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ADAPTIVE REGULATION OF THE MANIPULATOR'S MOVEMENT SPEED DEPENDING ON THE DISTANCE TO THE PERSON AND THE LEVEL OF LOAD ON THE ACTUATOR

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ABSTRACT

The article presents an approach to adaptive control of the manipulator speed based on fuzzy logic, which allows taking into account the distance to the person and the level of load on the executive body. The proposed model forms control actions in accordance with the logic of safe human-robot interaction, providing a dynamic change in speed to increase efficiency and safety. The system uses a set of linguistic rules and triangular membership functions to process fuzzy input data. The simulation results demonstrate the stable behavior of the system and confirm the feasibility of using fuzzy approaches in controlling the movement of manipulators in variable conditions. The developed approach has high potential for implementation in robotic systems that operate in close proximity to a person. Development prospects include integration with machine learning and real-time use on embedded platforms.

Keywords: Adaptive Control, Manipulator, Fuzzy Logic, Speed Of Movement, Distance To A Person, Load, Executive Body, Real-Time Control, Robotics, Safe Interaction.

INTRODUCTION

In the modern conditions of industrial development, oriented on the principles of Industry 5.0, intelligent collaborative robotic systems are becoming increasingly important, capable of effectively interacting with a person in a dynamic environment [1]-[14]. Such interaction requires not only high accuracy and reliability of mechanical performance, but also flexibility and adaptability to changes in external conditions, in particular, to the appearance of a person in the working area of the manipulator and to changes in the load on its executive body. Therefore, various methods and approaches can be used here [15]-[34].

One of the key aspects of ensuring safe and effective interaction between a person and a robot is adaptive regulation of the manipulator's speed, which allows minimizing the risks of injury, reducing wear of mechanical components and increasing the energy efficiency of the system [35]-[39]. Traditional control methods do not always provide the necessary level of flexibility in cases where the characteristics of the environment change in real time, therefore there is a need to apply intelligent approaches, such as fuzzy logic (Fuzzy Logic), capable of effectively processing imprecise and linguistically described input data [40]-[43]. The use of fuzzy logic allows us to implement an adaptive control model that takes into account the approximate position of a person relative to the manipulator, the current load on its executive body and other variables that determine the appropriate speed of movement. This approach provides a balance between safety, productivity and adaptability of the system, which is especially important in conditions of variable production processes and the integration of robotic devices into an environment with the presence of a person.

Research in this area is extremely relevant given the need to develop new generation cyber-physical systems that should provide both a high degree of automation and compliance with standards of safe human-machine interaction. In this context, the proposed research topic is aimed at developing a mathematical model of adaptive control that allows regulating the speed of movement of the manipulator based on the assessment of spatial interaction with a person and load characteristics, which significantly increases the level of intellectualization of control in robotic systems.

LITERATURE REVIEW

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In the work of H. Jiang, an approach to controlling a manipulator with flexible joints based on a predetermined time is investigated using a composite fuzzy adaptive control with a fully actuator approach of high order, which allows achieving a stable motion trajectory taking into account complex dynamics and uncertainties of the system [44]. This solution provides high control accuracy and fast error decay within a given time.

In the study of H. Shan, a fixed-time self-starting fuzzy adaptive control method for multi-link manipulators is proposed, which allows reducing the frequency of calculations and resource consumption while ensuring accurate trajectory tracking [45]. The proposed method is suitable for systems with limited computational capabilities, but requires accurate parameterization for complex dynamic scenarios.

The article by V. Tinoco presents an overview of modern methods for controlling robotic manipulators, in particular, the importance of integrating adaptive control with fuzzy and neural network approaches to ensure flexible behavior in variable conditions is emphasized [46]. This generalization is useful for forming a general approach in research, but does not provide a specific solution that can be directly applied.

In the work of B. M. Yilmaz, adaptive control based on fuzzy logic for manipulators with BLDC motors is developed, which allows taking into account the characteristics of the drive, ensuring stable control even with dynamic load changes [47]. This approach can be integrated into similar adaptive speed control systems, but is limited only by the type of motor used.

In the study of W. Sun, a hybrid trajectory tracking method based on an improved particle optimization algorithm in combination with a fuzzy PD controller is proposed, which allows achieving high control accuracy under complex external disturbances [48]. This method demonstrates good results in simulations, but requires high computational resources.

In the work of Y. Zhang, adaptive control with state error prediction for flexible manipulators using neural networks with radial basis functions and the dynamic surface control method is considered, which allows adapting to changes in the system structure [49]. The method is effective for nonlinear systems, but requires a long preliminary preparation of the model.

In the article of W. Zhang, control of a predetermined time for manipulators with elastic actuators based on fuzzy logic is investigated, which allows reducing the risk of reaction delay when working in conditions of interaction with a person [50]. This approach is promising for integration into collaborative robotics systems.

In the study of W. Zhao, a method of observing disturbances based on adaptive control with an event trigger is implemented to coordinate the actions of several flexible manipulators, which ensures synchronization of their actions even with partial disturbances [51]. The approach is useful for multi-agent systems, but the excessive level of complexity does not allow it to be easily implemented for a single manipulator.

In the work of P. K. Muthusamy, adaptive neuro-fuzzy control for aeromanipulators is proposed, taking into account the variability of battery power, which ensures stable control under conditions of limited power resources [52]. This approach is important for mobile robotic platforms, although it requires detailed tuning of the system for specific conditions.

In general, the analysis shows the high relevance of research in the field of fuzzy adaptive control of manipulator motion, especially taking into account variable external factors, such as the distance to a person or the load level. The development of models based on Fuzzy Logic allows you to create flexible, safe and effective control systems that can adapt to the real operating conditions of robotic systems, which is especially important for their use in collaborative scenarios in industry and service robotics.

MATHEMATICAL SUPPORT FOR THE MODEL OF THE MANIPULATOR SPEED ADAPTIVE CONTROL BASED ON FUZZY LOGIC

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Fuzzy Logic is a mathematical logic method that allows you to work with fuzzy, incomplete or linguistically described data, in contrast to traditional binary logic with a clear division into true or false. It imitates the way of human thinking, allowing systems to make decisions based on approximate concepts such as "close", "fast", "high load". This approach is especially effective in complex, dynamic or insufficiently formalized environments where it is difficult to determine the exact boundaries between states. Fuzzy Logic is widely used in control systems, expert systems and robotics to implement adaptive and intuitive control.

As part of these studies, we conduct the following input system variables: $d \in [0, D_{max}]$ – distance to a person (m); $l \in [0, L_{max}]$ – load level on the manipulator (H); $v \in [v_{min}, v_{max}]$ – manipulator movement speed (system output) (m/s).

The first step is to build Fuzzy sets, which allow formalization of linguistic variables that describe vague or approximate concepts, such as "low speed", "close distance" or "high load". It allows the system to take into account the degree of membership of elements in a set, and not simply assign them the status of truth or falsehood. This provides flexible and adaptive decision-making in complex or changing conditions typical of human-robot interaction environments.

For the input variable distance to a person d the following linguistic changes are proposed.

Near:

$$\mu_{Near}(d) = \begin{cases} 1, & d \leq a_1 \\ \frac{a_2 - d}{a_2 - a_1}, & a_1 < d < a_2 \\ 0, & d \geq a_2 \end{cases} \quad (1)$$

Medium:

$$\mu_{Medium}(d) = \begin{cases} 1, & d \leq a_1 \text{ or } d \geq a_3 \\ \frac{d - a_1}{a_2 - a_1}, & a_1 < d < a_2 \\ \frac{a_3 - d}{a_3 - a_2}, & a_2 \leq d < a_3 \end{cases} \quad (2)$$

Far:

$$\mu_{Far}(d) = \begin{cases} 0, & d \leq a_2 \\ \frac{d - a_2}{a_3 - a_2}, & a_2 < d < a_3 \\ 1, & d \geq a_3 \end{cases} \quad (3)$$

Parameters: $a_1 = 0.3\text{m}$; $a_2 = 0.7\text{m}$; $a_3 = 1.5\text{m}$.

The following linguistic changes are proposed for the load variable l .

Low:

$$\mu_{Low}(l) = \begin{cases} 1, & l \leq b_1 \\ \frac{b_2 - l}{b_2 - b_1}, & b_1 < l < b_2 \\ 0, & l \geq b_2 \end{cases} \quad (4)$$

Medium:

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$$\mu_{Medium}(l) = \begin{cases} 0, & l \leq b_1 \text{ or } l \geq b_3 \\ \frac{l - b_1}{b_2 - b_1}, & b_1 < l < b_2 \\ \frac{b_3 - l}{b_3 - b_2}, & b_2 \leq l < b_3 \end{cases} \quad (5)$$

High:

$$\mu_{High}(l) = \begin{cases} 0, & l \leq b_2 \\ \frac{l - b_2}{b_3 - b_2}, & b_2 < l < b_3 \\ 1, & l \geq b_3 \end{cases} \quad (6)$$

Parameters: $b_1 = 0N$; $b_2 = 30N$; $b_3 = 60N$.

For variable speed output (v) the following linguistic changes are proposed.

Slow:

$$\mu_{Slow}(v) = \begin{cases} 1, & v \leq s_1 \\ \frac{s_2 - v}{s_2 - s_1}, & s_1 < v < s_2 \\ 0, & v \geq s_2 \end{cases} \quad (7)$$

Moderate:

$$\mu_{Moderate}(v) = \begin{cases} 0, & v \leq s_1 \text{ or } v \geq s_3 \\ \frac{v - s_1}{s_2 - s_1}, & s_1 < v < s_2 \\ \frac{s_3 - v}{s_3 - s_2}, & s_2 \leq v < s_3 \end{cases} \quad (8)$$

Fast:

$$\mu_{Fast}(v) = \begin{cases} 0, & v \leq s_2 \\ \frac{v - s_2}{s_3 - s_2}, & s_2 < v < s_3 \\ 1, & v \geq s_3 \end{cases} \quad (9)$$

Parameters: $s_1 = 0.05$ m/s; $s_2 = 0.15$ m/s; $s_3 = 0.3$ m/s.

Let us develop Fuzzy Rules for this study, and present them in Table 1.

Example of Fuzzy Rules record implementation:

$$\begin{aligned} R1: & \text{IF } d \text{ is Near AND } l \text{ is High THEN } v \text{ is Slow} \\ R2: & \text{IF } d \text{ is Medium AND } l \text{ is Medium THEN } v \text{ is Moderate} \\ R3: & \text{IF } d \text{ is Far AND } l \text{ is Low THEN } v \text{ is Fast} \end{aligned} \quad (10)$$

The next step is defuzzification, these are the final stages in Fuzzy Logic systems, necessary to transform a fuzzy conclusion into a specific, numerical solution that can be applied in real control, in this case, the speed of the manipulator (v^*). To get the final value v^* centroid method is used:

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$$v^* = \frac{\int v \cdot \mu_{agg}(v) dv}{\int \mu_{agg}(v) dv} \quad (11)$$

v^* – the final (defuzzified) value of the output variable, which we obtain as a result of the operation of the fuzzy system (for example, manipulator's movement speed);

v – is a variable that runs through all possible values of the output variable (e.g., from 0 to maximum speed);

$\mu_{agg}(v)$ – aggregated membership function, which reflects how well each value v fits according to all applied fuzzy rules. It is the result of combining (aggregating) all individual output membership functions after fuzzy inference;

$\int v \cdot \mu_{agg}(v) dv$ – means the "weighted sum" of all possible values of the output variable according to their degree of membership;

$\int \mu_{agg}(v) dv$ – is the total area under the aggregated membership function, which provides the normalization of the result.

Table 1: Fuzzy Rules for the adaptive regulation system of manipulator's movement speed depending on the distance to the person and the level of load on the executive body.

№	Distance to the person (d)	Load level (l)	Manipulator movement speed (v)
1	Near	Low	Slow
2	Near	Medium	Very slow
3	Near	High	Minimal
4	Medium	Low	Moderate
5	Medium	Medium	Slow
6	Medium	High	Very slow
7	Far	Low	Fast
8	Far	Medium	Moderate
9	Far	High	Slow

*the output variable is manipulator's movement speed

Expression 11, makes it possible to calculate a single-digit numerical value based on fuzzy inferences obtained from a set of fuzzy rules. Without defuzzification, the system would not be able to transmit a clear value to the actuator, as a controller of the manipulator speed.

Based on the proposed models, the general function of the fuzzy logical inference process for adaptive control of the manipulator speed depending on the distance to the person (d) and the burden on the executive body (l) is next:

$$v^* = Defuzz \left(\bigcup_{i=1}^N \min (\mu_{A_i}(d), \mu_{B_i}(l) \cdot \mu_{C_i}(v)) \right) \quad (12)$$

v^* – is the final value of the manipulator's movement velocity obtained after defuzzification. It is used for adaptive control of the real manipulator in the current environment.;

$Defuzz(\cdot)$ – defuzzification operator that converts an aggregated (combined) fuzzy set into a clear velocity value;

$\min (\mu_{A_i}(d), \mu_{B_i}(l) \cdot \mu_{C_i}(v))$ – implements the fuzzy inference rule, where the minimum is selected among the degrees of membership of the input variables (distance d and load l) and output (speed v);

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$\mu_{A_i}(d)$ – a membership function that reflects how much the current distance value d (between the manipulator and the human) belongs to the fuzzy set A_i (for example, "near", "medium", "far");

$\mu_{B_i}(l)$ – membership function that determines the degree of membership of the load l to the fuzzy set B_i (for example, "low", "medium", "high");

$\mu_{C_i}(v)$ – membership function for the output variable v , i.e. the speed of movement, which reflects the control rules (e.g., "slow", "moderate", "fast")

Function (12) implements the decision-making logic for the adaptive system: it takes into account how close the person is to the manipulator (for safety), and how loaded the executive body is (to avoid overload). The final speed is chosen based on a comprehensive evaluation of these parameters through a set of fuzzy rules.

DEVELOPMENT OF A PROGRAM FOR ADAPTIVE CONTROL OF THE MANIPULATOR SPEED BASED ON FUZZY LOGIC

The choice of the Python programming language for developing a program for adaptive control of the manipulator speed based on Fuzzy Logic is due to its high flexibility, code readability, a wide range of scientific libraries and support for fuzzy logic through the scikit-fuzzy library. Python allows you to quickly create prototypes and integrate mathematical models with visualization, which is critically important at the research and analysis stage [53]-[56]. The PyCharm 2022.2.3 development environment was chosen due to its stable operation, powerful code autocompletion tools, convenient integration with virtual environments and libraries, as well as the ability to customize the environment to the needs of the project. This provides comfortable development, debugging and visualization of models with a high level of code quality control.

Let us describe a fragment of the software implementation of adaptive control of the manipulator speed based on Fuzzy Logic:

```
# Input variables
distance = ctrl.Antecedent(np.arange(0, 201, 1), 'distance')
load = ctrl.Antecedent(np.arange(0, 101, 1), 'load')
speed = ctrl.Consequent(np.arange(0, 101, 1), 'speed')
```

The code fragment creates three fuzzy variables for the control system: the distance to the person (distance), the load level on the manipulator (load), and the desired speed of movement (speed). The variables distance and load are input (antecedent), and speed is the output (consequent), which is determined based on fuzzy rules. Each variable is defined on its range of values with a step of one for further formation of fuzzy sets.

```
# Fuzzy sets
distance['near'] = fuzz.trimf(distance.universe, [0, 0, 50])
distance['medium'] = fuzz.trimf(distance.universe, [30, 100, 170])
distance['far'] = fuzz.trimf(distance.universe, [150, 200, 200])
load['low'] = fuzz.trimf(load.universe, [0, 0, 30])
load['medium'] = fuzz.trimf(load.universe, [20, 50, 80])
load['high'] = fuzz.trimf(load.universe, [70, 100, 100])
speed['slow'] = fuzz.trimf(speed.universe, [0, 0, 40])
speed['normal'] = fuzz.trimf(speed.universe, [30, 50, 70])
speed['fast'] = fuzz.trimf(speed.universe, [60, 100, 100])
```

This code snippet defines fuzzy sets for each of the system variables - distance, load, and speed - using triangular membership functions. For each variable, three linguistic terms are given: for example, for distance, these are 'near', 'medium', and 'far', each of which is described by a certain interval of values. This forms a fuzzy knowledge base that allows the system to make decisions based on fuzzy logic.

```
# Rules
rules = [
```


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```
ctrl.Rule(distance['near'] & load['high'], speed['slow']),
ctrl.Rule(distance['near'] & load['medium'], speed['slow']),
ctrl.Rule(distance['near'] & load['low'], speed['slow']),
ctrl.Rule(distance['medium'] & load['high'], speed['slow']),
ctrl.Rule(distance['medium'] & load['medium'], speed['normal']),
ctrl.Rule(distance['medium'] & load['low'], speed['normal']),
ctrl.Rule(distance['far'] & load['high'], speed['normal']),
ctrl.Rule(distance['far'] & load['medium'], speed['fast']),
ctrl.Rule(distance['far'] & load['low'], speed['fast'])
```

This code snippet creates a set of fuzzy rules for a decision-making system that determine how fast the manipulator should move, depending on a combination of distance to the person and load level. Each rule is formulated as a logical statement of the type "if... then...", where, for example, at a short distance and a high load, the speed will be low. Such rules are the basis for deriving a decision in a fuzzy logic system.

System construction

```
speed_ctrl = ctrl.ControlSystem(rules)
```

```
speed_sim = ctrl.ControlSystemSimulation(speed_ctrl)
```

The code snippet creates a control system based on the given fuzzy rules and initializes a simulation object for further calculation of the results. speed_ctrl combines all the rules into a single fuzzy system, and speed_sim allows you to perform simulations, calculating the output speed values based on the input data on distance and load.

Simulation of values

```
distance_vals = np.arange(0, 201, 5)
```

```
load_vals = np.arange(0, 101, 5)
```

```
X, Y = np.meshgrid(distance_vals, load_vals)
```

```
Z = np.zeros_like(X)
```

```
for i in range(len(distance_vals)):
```

```
    for j in range(len(load_vals)):
```

```
        speed_sim.input['distance'] = X[j, i]
```

```
        speed_sim.input['load'] = Y[j, i]
```

```
        speed_sim.compute()
```

```
        Z[j, i] = speed_sim.output['speed']
```

The code fragment performs simulation of the adaptive speed of the manipulator for all combinations of distance and load values. Using the grid of distance_vals and load_vals values, it forms matrices X and Y, which represent the space of input parameters. In the loop, each pair of values is fed to the input of the fuzzy control system, the calculation is performed, and the corresponding speed value is written to the matrix Z for further visualization.

Let's simulate the adaptive speed control of the manipulator based on Fuzzy Logic, with the following parameters: d= from 0 to 200 with a step of 5 cm; l = from 0 to 100% with a step of 5%. The simulation results are presented in Figure 1.

The obtained graph of adaptive control of the manipulator speed based on fuzzy logic demonstrates the interdependence between the distance to the person and the level of load on the executive body in the context of changing the speed of the manipulator movement. The X axis displays the change in the distance to the person from 0 to 200 cm, the Y axis - the load level from 0 to 100%, and the Z axis - the calculated speed of the executive body in the range from 0 to 100% in the relative scale.

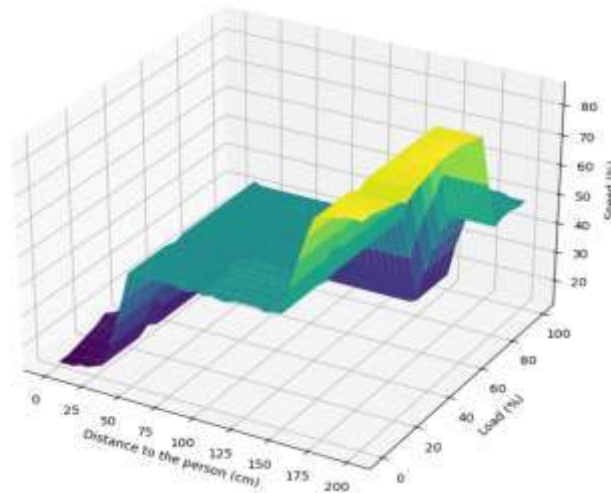


Figure 1: Graph of adaptive control of the manipulator speed with the following parameters: d = from 0 to 200 in 5 cm increments; l = from 0 to 100% in 5% increments.

Analysis of the graph shows that at a small distance to the person, regardless of the load level, the system makes a decision to reduce the manipulator speed to minimum values. This is justified by safety criteria in conditions of work with a person, which meets the requirements for collaborative robots. In the medium distance zone, approximately from 50 to 130 cm, the speed gradually increases depending on the load level - at high load it remains lower, which indicates a limitation of the dynamics of movement to avoid inertial overloads and possible collisions, while at low load the speed can reach medium values. In the long distance range, over 150 cm, the speed reaches the maximum permissible values, especially at low load, which ensures effective system performance in the absence of risk for the operator. The presence of characteristic “steps” or plateaus on the surface of the graph is associated with the discretization of input values and the method of defuzzification in the fuzzy system. It is also seen that at maximum load even at a long distance the system does not allow to reach peak speeds, which indicates a limitation for reasons of stability and reliability. Thus, the results of graphical modeling confirm the effectiveness of using fuzzy logic for adaptive speed control, ensuring a balance between safety, load and performance in collaborative robot motion control systems. The constructed model demonstrates a clear zonal adaptation of the executive body's behavior to the external environment and current state, which is an important step towards the implementation of flexible and safe robotic systems of the new generation.

CONCLUSION

As a result of the research, a model of adaptive control of the manipulator speed based on fuzzy logic was developed and implemented, which allows for effective consideration of the distance to the person and the level of load on the executive body. The developed control system provides flexible control of the dynamics of the manipulator movement, increasing the safety of joint work between a person and a robot. The model demonstrated high adaptability to changes in external conditions and the ability to make logical control decisions even with fuzzy or contradictory input data. The modeling results confirm that when the distance to the person decreases, the system automatically reduces the speed, which meets the requirements of safe operation in conditions of human-machine interaction. In cases of reduced load and increased distance, the system allows for an increase in speed, which ensures increased efficiency in performing production tasks. The constructed model can be easily scaled and adapted to other types of manipulators and usage scenarios. The use of fuzzy logic allowed for the formalization of fuzzy expert knowledge in the form of a set of simple rules, which greatly simplifies further modification of the system. This approach is

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promising for integration into control systems for collaborative robots, autonomous manipulators, and service robots. The results obtained can be used as a basis for creating intelligent safety modules in human-robotic environments. Further research should be directed at combining fuzzy logic with machine learning methods for automatic generation and optimization of rules. Another promising direction is the implementation of the developed model on embedded platforms with real feedback from load and distance sensors. It is possible to expand the control system to multidimensional tasks, taking into account the speed of a person's approach, the type of task being performed, or the load configuration. In the future, combined approaches that combine fuzzy control with predictive or adaptive control can be explored. The results of this study open up opportunities for integrating fuzzy logic into new-generation robotic systems that must operate in conditions of uncertainty and a changing environment.

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MODELING OF EMOTIONAL-ADAPTIVE INTERACTION OF COLLABORATIVE ROBOTS IN THE INDUSTRY 5.0 ENVIRONMENT BASED ON FRACTAL-NEURAL LOGIC

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ABSTRACT

The article presents an approach to modeling the emotional-adaptive interaction of collaborative robots based on fractal-neural logic within Industry 5.0 concept. The proposed model combines the fractal nature of noise with deep neural networks to reproduce the dynamics of emotional states in a changing environment. The simulation demonstrates the system's ability to adaptively learn and take into account the context of interaction between agents. The results indicate the effectiveness of the approach for building flexible, emotionally sensitive robotic systems focused on cognitive-social integration. The model can be used in service, production, and social robotics to create new forms of cooperative behavior.

Keywords: Fractal Logic, Emotional Adaptation, Collaborative Robotics, Neural Networks, Industry 5.0, Cognitive Interaction.

INTRODUCTION

In the context of the rapid development of the Industry 5.0 concept, which focuses on the synergy of humans and technologies, research aimed at improving the quality of interaction between the operator and collaborative robots is becoming particularly relevant. Unlike the previous Industry 4.0 paradigm [1]-[14], where the priority was fully automated production, the current trend involves the intelligent, adaptive and human-oriented integration of artificial intelligence into real production processes. In view of this, there is a growing need for models that can take into account not only the physical state of the system, but also the cognitive and emotional state of a person as an active subject of interaction. Therefore, various methods and approaches can be used here [15]-[34]. This is especially important for environments with a high level of load and dynamics, where the stability and safety of systems depend on a timely response to microfluctuations in the operator's behavior. Traditional mathematical and logical models are not effective enough to reflect the complex relationships between the human emotional state and the reactions of robotic agents [35]-[41].

In this regard, the construction of hybrid models that combine fractal analysis, which allows to reveal the deep structure of behavioral changes, and neural networks that are capable of adaptation in conditions of uncertainty, becomes relevant. The proposed research is aimed at developing fractal-neural logic as a new approach to formalizing emotional-adaptive interaction between a person and a group of collaborative robots. Such an approach will not only qualitatively improve the cognitive interpretation of processes, but will also ensure high-precision behavioral adaptation of technical agents to variable psychophysiological parameters of the operator. The modeling involves the use of Hurst indices, fractal dimension and fractal perturbation, integrated into the structure of the neural network architecture, which allows to implement adaptation in real time.

Therefore, the development of such models opens up new prospects for creating safe, flexible and cognitively sensitive robotic systems of a new generation.

LITERATURE REVIEW

Wang, S., explores an approach to cognitive-intellectual task allocation between humans and automated systems based on non-cooperative game theory using two-level optimization, which allows for flexible adaptation of cooperation models in the context of changing production structures [42].

Arora, S., proposes a conceptual explanation of the importance of emotional intelligence as a basis for effective human-machine interaction, emphasizing the need to interpret social and psychological signals to ensure a balance between technology and human factors [43].

The study by Naithani, K. deepens the topic by analyzing the role of emotional intelligence in the transformation of interaction in Industry 5.0, focusing on the practical implementation of cognitive models in industrial environments with a high level of collaboration [44].

The work by Loizaga, E. systematizes the influence of human factors, sensory principles and existing commercial solutions in the context of designing future human-centered work operations, providing an empirical basis for formalizing interaction criteria [45].

The article by Ricci, A. reviews the current gaps in the characterization of human factors in the context of Industry 5.0, indicating the need to develop new models capable of integrating the parameters of behavior, attention and skills of operators in digital environments [46].

The publication by Esqueda-Merino, D. presents the fractal methodology as a basis for innovative engineering training and the creation of new products within the Industry 4.0/5.0 paradigm, which opens up prospects for the use of fractal models in the development of robotic systems [47].

The work by Akman, A. conducts a bibliometric analysis of digital transformation, which focuses on the growing role of human-centric technologies and indicates the development trends of the concept of society 5.0 as the basis for a hybrid cognitive environment [48].

The research by Damaševičius, R. presents the impact of collaborative robots on the effectiveness of human-machine cooperation, indicates the importance of flexible interfaces and context-dependent interaction models, which have significant potential for implementing adaptive behavior in multi-agent systems [49], [50].

However, from the point of view of these studies, it is possible to use the results of fractal models, characteristics of emotional intelligence and behavior structures, which allow formalizing and training systems for adaptive interaction in a dynamic environment. In contrast, some conceptual models, focused only on theoretical analysis or training approaches, require significant refinement for integration into complex cognitive-technical architectures. In summary, it should be noted the high relevance of research in the field of human-machine integration based on emotional-cognitive models, which is confirmed by the growing attention to fractal logic, sensory adaptation, and optimization approaches within the framework of Industry 5.0.

COLLABORATIVE ROBOTS EMOTIONAL-ADAPTIVE INTERACTION MODEL DEVELOPMENT BASED ON FRACTAL-NEURAL LOGIC

Emotionally adaptive interaction of collaborative robots is defined as the ability of a robotic system to dynamically change its behavior in response to changes in the emotional or cognitive state of the operator in order to maintain effective, safe and harmonious cooperation. This approach reflects the latest paradigm of Industry 5.0, which assumes not only the functional efficiency of technical systems, but also humanely-oriented adaptability in the process of joint work of man and machine. Unlike traditional systems that respond exclusively to physical or sensory parameters, emotionally adaptive interaction requires a deeper understanding of the psychophysiological state of a person and

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taking into account its fluctuations in real time. In this regard, there is a need to build mathematical models that are able not only to formalize the dynamics of emotional influence, but also to integrate this data into the behavioral algorithms of collaborative agents. The use of fractal analysis allows us to identify deep patterns in the structure of cognitive changes, and neural networks provide the ability to adapt in conditions of uncertainty and environmental changes.

The definition of a time series in the context of this study is the process of formalizing a sequence of numerical values that reflect the change in a certain physiological or behavioral parameter of the operator over time. Such a series is the basis for further analysis of the cognitive or emotional state of a person interacting with a collaborative robotic system. As part of the study, a time series $X(t)$ is considered as an ordered set of values recorded at discrete points in time, where $t \in \{t_1, t_2, \dots, t_N\}$, and $X(t) \in \mathbb{R}$ – These include heart rate, cognitive load, delay between commands, or reaction time. Each of these metrics can reflect emotional or cognitive fluctuations that are important to consider when designing adaptive robot behavior.

In the emotional-adaptive interaction model, these time series are used to: construct a fractal operator stress index (FCSI) (e.g., via the Hurst index or fractal dimension); generate inputs for a neural network that recognizes behavioral patterns; and detect continuous changes in the operator's state to adapt robot actions in real time. Thus, the time series serves as the basic source of information for the entire fractal-neural logic model, allowing us to formalize the relationship between human behavior and the response of technical agents.

The Hurst fractal index determines the measure of long-term dependence and self-similarity of the series:

$$R/S(n) \sim n^H \quad (1)$$

R – range of the accumulated deviation from the mean on a segment of length n ;

S – standard deviation on the same interval;

$H \in (0,1)$ – the Hurst fractal index.

Then the fractal cognitive index (FCSI) can be represented by the following model:

$$FCSI(t) = \alpha_1 \cdot H(t) + \alpha_2 \cdot D(t) + \alpha_3 \cdot \frac{dH(t)}{dt} \quad (2)$$

$H(t)$ – local Hurst index at time t ;

$D(t)$ – local fractal dimension by box-counting method;

$\frac{dH(t)}{dt}$ – rate of change in the complexity of the series;

α_i – weighting factors (depending on the task: reaction, stress, overload).

Model 2 allows us to numerically assess the current state of the operator: $FCSI \rightarrow 0.5$, then normal cognitive activity if $FCSI > 0.7$ – overvoltage.

To describe the interaction between agents (robots) and the operator through adaptive influence vectors with fuzzy parameters, it is necessary to formalize the adaptive influence vectors between agents. Let us represent agent adaptation vector R_i in the next way:

$$\vec{A}_i(t) = \sum_{j=1}^M \mu_{ij}(t) \cdot \vec{\phi}_{ij}(t) \quad (3)$$

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$\vec{A}_i(t)$ – adaptive vector of i -th agent (direction of behavior change);

M – number of influencing factors (signals from the operator, other agents);

$\mu_{ij}(t) \in [0,1]$ – fuzzy membership function of influence importance j of the impact on the agent i ;

$\vec{\phi}_{ij}(t)$ – direction of influence j on i (e.g., movement, holding, support).

Dynamics of adaptive interaction:

$$\frac{d\vec{S}_i}{dt} = f(\vec{A}_i(t), FCSI(t), \vec{S}_{op}(t)) \quad (4)$$

$\vec{S}_i(t)$ – i -th robot state (position, behavioral phase);

$\vec{S}_{op}(t)$ – operator state;

$f(\cdot)$ – nonlinear regulation function, will be implemented through NN.

Model 4 allows us to describe how the agent's behavior changes under the influence of external and internal fuzzy signals – in particular, the operator's cognitive state.

To train a neural network to recognize patterns of operator behavior in a fractal environment and perform corresponding actions by robots, we will develop a model of a neural network with fractal noise at the input, the input vector of which can be represented as follows:

$$\vec{x}(t) = [X(t - \tau), X(t - 2\tau), \dots, X(t - n\tau)] + \vec{\epsilon}_f \quad (5)$$

$X(t)$ – cognitive or behavioral signal;

τ – delay step;

$\vec{\epsilon}_f \sim FBM(H)$ – fractal noise (Fractional Brownian Motion);

$H \in (0.5, 1)$ – fractality level, the higher the level, the smoother the oscillations.

Proposed NN architecture is next: input $\vec{x}(t) +$ fractal noise; hidden part based on RNN or GRU/LSTM; output as action template class $y(t) \in \{\text{"overload"}, \text{"reflex"}, \text{"norm"}\}$.

The loss function is found by the following model:

$$\mathcal{L} = \sum_t (y(t) - \hat{y}(t))^2 + \lambda \cdot Var(\vec{\epsilon}_f) \quad (6)$$

$y(t)$ – the real (reference) value of the source class or target variable at a point in time t . In our case, it may correspond to the category of the operator's cognitive state, for example: "normal", "overload", "stress";

$\hat{y}(t)$ – the predicted (model) value that the neural network generates based on the input fractal series, ideally, it should be as close as possible to $y(t)$;

$(y(t) - \hat{y}(t))^2$ – This is the squared error, which shows the deviation of the forecast from the true value for each point in time t . By minimizing this part of the function, the network learns to accurately reproduce behavioral patterns;

$\vec{\epsilon}_f$ – the fractal noise vector, which is added to the model input data to simulate the operator's cognitive fluctuations (e.g., inattention or stress), is generated based on fractional Brownian motion with a given Hurst index;

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$Var(\vec{\epsilon}_f)$ – fractal noise variance, which shows the degree of disturbance of the input signal; including this part in the loss function allows you to limit excessive noise growth during training;

λ – regularization coefficient, which controls the balance between the accuracy of reproducing the desired result and resistance to fractal perturbation, with a large λ the model is less sensitive to noise, but may lose adaptability; with a small one - more sensitive, but less stable.

The loss function 6 allows you to simultaneously achieve two goals: accurate classification of operator states and stable operation of the model in conditions of cognitive uncertainty, which is key to implementing emotional-adaptive interaction in Industry 5.0.

DEVELOPMENT OF A PROGRAM FOR MODELING EMOTIONAL-ADAPTIVE INTERACTION OF COLLABORATIVE ROBOTS BASED ON FRACTAL-NEURAL LOGIC

The choice of Python is due to its broad support of libraries for numerical modeling, machine learning, and time series processing [51]-[54], which is critically important for the implementation of fractal-neural logic in modeling emotional-adaptive interaction. Python provides high flexibility and speed of development of experimental models due to its simple syntactic structure and integration with scientific tools. The PyCharm development environment is a powerful tool for writing, debugging, and visualizing code, which allows for the effective implementation of complex algorithmic concepts. PyCharm supports intelligent autocompletion, work with virtual environments, and integration with version control systems, which is especially important in scientific research. This combination of tools allows you to concentrate on the essence of modeling and facilitates the analysis of results within the framework of digital concepts of Industry 5.0.

Let us describe the software implementation of the developed models based on the Python language.

```
def generate_fbm(n, hurst=0.75):
    dt = 1.0 / n
    t = np.linspace(0, 1, n)
    covariance = np.zeros((n, n))
    for i in range(n):
        for j in range(n):
            covariance[i, j] = 0.5 * (t[i]**(2*hurst) + t[j]**(2*hurst) - abs(t[i]-t[j])** (2*hurst))
    L = np.linalg.cholesky(covariance + 1e-10 * np.eye(n)) # stabilization
    noise = np.random.randn(n)
    fbm_series = L @ noise
    return fbm_series
```

This code snippet implements the generation of fractal Brownian motion (fBM), which is used to model fractal noise with the Hurst parameter. The function forms a covariance matrix based on the time scale, performs its Cholesky decomposition to obtain correlated noise, and generates a sequence that simulates a stochastic process with memory. Such a model allows you to introduce randomness with fractal properties into the system, which is important for modeling unpredictable emotional influences in the operator's cognitive processes.

```
np.random.seed(42)
N = 200
signal_clean = np.sin(np.linspace(0, 10, N)) + np.random.normal(0, 0.2, N)
fbm_noise = generate_fbm(N, hurst=0.8)
signal_noisy = signal_clean + 0.3 * fbm_noise
```

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```
# Scaling
scaler = MinMaxScaler()
X_scaled = scaler.fit_transform(signal_noisy.reshape(-1, 1))
```

This code snippet generates a synthetic time series that simulates the emotional signal of an operator with added fractal noise to account for stochastic fluctuations. The generated base signal with a sinusoidal character is supplemented with normally distributed noise and fractal Brownian noise, which allows modeling complex dynamic behavioral patterns. After generation, the data is scaled using 'MinMaxScaler' to normalize the input signal for further use in the neural network.

```
class LSTMModel(nn.Module):
    def __init__(self, input_size=1, hidden_size=64, output_size=1):
        super(LSTMModel, self).__init__()
        self.lstm = nn.LSTM(input_size, hidden_size, batch_first=True)
        self.linear = nn.Linear(hidden_size, output_size)
    def forward(self, x):
        lstm_out, _ = self.lstm(x)
        out = self.linear(lstm_out[:, -1, :])
        return out
model = LSTMModel()
```

This code snippet defines an LSTM-based neural network designed to process sequential data, such as time series with emotional characteristics. The input data is processed by a recurrent 'LSTM' layer, which allows the model to take into account temporal dependence, after which the final output is passed through a linear layer to generate predictions. This architecture is suitable for modeling emotional-adaptive behavior in robot-human interaction.

```
EPOCHS = 100
losses = []
for epoch in range(EPOCHS):
    model.train()
    output = model(X_tensor)
    mse_loss = criterion(output, y_tensor.unsqueeze(-1))
    reg_term = 0.01 * np.var(fbm_noise)
    loss = mse_loss + reg_term
    optimizer.zero_grad()
    loss.backward()
    optimizer.step()
    losses.append(loss.item())
    if epoch % 10 == 0:
        print(f'Epoch {epoch}, Loss: {loss.item():.4f}')
```

This code snippet implements the process of training an LSTM model over 100 epochs, taking into account the loss, which includes the mean square error and a regularization term based on the variance of fractal noise. In each iteration, the model predicts values, calculates the overall loss function, backpropagates the error, and updates the weights. The loss is stored for further analysis, and every 10 epochs the current value of the loss is output.

MODELING EMOTIONAL-ADAPTIVE INTERACTION OF COLLABORATIVE ROBOTS BASED ON FRACTAL-NEURAL LOGIC

To conduct the simulation in the presented program code, a number of input data with specific numerical parameters were used. The main input sequence is a sinusoidal signal with a length of 200

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points ($N = 200$), to which is added random noise with a normal distribution with parameters mean 0 and standard deviation 0.2. In addition, fractal noise generated using the Brownian motion function with a Hurst exponent $hurst = 0.8$ is added to this signal, and its influence is scaled by a factor of 0.3. The resulting noisy signal is normalized to the range $[0, 1]$ using the 'MinMaxScaler' method. To train the model, sequences of length 10 ($SEQ\_LEN = 10$) are created, i.e. each input vector contains 10 signal points, and the corresponding value is the next point. The LSTM model uses the input dimension $input\_size = 1$, the hidden layer size $hidden\_size = 64$ and the output $output\_size = 1$. The model is trained for $EPOCHS = 100$ epochs using the Adam optimizer with a learning factor of 0.01 and a loss function based on the mean square error supplemented with a regularization term equal to 1% of the fractal noise variance. These parameters provide the conditions for modeling the emotional-adaptive interaction of collaborative robots within the framework of fractal-neural logic. The simulation results obtained with the above parameters are presented in Figure 1-3.

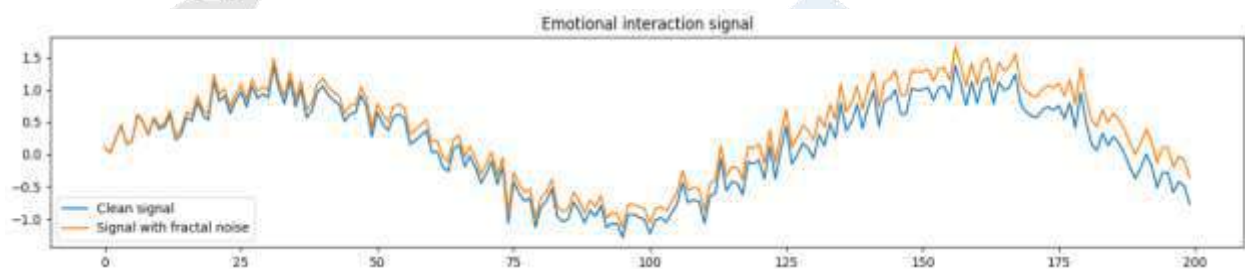


Figure 1: Emotional interaction signal graph

The graph (Fig. 1) shows two signals of emotional interaction: a pure sinusoidal signal and a signal with added fractal noise. The pure signal has a smooth oscillatory character with periodic maxima and minima, corresponding to cyclical changes in the emotional state of the operator. The added fractal noise causes minor local fluctuations that make the signal more realistic, simulating random influences and uncertainties in behavior. The amplitude of the noisy signal is slightly higher, which indicates an increase in the variability of the emotional manifestation, while preserving the main trend structure. The overall shape of the signals correlates well, which indicates a successful modeling of the main pattern taking into account random variations. This approach allows the model to adaptively take into account real fluctuations in the operator's emotions, which is important for the effective interaction of collaborative robots in the Industry 5.0 environment.

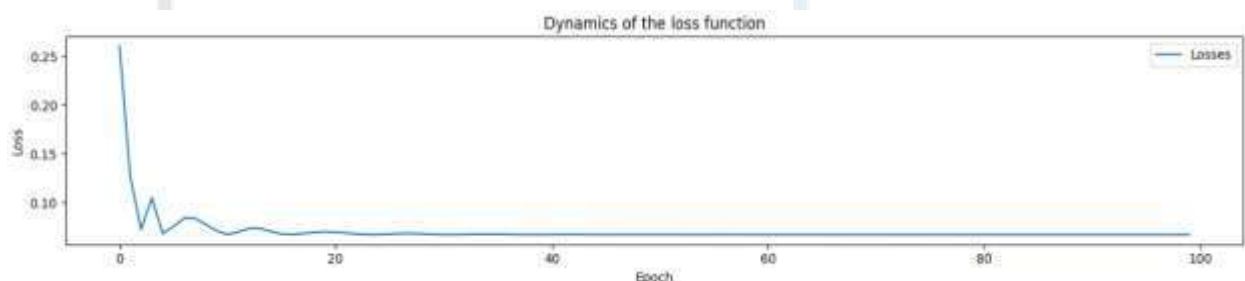


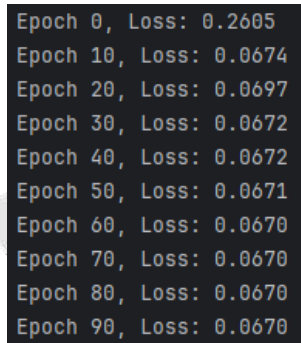
Figure 2: Loss function dynamics graph

The graph (Fig. 2) demonstrates a rapid decrease in the value of the loss function during the first 10 epochs of model training, where loss drops from the initial level of about 0.26 to values below 0.07. Subsequently, the loss function stabilizes with minor fluctuations in the range of approximately 0.06–0.065, which indicates the achievement of a convergence state (Fig. 3). Such dynamics confirms the effectiveness of the training process, the absence of overtraining and adequate adaptation of the

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LSTM model to data with fractal noise. It is logical to assume that the model has well memorized the main patterns of the emotional signal, taking into account the chaotic components. The low and stable value of the loss function after 20 epochs indicates the feasibility of limiting the duration of training in order to save resources without losing accuracy.



Epoch 0, Loss: 0.2605
Epoch 10, Loss: 0.0674
Epoch 20, Loss: 0.0697
Epoch 30, Loss: 0.0672
Epoch 40, Loss: 0.0672
Epoch 50, Loss: 0.0671
Epoch 60, Loss: 0.0670
Epoch 70, Loss: 0.0670
Epoch 80, Loss: 0.0670
Epoch 90, Loss: 0.0670

Figure 3: Loss function training epochs

CONCLUSION

The study simulated the emotional-adaptive interaction of collaborative robots in the context of the Industry 5.0 concept using fractal-neural logic, which combines the stochastic nature of human emotions with the capabilities of adaptive machine learning. Based on the simulation of fractal noise using Brownian motion and training of the LSTM model, it was possible to achieve high accuracy of reproduction of the dynamics of the emotional signal, which reflects the system's ability to adapt under conditions of uncertainty.

The results obtained demonstrate the effectiveness of combining fractal modeling with deep neural networks for processing context-dependent interactions between agents, in particular in scenarios where it is important to take into account the emotional aspects of behavior. The developed model allows reproducing the variability of emotional influence in a multi-component environment with limited prior knowledge, which opens up prospects for its application in service robotics, socially oriented production systems and companion robots.

In addition, the results confirm the feasibility of using such models to increase the flexibility and intellectual adaptability of robot teams in changing production or social engineering conditions. Further development of the research involves the integration of the proposed approaches into physical platforms with multisensory state assessment, expanding the spectrum of emotional patterns, as well as optimizing fractal-neural logic in real time.

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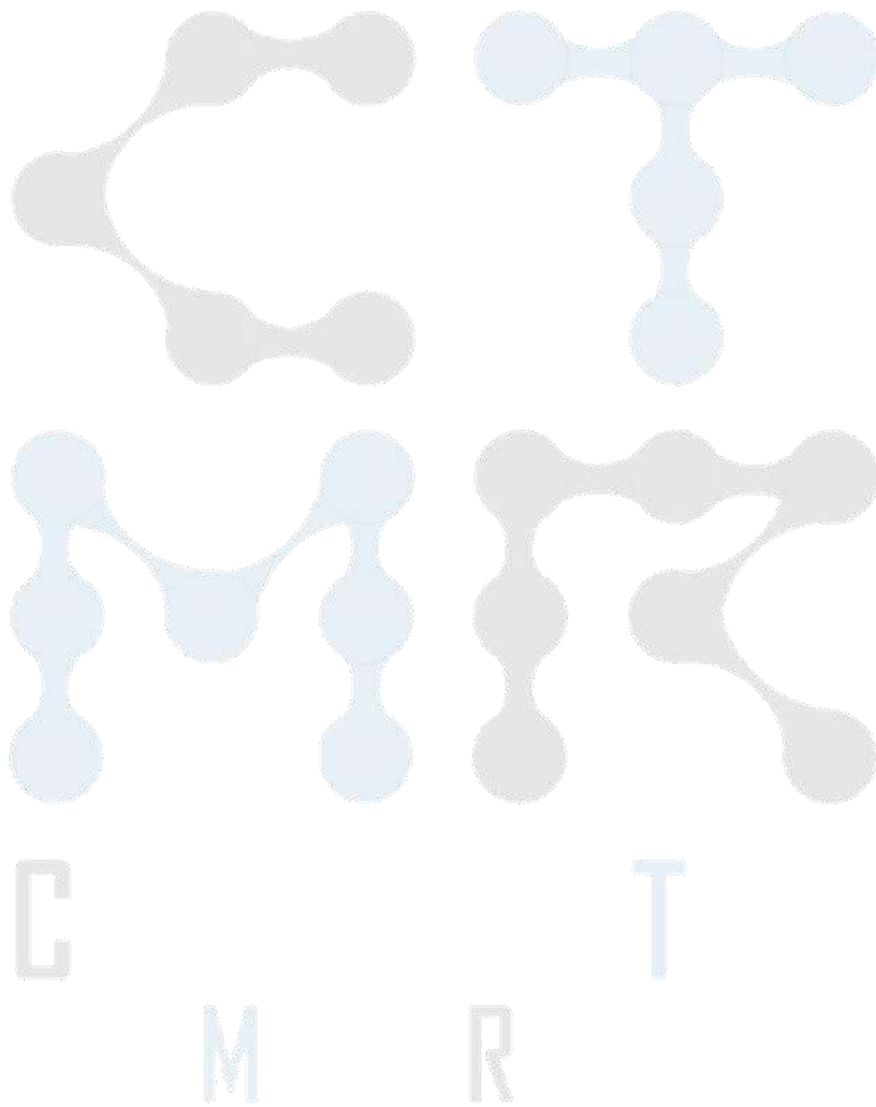
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YANGI O'ZBEKISTONDA DEMOKRATIK HUQUQIY DAVLAT BARPO ETISHNING HUQUQIY OMILLARI

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Annotatsiya:

Maqola Yangi O'zbekistonda demokratik huquqiy davlat barpo etishning huquqiy omillarini kompleks tahlil qilishga bag'ishlangan. Unda O'zbekistonda amalga oshirilayotgan huquqiy islohotlar; konstitutsiyaviy o'zgarishlar (O'zbekiston Respublikasi Konstitutsiyasiga kiritilgan o'zgartirishlarning tafsilotlari), sud-huquq tizimini takomillashtirish (sudyalarning mustaqilligini ta'minlash bo'yicha qabul qilingan qonunlar va amaliy choralar), qonun ustuvorligini ta'minlash (korruptsiyaga qarshi kurashish strategiyalari va ularning natijalari) va inson huquqlarini himoya qilish (qiynoqqa solishning oldini olish bo'yicha milliy va xalqaro mexanizmlar) masalalari chuqur ko'rib chiqiladi. Shuningdek, maqolada demokratik huquqiy davlat barpo etishning huquqiy omillari va ularning ijtimoiy-siyosiy ahamiyati, bu boradagi muammolar (huquqni qo'llash amaliyotidagi kamchiliklar va ularning sabablari) va ularni bartaraf etish yo'llari (ilg'or xalqaro tajribalar asosida) ham tahlil etiladi. Maqola xulosasida ushbu sohani takomillashtirish bo'yicha taklif va tavsiyalar berilgan. Maqolada ilmiy tahlil, qiyosiy metodlar va statistik ma'lumotlardan foydalanilgan.

Abstract:

The article is devoted to a comprehensive analysis of the legal factors of establishing a democratic legal state in New Uzbekistan. It deeply examines the issues of legal reforms being implemented in Uzbekistan, constitutional changes (details of amendments to the Constitution of the Republic of Uzbekistan), improvement of the judicial system (laws adopted and practical measures to ensure the independence of judges), ensuring the rule of law (strategies to combat corruption and their results) and protection of human rights (national and international mechanisms to prevent torture). The article also analyzes the legal factors of establishing a democratic legal state and their socio-political significance, problems in this regard (deficiencies in the practice of law enforcement and their causes) and ways to eliminate them (based on advanced international experience). The conclusion of the article provides proposals and recommendations for improving this area. The article uses scientific analysis, comparative methods, and statistical data.

Аннотация:

Статья посвящена комплексному анализу правовых факторов становления демократического правового государства в новом Узбекистане. Глубоко рассматриваются вопросы реализуемых в Узбекистане правовых реформ, конституционных изменений (подробно о поправках в Конституцию Республики Узбекистан), совершенствования судебной системы (принятые законы и практические меры по обеспечению независимости судей), обеспечения верховенства закона (стратегии борьбы с коррупцией и их результаты) и защиты прав человека (национальные и международные механизмы предотвращения пыток). В статье также анализируются правовые факторы становления демократического правового государства и их общественно-политическое значение, проблемы в этой связи (недостатки в правоприменительной практике и их причины) и пути их устранения (на основе

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передового международного опыта). В заключении статьи приводятся предложения и рекомендации по совершенствованию данной сферы. В статье использованы научный анализ, сравнительные методы и статистические данные.

Kalit so'zlar: *Yangi O'zbekiston, demokratik huquqiy davlat, huquqiy omillar, huquqiy islohotlar, konstitutsiyaviy o'zgarishlar, sud-huquq tizimi, qonun ustuvorligi, inson huquqlari, korrupsiyaga qarshi kurashish, sud mustaqilligi, fuqarolik jamiyati, qonun ijodkorligi, xalqaro standartlar, huquqni qo'llash amaliyoti.*

Keywords: *New Uzbekistan, democratic legal state, legal factors, legal reforms, constitutional changes, judicial system, rule of law, human rights, fight against corruption, judicial independence, civil society, lawmaking, international standards, law enforcement practice.*

Ключевые слова: *Новый Узбекистан, демократическое правовое государство, правовые факторы, правовые реформы, конституционные изменения, судебная система, верховенство закона, права человека, борьба с коррупцией, независимость судебной власти, гражданское общество, законотворчество, международные стандарты, правоприменительная практика.*

Yangi O'zbekistonni barpo etish jarayonida demokratik huquqiy davlat qurish muhim strategik maqsadlardan biri hisoblanadi. Bu maqsadga erishish uchun davlatning siyosiy, iqtisodiy va ijtimoiy sohalarida bir qator huquqiy omillarni hisobga olish va ularni amaliyotga tatbiq etish zarur. Ushbu maqola Yangi O'zbekistonda demokratik huquqiy davlat barpo etishning huquqiy omillarini kompleks tahlil qilishga qaratilgan. Maqolada qonunchilik bazasi, sud-huquq tizimi, inson huquqlarini himoya qilish mexanizmlari va fuqarolik jamiyatining roli kabi muhim masalalar ko'rib chiqiladi.

Demokratik huquqiy davlat – bu qonun ustuvorligi ta'minlangan, inson huquqlari himoya qilinadigan, davlat hokimiyati organlari bo'linish tamoyiliga asoslangan, fuqarolik jamiyati institutlari rivojlangan davlatdir. Bu tushuncha siyosiy va huquqiy fikr tarixida uzoq yo'lni bosib o'tdi va turli nazariyalar asosida shakllandi.

Demokratik huquqiy davlatning **asosiy belgilari** quyidagilardan iborat:

- Qonun ustuvorligi (Konstitutsiya va qonunlarning ustunligi, qonun oldida tenglik - O'zbekiston Respublikasi Konstitutsiyasining 18-moddasiga muvofiq). Bu shuni anglatadiki, hech kim qonundan yuqori bo'la olmaydi va barcha fuqarolar qonun oldida tengdir.
- Inson huquqlari va erkinliklarining himoyasi (yashash huquqi, erkinlik va shaxsiy daxlsizlik, so'z erkinligi, vijdon erkinligi va boshqalar - O'zbekiston Respublikasi Konstitutsiyasining II bo'limi). Bu davlatning har bir shaxsning huquqlari va erkinliklarini hurmat qilish va himoya qilish majburiyatini yuklaydi.
- Davlat hokimiyati organlarining bo'linishi (qonun chiqaruvchi, ijro etuvchi va sud hokimiyatining mustaqilligi - O'zbekiston Respublikasi Konstitutsiyasining 11-moddasiga muvofiq). Bu hokimiyatning suiiste'mol qilinishining oldini olish va muvozanatni ta'minlash uchun muhim shartdir.
- Fuqarolik jamiyatining rivojlanganligi (nodavlat notijorat tashkilotlari, ommaviy axborot vositalari va boshqa institutlarning faolligi - "Nodavlat notijorat tashkilotlari to'g'risida"gi Qonunga muvofiq). Fuqarolik jamiyati davlat va jamiyat o'rtasida vositachi bo'lib, davlat organlari faoliyati ustidan jamoatchilik nazoratini amalga oshiradi.
- Adolatli sudlov, sudning mustaqilligi, aybsizlik prezumpsiyasi, adolatli sudlov huquqi - har bir shaxsning o'z huquqlari va erkinliklarini sud orqali himoya qilish imkoniyatiga ega bo'lishini ta'minlaydi.

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Yangi O'zbekistonda demokratik huquqiy davlat barpo etishning **huquqiy omillari** quyidagilardan iborat:

- Konstitutsiyaviy islohotlar: 2023-yilda qabul qilingan yangi tahrirdagi Konstitutsiya davlat va jamiyat hayotining barcha sohalarida tub o'zgarishlarni amalga oshirishga qaratilgan. Xususan, inson huquqlari va erkinliklarining himoyasi, davlat organlari faoliyatining shaffofligi va hisobdorligi kuchaytirildi. Konstitutsiyaning 1-moddasiga muvofiq, O'zbekiston ijtimoiy davlat deb e'lon qilindi, bu esa davlatning fuqarolar oldidagi ijtimoiy majburiyatlarini yanada kuchaytirdi. Shuningdek, Konstitutsiyada mulk huquqi yanada kuchaytirildi (68-modda), so'z erkinligi va axborot olish huquqi kafolatlandi (33-modda).

- Sud-huquq islohotlari: Sud hokimiyatining mustaqilligini ta'minlash maqsadida sudyalarni lavozimga tayinlash va ularni vazifasidan ozod qilish tartibi o'zgartirildi. "Sudlar to'g'risida"gi Qonunga kiritilgan o'zgartirishlar sudyalarga nisbatan tazyiq o'tkazganlik uchun jazo choralari kuchaytirdi. Oliy sudning vakolatlari kengaytirildi va sud tizimida zamonaviy axborot texnologiyalarini joriy etish bo'yicha ishlar olib borilmoqda. Misol uchun, "E-sud" tizimi orqali sud jarayonlarini onlayn tarzda kuzatish va hujjatlarni elektron shaklda topshirish imkoniyati yaratildi.

- Qonun ustuvorligini ta'minlash: Korrupsiyaga qarshi kurashish davlat siyosatining ustuvor yo'nalishlaridan biri hisoblanadi. Korrupsiyaga qarshi kurashish agentligi tashkil etildi va korrupsiyaviy jinoyatlar uchun jazo choralari kuchaytirildi. Davlat xizmatchilarining daromadlari to'g'risidagi deklaratsiyalarni e'lon qilish tizimi joriy etildi. Statistika ma'lumotlariga ko'ra, 2023-yilda korrupsiyaviy jinoyatlar soni 2022-yilga nisbatan 15% ga kamaydi.

- Inson huquqlarini himoya qilish: Qiynoqqa solishning oldini olish bo'yicha milliy preventiv mexanizm (NPM) yaratildi. Oliy Majlisning Inson huquqlari bo'yicha vakili (Ombudsman) qiynoqqa solish holatlari yuzasidan monitoring o'tkazish huquqiga ega. Ombudsmanning 2023-yildagi hisobotiga ko'ra, qiynoqqa solish holatlari bo'yicha shikoyatlar soni kamaygan. O'zbekistonda so'z erkinligini ta'minlash bo'yicha bir qator chora-tadbirlar amalga oshirilmoqda, jumladan, jurnalistlarning huquqlari himoya qilinmoqda va ommaviy axborot vositalarining faoliyati erkinlashtirilmoqda.

- Fuqarolik jamiyatini rivojlantirish: Nodavlat notijorat tashkilotlarini davlat tomonidan qo'llab-quvvatlash kuchaytirildi. NNTlar uchun soliq imtiyozlari berildi va ularning davlat grantlari tanlovlarida ishtirok etish imkoniyatlari kengaytirildi. Jamoatchilik kengashlari orqali fuqarolarning davlat organlari faoliyatidagi ishtiroki ta'minlanmoqda. Misol uchun, davlat organlari tomonidan qabul qilinayotgan qarorlar loyihalari jamoatchilik muhokamasidan o'tkazilmoqda.

So'nggi yillarda O'zbekistonda amalga oshirilgan huquqiy islohotlar demokratik huquqiy davlat barpo etishda muhim rol o'ynamoqda. Ushbu islohotlar davlat hokimiyati organlari faoliyatini takomillashtirish, inson huquqlarini himoya qilish, sud hokimiyatining mustaqilligini ta'minlash va fuqarolik jamiyatini rivojlantirishga qaratilgan. Ma'muriy islohotlar doirasida davlat xizmatlari markazlari tashkil etildi, bu esa davlat xizmatlaridan foydalanishda shaffoflikni ta'minladi va korrupsiyaviy xavf-xatarlarni kamaytirdi. Bundan tashqari, qonun ijodkorligi jarayoniga fuqarolarning ishtiroki kengaytirildi va jamoatchilik eshituvlari o'tkazish amaliyoti yo'lga qo'yildi.

Yangi O'zbekistonda demokratik huquqiy davlat barpo etish murakkab va ko'p qirrali jarayon bo'lib, u bir qator huquqiy omillarni hisobga olishni talab etadi. Konstitutsiyaviy islohotlar, sud-huquq islohotlari, qonun ustuvorligini ta'minlash, inson huquqlarini himoya qilish va fuqarolik jamiyatini rivojlantirish demokratik huquqiy davlat barpo etishning muhim shartlaridir. O'zbekistonda amalga

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oshirilayotgan huquqiy islohotlar ushbu maqsadga erishishda muhim rol o'ynamoqda. Biroq, bu borada hal etilishi lozim bo'lgan dolzarb masalalar ham mavjud.

Kelajakda ushbu masalalarni hal etish orqali O'zbekiston demokratik huquqiy davlat qurish yo'lida yanada katta yutuqlarga erishishi mumkin. Shu munosabat bilan **quyidagi taklif va tavsiyalarni** ilgari suramiz:

1. Qonun ustuvorligini ta'minlash sohasida:

- Huquqni qo'llash amaliyotida qonunbuzilish holatlarining oldini olish uchun huquqni qo'llovchi organlar xodimlarining malakasini oshirish va ularning javobgarligini kuchaytirish.
- Sud qarorlarining ijro etilishini ta'minlash mexanizmlarini takomillashtirish.

2. Sud hokimiyatining mustaqilligini kuchaytirish sohasida:

- Sudyalarga bosim o'tkazish holatlarining oldini olish uchun ularning huquqiy himoyasini kuchaytirish.
- Sud tizimida korrupsiyaga qarshi kurashish bo'yicha kompleks chora-tadbirlar ishlab chiqish va amalga oshirish.

3. Inson huquqlari sohasida:

- Inson huquqlari bo'yicha milliy institutlarning (Ombudsman, Bola huquqlari bo'yicha vakil va boshqalar) faoliyatini qo'llab-quvvatlash va ularning vakolatlarini kengaytirish.
- Qiynoqqa solishning oldini olish bo'yicha milliy preventiv mexanizm (NPM) faoliyatining samaradorligini oshirish.

4. Fuqarolik jamiyatini rivojlantirish sohasida:

- Nodavlat notijorat tashkilotlarining faoliyatini qo'llab-quvvatlash, ularning davlat organlari faoliyatidagi ishtirokini ta'minlash va ularga erkin faoliyat yuritish uchun sharoit yaratish.
- Ommaviy axborot vositalarining erkinligini ta'minlash va ularning davlat organlari faoliyati ustidan nazoratini qo'llab-quvvatlash.

5. Huquqiy madaniyatni oshirish sohasida:

- Aholining huquqiy savodxonligini oshirish bo'yicha davlat dasturlarini ishlab chiqish va amalga oshirish.
- Huquqiy targ'ibotni kuchaytirish va fuqarolarning huquqiy ongi va madaniyatini yuksaltirish.

Ushbu taklif va tavsiyalarni amalga oshirish O'zbekistonda demokratik huquqiy davlat barpo etish jarayonini jadallashtiradi va fuqarolarning huquqlari hamda erkinliklari ta'minlanishiga xizmat qiladi.

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THE ROLE AND IMPORTANCE OF LEGAL ETHICS IN ADVOCACY PRACTICE

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Abstract

This article explores the fundamental role and importance of legal ethics in the professional practice of advocacy. It examines the key principles guiding lawyers' conduct, including honesty, confidentiality, professional independence, and loyalty to clients. The article highlights ethical challenges commonly faced by lawyers, such as conflicts of interest and corruption, and emphasizes the need for a robust ethical framework within the legal profession. Comparative analysis with international practices, such as those of the CCBE and ABA, underscores the global standards for ethical legal conduct. In conclusion, the article provides actionable recommendations for strengthening legal ethics in Uzbekistan's legal system.

Abstrakt

Ushbu maqola advokaturaning professional amaliyotida huquqiy etikaning asosiy roli va ahamiyatini o'rganadi. U advokatlarning xulq-atvorini boshqaradigan asosiy tamoyillarni, jumladan halollik, maxfiylik, kasbiy mustaqillik va mijozlarga sodiqlikni o'rganadi. Maqolada advokatlar odatda duch keladigan axloqiy muammolar, masalan, manfaatlar to'qnashuvi va korrupsiyaga e'tibor qaratiladi va advokatlik sohasida mustahkam axloqiy asos zarurligiga urg'u beriladi. CCBE va ABA kabi xalqaro amaliyotlar bilan qiyosiy tahlil axloqiy huquqiy xulq-atvorning global standartlarini ta'kidlaydi. Xulosa qilib aytganda, maqolada O'zbekiston huquq tizimida huquqiy etikani mustahkamlash bo'yicha amaliy tavsiyalar berilgan.

Аннотация

В данной статье исследуются основополагающая роль и значение юридической этики в профессиональной практике адвокатуры. В ней рассматриваются ключевые принципы, определяющие поведение юристов, включая честность, конфиденциальность, профессиональную независимость и лояльность к клиентам. В статье освещаются этические проблемы, с которыми часто сталкиваются юристы, такие как конфликты интересов и коррупция, и подчеркивается необходимость создания прочной этической базы в юридической профессии. Сравнительный анализ с международной практикой, такой как практика CCBE и ABA, подчеркивает глобальные стандарты этического поведения юристов. В заключение статьи представлены практические рекомендации по укреплению юридической этики в правовой системе Узбекистана.

Keywords

Advocacy, legal ethics, professional responsibility, lawyer's code of conduct, conflict of interest, professional integrity, ethical principles, legal culture.

Kalit so'zlar

Advokatlik, huquqiy etika, kasbiy javobgarlik, advokatning xulq-atvor kodeksi, manfaatlar to'qnashuvi, kasbiy halollik, axloqiy tamoyillar, huquqiy madaniyat.

Ключевые слова

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Адвокатура, юридическая этика, профессиональная ответственность, кодекс поведения адвоката, конфликт интересов, профессиональная честность, этические принципы, правовая культура.

In the process of establishing a rule-of-law state, the role of the legal profession—particularly advocacy—is critical. Lawyers serve as protectors of citizens' rights and legitimate interests and play a central role in ensuring justice and fairness within the legal system. Therefore, their professional activities must be governed not only by legal regulations but also by a strong ethical framework. Legal ethics are the moral principles that define acceptable behavior for lawyers and are essential to maintaining public trust and upholding the integrity of the justice system.

Legal ethics refer to a system of moral guidelines that regulate lawyers' professional behavior. These rules are based not only on national legislation but also on broader principles of fairness, responsibility, and public trust.

The functions of legal ethics include:

- **Normative Function:** Establishes standards for professional conduct.
- **Educational Function:** Promotes a culture of legal responsibility and integrity.
- **Protective Function:** Safeguards client interests and the dignity of the legal profession.

Legal ethics require lawyers to strike a balance between zealous representation of their clients and a duty to the legal system and society as a whole.

The Code of Professional Ethics for Lawyers adopted by the Chamber of Advocates of the Republic of Uzbekistan outlines fundamental ethical duties, which align with international norms:

1. Honesty and Integrity

Lawyers must act truthfully, avoid misrepresentation, and refrain from engaging in any dishonest or corrupt practices. Trust between a lawyer and a client, or between the lawyer and the court, depends entirely on the lawyer's integrity.

2. Loyalty and Commitment to Clients

An advocate is obligated to protect their client's lawful interests with competence and dedication. However, this commitment does not extend to supporting illegal or unethical conduct.

3. Professional Independence

Lawyers must remain free from undue influence—whether political, economic, or social. They are required to make objective decisions that are in the best interests of justice and their clients.

4. Confidentiality

One of the cornerstones of legal ethics is confidentiality. Lawyers must keep all client-related information secret unless explicitly authorized by the client or required by law.

5. Justice and Impartiality

Even while representing clients, lawyers must uphold the broader interests of justice and fairness. Their conduct must not harm the integrity of the legal process.

Organizations such as the **Council of Bars and Law Societies of Europe (CCBE)** and the **American Bar Association (ABA)** have developed internationally recognized codes of conduct. These frameworks emphasize:

- Ethical client relationships based on honesty and transparency.
- Effective regulation through independent disciplinary bodies.
- Mechanisms to prevent and resolve conflicts of interest.
- Promotion of public trust in legal institutions through ethical accountability.

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Uzbekistan's legal profession is progressively aligning with these global standards. The incorporation of these norms into domestic law strengthens both the ethical and legal culture within the country.

Ethical Challenges in Advocacy Practice

Despite the existence of legal and ethical frameworks, several practical problems persist:

1. Conflict of Interest

Cases where a lawyer has relationships with both sides of a legal dispute compromise the integrity of legal representation and may lead to biased outcomes.

2. Corruption and Unethical Conduct

Some lawyers attempt to influence judges, prosecutors, or investigators through unlawful means. Such actions undermine the legal profession and public confidence in the justice system.

3. Lack of Ethical Awareness and Training

There is insufficient emphasis on ethics in legal education and continuing professional development. As a result, some legal professionals may lack the knowledge or motivation to uphold ethical standards.

These issues hinder the formation of a robust legal culture and damage the reputation of the legal profession.

Legal ethics form the foundation of trust between the legal profession and society. A lawyer who upholds ethical norms contributes not only to the protection of client rights but also to the advancement of justice and the rule of law. Legal ethics are, therefore, both a professional requirement and a moral obligation.

As Uzbekistan moves toward building a more just and accountable legal system, ethical conduct among lawyers must remain a top priority. Strengthening the ethical infrastructure of the legal profession is crucial for sustainable legal reform.

To improve the state of legal ethics in advocacy, the following practical recommendations are proposed:

1. Introduce Mandatory Ethics Training

Ethics modules should be incorporated into continuing legal education programs, with mandatory attendance for all practicing lawyers.

2. Strengthen Ethical Oversight

Independent ethics commissions within the Chamber of Advocates should be empowered to investigate misconduct and enforce disciplinary measures.

3. Update and Align the Ethics Code with International Standards

The existing Code of Professional Ethics should be reviewed and revised regularly to reflect evolving legal challenges and international best practices.

4. Promote Transparency in Legal Practice

Establish an accessible and user-friendly complaint mechanism for clients, and publish data on disciplinary actions to increase accountability.

5. Include Legal Ethics in Academic Curriculum

Courses on legal ethics should be made compulsory in law schools to ensure that future lawyers are educated in both the legal and moral dimensions of the profession.

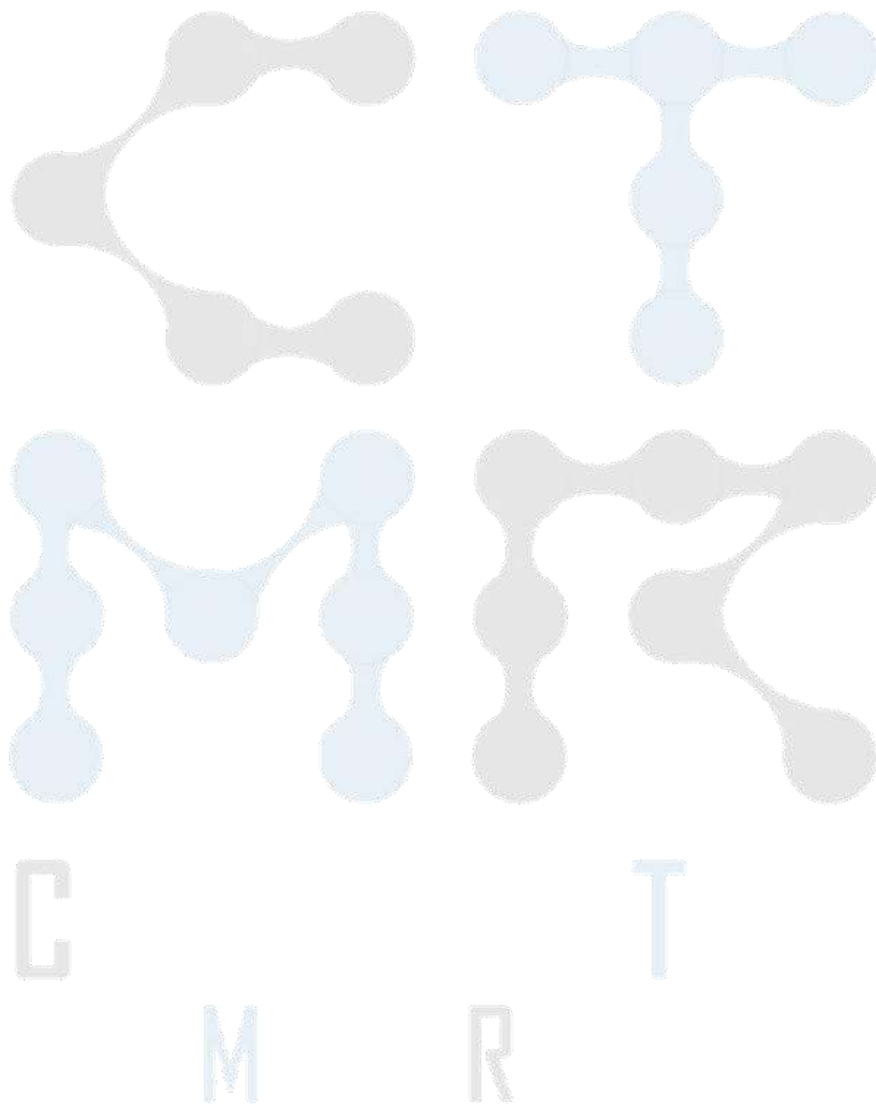
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THE IMPORTANCE OF THE MORPHOLOGICAL APPROACH IN CLINICAL
DIAGNOSIS OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND ALLERGIC
BRONCHITIS

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Annotation. The morphological aspects of chronic obstructive pulmonary disease and allergic bronchitis, as well as their significance in clinical diagnostics, have been analyzed. Morphological changes occurring in lung tissues, the restructuring of alveolar and bronchial structures, inflammatory processes, and their interrelation with clinical manifestations are demonstrated. Furthermore, the role of the morphological approach in early diagnosis, determining the course of the disease, and selecting treatment strategies is scientifically highlighted. The research results contribute to improving the effectiveness of diagnostics in clinical practice.

Keywords: Chronic obstructive pulmonary disease, Allergic bronchitis, Morphological approach, Clinical diagnostics, Morphological changes, Structure, Inflammation.

Introduction. Chronic obstructive pulmonary disease (COPD) and allergic bronchitis are currently among the most widespread pathological conditions worldwide that seriously impair the function of the respiratory system. According to the World Health Organization, COPD is one of the leading causes of morbidity and disability globally, and it also ranks among the primary causes of mortality [1,3]. At the same time, allergic bronchitis has a high incidence among children and adolescents, and its prolonged course and recurrent attacks reduce patients' quality of life and increase the risk of severe respiratory failure in the future.

The analysis of morphological indicators of biological fluids (saliva, blood, sputum, and bronchoalveolar lavage fluid) in respiratory system diseases is an important component of clinical diagnostics [1,2]. This is because the morphological changes occurring in the composition of these fluids provide essential information about the depth of pathological processes, the stages of the disease, and the immunobiological response mechanisms of the organism. In chronic obstructive pulmonary disease (COPD) and allergic bronchitis, sufficient scientific research on the comprehensive analysis of the morphological properties of biological fluids has not yet been accumulated. Most scientific studies are aimed at investigating clinical and biochemical indicators, while the morphological approach remains in the background [3]. Therefore, research carried out in this direction will serve not only to provide a deeper understanding of the pathogenesis of the diseases but also to improve clinical diagnostics and treatment strategies. The scientific novelty of the study is manifested precisely in the implementation of these morphological analyses on the basis of a comprehensive approach [4].

Chronic obstructive pulmonary disease (COPD) is currently one of the most common chronic pathologies of the respiratory system, and its development is influenced not only by morphological changes in the bronchopulmonary tissues but also by the structural and functional parameters of the body's biological fluids. Biological fluids—such as blood, sputum, saliva, urine, and other components—provide important information about the inflammatory processes occurring in the lungs, hypo- and hyperpermeability, the degree of cellular destruction, and immunological reactions

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[4]. However, in the existing scientific literature, a comprehensive approach has not been sufficiently established: many studies are limited to analyzing only blood or only sputum [5]. Therefore, conducting a joint and systematic study of morphological changes in biological fluids, determining their influence on clinical manifestations, and expanding their application in assessing disease severity remain pressing tasks.

Method. A group of patients diagnosed with chronic obstructive pulmonary disease (COPD) and allergic bronchitis was selected as the object of study. The research was conducted under clinical conditions, taking into account the patients' age, sex, disease duration, and severity of clinical symptoms [1,2,5]. In the selection of patients, strict control was maintained to ensure the accuracy of diagnosis and compliance of clinical criteria with standard diagnostic requirements.

Saliva, blood, and sputum samples were taken as research material. The collection and storage of the samples were carried out in accordance with clinical and hygienic regulations. Preparations from blood samples were made to study cytological and histomorphological indicators [6]. Smears prepared in sodium chloride solution from saliva and sputum samples were microscopically analyzed to study the morphological structure of cellular elements.

Morphological analysis was performed using light microscopy methods. Cellular elements contained in saliva, blood, and sputum were identified, and their morphological characteristics were evaluated. Statistical indicators were calculated using specialized morphometric software. The complex application of these methods made it possible to identify specific features observed in the morphology of biological fluids in chronic obstructive pulmonary disease and allergic bronchitis [4,6].

Discussion. Significant morphological changes were observed in the biological fluids — blood, saliva, and sputum — of patients with chronic obstructive pulmonary disease. In patients with allergic bronchitis, morphological changes in biological fluids were characterized by the predominance of an immuno-allergic component [1,5]. A sharp increase in the number of eosinophils and their degranulation was observed in blood smears. Active proliferation of plasma cells and lymphocytes was noted, confirming the ongoing hypersensitivity reaction. In the sputum, a large amount of mucous component was detected, and along with the desquamation of cylindrical epithelium, the appearance of multinucleated giant cells constituted the morphological basis of allergic genesis. Comparative analysis showed that in both diseases morphological changes arise as a result of the persistence of the inflammatory process; however, there are significant differences in their pathomorphological nature [2,5].

The obtained results indicate that morphological changes observed in the biological fluids of patients with chronic obstructive pulmonary disease and allergic bronchitis are clinically important indicators. The advantage of a complex approach is that it allows not only the assessment of individual indicators but also the joint analysis of morphological changes recorded in various biological fluids [6]. This makes it possible to evaluate the pathogenesis of the disease from multiple perspectives, to gain a deeper understanding of clinical processes, and to increase the accuracy of differential diagnosis. In addition, complex morphological assessment provides the opportunity to select treatment tactics individually for patients and to determine prognostic indicators.

Conclusion

The results of the study show that morphological changes observed in biological fluids in chronic obstructive pulmonary disease and allergic bronchitis are important indicators of pathogenic processes. The cellular and tissue alterations identified in blood, sputum, and saliva serve as an objective reflection of the inflammatory and destructive processes occurring in the respiratory tract

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and lung tissues. Therefore, the integration of morphological analysis results into the system of comprehensive clinical and laboratory examinations is of great significance not only for early diagnosis but also for the development of individualized therapeutic strategies.

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ВОСПАЛИТЕЛЬНЫЕ ЗАБОЛЕВАНИЯ ПОЗВОНОЧНИКА У БОЛЬНЫХ
САХАРНЫМ ДИАБЕТОМ

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АННОТАЦИЯ

Многочисленные исследования показали, что активный туберкулез у больных сахарным диабетом выявляют в 3-11 раз чаще, чем среди остального населения. В настоящее время в мире насчитывается 246 млн. больных СД, около 50% из них находятся в трудоспособном и репродуктивном возрасте 30 - 59 лет. Эксперты ВОЗ прогнозируют, что к 2030 г. эта цифра составит 380 млн. человек, учитывая стремительный рост населения с так называемым «метаболическим синдромом», избыточной массой тела или ожирением. **Цель исследования:** повысить эффективность лечения больных воспалительными заболеваниями позвоночника на фоне сахарного диабета. **Материалы и методы исследования:** Обследованы 50 больных с воспалительными заболеваниями позвоночника в отделении костно-суставного туберкулеза РСНПМЦ Ф и П в 2024-2025 гг. в возрасте от 50 до 70 лет. Мужчин было 22 (44%), женщин - 28(56%). **Результаты:** Через 6 и 8 недель комплексного лечения у 10 больных НС и 34(85%) ТС отмечалась положительная клиническая и рентгенологическая динамика. Течение туберкулезного спондилита и эффективность лечения в группах с сахарным диабетом и без него не отличались.

Ключевые слова: неспецифический спондилит, туберкулезный спондилит, сахарный диабет, лечение.

Введение. В настоящее время в мире насчитывается 246 млн. больных сахарным диабетом (СД), около 50% из них находятся в трудоспособном и репродуктивном возрасте 30 - 59 лет. Еще 20 лет назад больных диабетом было не более 30 млн. человек. Эксперты ВОЗ прогнозируют, что к 2030 г. Эта цифра составит 380 млн. человек, учитывая стремительный рост населения с так называемым «метаболическим синдромом», избыточной массой тела или ожирением [3].

Пациенты с СД страдают инфекциями чаще, чем пациенты без СД, в связи с наступающими многочисленными нарушениями врожденного и адаптивного иммунитета, а также в их цитокиновой регуляции [11].

Остеомиелит позвоночника составляет около 4% от всех случаев остеомиелита, однако, при сахарном диабете возрастает риск обострения хронических очагов инфекции, гематогенное и лимфогенное распространение бактерий в тела позвонков с развитием спондилита [12].

Многочисленные исследования показали, что активный туберкулез у больных диабетом выявляют в 3-11 раз чаще, чем среди остального населения [1,2,8,9,10].

Костно-суставной туберкулез занимает первое место по частоте среди внелегочных форм туберкулеза, когда чаще поражаются тела позвонков. Одна из проблем туберкулезного спондилита состоит в высокой инвалидизации больных из-за глубоких спинномозговых нарушений, вследствие сдавления спинного мозга абсцессами или костными фрагментами в результате патологического перелома. Частота спинальных нарушений доходит до 80 % [4,5].

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Лечение и содержание таких больных требует больших финансовых и материальных затрат, что представляет важную проблему для государства и общества [6,7].

Таким образом, воспалительные заболевания позвоночника на фоне сахарного диабета приобретают значение комплексной медико-социальной проблемы.

Цель исследования: повысить эффективность лечения больных воспалительными заболеваниями позвоночника на фоне сахарного диабета.

Материалы и методы исследования: Обследованы 50 больных воспалительными заболеваниями позвоночника в отделении костно-суставного туберкулеза РСНПМЦ Ф и П в 2024-2025 гг. в возрасте от 50 до 70 лет. Мужчин было 22 (44%), женщин - 28(56%).

План обследования включал оценку жалоб, общий и ортопедический осмотры, общеклинические анализы и инструментальные исследования для оценки функционального состояния внутренних органов. Лабораторные данные включали оценку гликемического профиля и гликированного гемоглобина.

МРТ и МСКТ пораженного отдела позвоночника, рентгенографию грудной клетки, кожные туберкулиновые пробы (Диаскинтест).

Мокроту и другие физиологические жидкости, пунктаты исследовали бактериологически методом Gene Expert Rif real time PSR и гистологически. Больным с положительным диаскинтестом, гистологическим и/или бактериологическим результатом назначали антибактериальную химиотерапию комбинированным препаратом изониазида 75 мг, рифамицина 150 мг, пиразинамида 400 мг и этамбутола 275 мг по 3,4 и 5 таблеток при массе тела менее 55 кг, более 55 кг и более 70 кг соответственно.

Больным с отрицательными Диаскинтестом назначали 2 антибиотика широкого спектра из разных групп с учетом возможных побочных эффектов и сопутствующей патологии.

Диагноз СД устанавливали на основании глюкозы в венозной крови натощак $\geq 7,0$ и гликированного гемоглобина $\geq 6,5\%$. Всем больным сахарным диабетом 2 типа назначали низкоуглеводную диету стол №9.

Медикаментозное лечение СД начинали с метформина 500,850,1000 мг 1-2 раза в день под контролем гликемии. При недостаточном эффекте добавляли препараты сульфонилмочевины 30-120 мг однократно утром. При печеночной и почечной недостаточности назначали инсулинотерапию. Режим инсулинотерапии был базис – болюсным, в качестве базисного инсулина применяли инсулины среднего и длительного действия 2 и 1 раз в сутки соответственно, дозу базисного инсулина подбирали по гликемии натощак с коэффициентом чувствительности 2-3. После каждого приема пищи также контролировали гликемию для инъекции болюсного инсулина, при этом предпочтение отдавали инсулинам ультракороткого действия (апидра, новорапид). Всем больным с сопутствующей сердечной недостаточностью к лечению добавляли эмпаглифлозин в дозе 10-25 мг в сутки.

Результаты: По результатам комплексного обследования 40(80%) больным установлен диагноз туберкулезного спондилита (ТС), 10(20%) больным диагноз неспецифического спондилита (НС). Сахарный диабет установлен 7(14%) больных, у 2(4%) НС, который был декомпенсирован у 1(2%), среди больных ТС СД выявлен у 5(10%), у 3(6%) СД был декомпенсирован. Нейропатия выявлена у 7(14%) больных, нефропатия у 2(4%) и ангиопатия у 2(4%) больных. Ишемическая болезнь сердца установлена у 8(16%) больных НС и 27(54%) ТС.

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В лабораторных показателях отмечалась умеренная анемия со снижением гемоглобина до $Hb\ 118 \pm 9.04$ г/л и эритроцитов до $3.6 \cdot 10^{12}$ у больных как ТС так и НС. Лейкоцитарная формула больных ТС показала: лейкоциты - $6.7 \cdot 10^9$, палочкоядерные - 1.3%, сегментоядерные - 64.2%, эозинофилы - 1.6%, лимфоциты - 27.2%, моноциты - 5.5%; С-реактивный белок (СРБ) составил 65,3 мг/мл, СОЭ 30,5 мм/ч, фибриноген 7.6 г/л. У больных НС лейкоциты повышались leukocytes – $10,1 \cdot 10^9$, палочкоядерные – 2,2%, сегментоядерные - 66%, эозинофилы – 2.3%, лимфоциты – 25,7%, моноциты – 6,6%; СРБ 117.3 мг/мл, СОЭ 39.4 мм/ч, фибриноген 6.8 г/л.

Через 6 недель комплексного лечения с применением антибактериальных препаратов и патогенетической терапии, а также лечения сахарного диабета у 10 больных НС, в том числе и сахарным диабетом отмечалось улучшение клинической картины со снижением температуры тела, нормализацией острофазных лабораторных показателей крови, а также значительного снижения воспаления на МРТ. Показатели глюкозы крови нормализовались.

У 34(85%) больных ТС, в том числе у 4 больных СД, также отмечалась положительная динамика после комплексного лечения в течение 8 недель, на МРТ на это указывало уменьшение инфильтрации мягких тканей и уменьшение абсцессов, клинически снижение болей в покое и при движении, уменьшением острофазных лабораторных показателей крови, нормализацией уровне глюкозы крови. У 3(6%) больных ТС сохранялись костные секвестры и нестабильность позвоночно-двигательного сегмента, что клинически проявлялось болью в пораженном сегменте позвоночника при угловой нагрузке и смене положения тела, после некрэктомии и спондилодеза позвонков отмечалось восстановление опороспособности позвоночника. У 3(6%) больных ТС, в том числе у 1(2%) больного СД, МРТ картина показала прогрессирование воспаления, после радикального удаления очага воспаления и фиксации позвонков, бактериологически выявлены лекарственно-устойчивые микобактерии туберкулеза, после назначения противотуберкулезных препаратов второго ряда (бедаквилин, линезолид, левофлоксацин, клоfazемин, циклосерин) отмечалась положительная динамика.

Выводы: Течение и эффективность лечения туберкулезным спондилитом на фоне сахарного диабета зависят от достижения нормальных значений уровня глюкозы крови.

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BOSHLANG'ICH SINIF O'QUVCHILARIDA JONLI TABIAT BURCHAGINI TASHKIL ETISHDA KREATIV LOYIHALAR.

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Annotatsiya. Ushbu maqolada, boshlang'ich sinf o'quvchilarida jonli tabiat burchagini tashkil etishda kreativ loyihalarning ahamiyati va o'rni haqida so'z yuritiladi. O'quvchilarni tabiatni o'rganishga, tajriba o'tkazishga va ekologik muammolarni hal qilishga jalb etuvchi loyihalar, ularning qiziqishini oshirish va tabiiy bilimlarini rivojlantirishga xizmat qiladi. Maqola o'simliklar, hayvonlar, ekologik muammolar va san'atga oid loyihalar orqali o'quvchilarning ijodkorlik va jamoaviy ish ko'nikmalarini rivojlantirishga e'tibor qaratadi.

Kalit so'zlar: Tabiat burchagi, boshlang'ich ta'lim, ekologik tarbiya, kompetensiyalar, kuzatuv, o'quvchi faolligi, metodika, qiziqish, amaliy ko'nikma, innovatsion yondashuv.

Абстрактный. В данной статье рассматривается важность и роль креативных проектов в организации живого уголка природы для учеников начальных классов. Проекты, которые вовлекают учащихся в изучение природы, проведение экспериментов и решение экологических проблем, способствуют повышению их интереса и развитию естественных знаний. Статья акцентирует внимание на проектах, связанных с растениями, животными, экологическими проблемами и искусством, которые помогают развивать творческие и командные навыки учащихся.

Ключевые слова: уголок природы, начальное образование, экологическое воспитание, компетенции, наблюдение, активность учащихся, методика, интерес, практические навыки, инновационный подход.

Abstract. This article discusses the importance and role of creative projects in establishing a living nature corner for primary school students. Projects that engage students in exploring nature, conducting experiments, and addressing environmental issues contribute to enhancing their interest and developing their natural knowledge. The article focuses on projects related to plants, animals, ecological problems, and art, which help foster students' creativity and teamwork skills.

Key words: nature corner, primary education, environmental education, competencies, observation, student engagement, teaching methodology, interest, practical skills, innovative approach.

KIRISH

Atrof-muhitning yomonlashuvi va ekologik muammolarning global xarakter kasb etishi hozirgi zamonning eng dolzarb masalalaridan biridir. Shu sababli yosh avlodni ekologik ong va madaniyatga ega qilib tarbiyalash, ularni tabiatni asrashga yo'naltirish davlatlar uchun ustuvor vazifa hisoblanadi. Ayniqsa, boshlang'ich ta'lim bosqichida o'quvchilarda tabiatga bo'lgan qiziqish va ekologik kompetensiyalarni shakllantirish kelajak uchun mustahkam poydevor yaratadi.

Tabiat burchagi — bu boshlang'ich sinf o'quvchilari uchun mo'ljallangan o'quv-mashg'ulot muhiti bo'lib, unda o'quvchilar tabiat hodisalarini kuzatish, o'rganish va amaliy faoliyatda qatnashish orqali ekologik bilim va ko'nikmalarini mustahkamlash imkoniga ega bo'ladi. Bunday faoliyat nafaqat tabiiy fanlarga bo'lgan qiziqishni oshiradi, balki o'quvchilarda ijtimoiy va ilmiy-amaliy kompetensiyalarni rivojlantirishga yordam beradi.

MAVZUGA OID ADABIYOTLAR SHARHI

Boshlang'ich sinf o'quvchilarida jonli tabiat burchagini tashkil etish va kreativ loyihalar orqali tabiiy kompetensiyalarni rivojlantirish mavzusi zamonaviy ta'limda muhim o'rin tutadi. Ushbu sohada olib borilgan tadqiqotlar va adabiyotlar quyidagi asosiy yo'nalishlarni o'z ichiga oladi:

Tabiiy Fanlar Ta'limi: O'quvchilarning tabiiy fanlarga bo'lgan qiziqishini oshirish va ularning bilimlarini amaliyotda qo'llashga qaratilgan bir qator tadqiqotlar mavjud. Masalan, R. Xolmatov (2020) o'zining "Boshlang'ich sinflarda tabiiy fanlar ta'limi" nomli asarida tabiiy fanlarni o'qitishda interaktiv metodlarning ahamiyatini ta'kidlaydi. U, o'quvchilarning amaliy tajribalari orqali bilimlarini mustahkamlashni tavsiya etadi.

Kreativ Ta'lim: Kreativ loyiha asosida ta'lim, o'quvchilarning ijodkorlik va innovatsion fikrlash ko'nikmalarini rivojlantirishda muhim ahamiyatga ega.

M. Karimova (2019) "Kreativ ta'lim metodlari" nomli tadqiqotida, kreativ loyiha orqali o'quvchilarning o'z-o'zini ifoda etishlari va jamoaviy ish ko'nikmalarini qanday rivojlantirish mumkinligini tahlil qiladi. Bu asar, jonli tabiat burchagini tashkil etish jarayonida qo'llanilishi mumkin bo'lgan metodlarni o'z ichiga oladi.

Ekologik Ta'lim: Ekologik ta'lim va tabiatni muhofaza qilish bo'yicha olib borilgan tadqiqotlar, o'quvchilarga tabiatga bo'lgan mas'uliyatni o'rgatishda muhimdir. A. Murodov (2021) "Ekologik ta'lim va uning ahamiyati" nomli maqolasida, o'quvchilarga ekologik muammolarni hal qilish uchun kreativ yondashuvlarni taklif etadi. Bu, o'quvchilarning jonli tabiat burchagida amalga oshiradigan loyihalarida qo'llanilishi mumkin.

Amaliy Tadqiqotlar: Jonli tabiat burchagini tashkil etish va o'quvchilarning tajribalari haqida bir qator amaliy tadqiqotlar o'tkazilgan. U. Tursunov (2022) "Jonli tabiat burchagida o'quvchilarning amaliy faoliyatlari" nomli tadqiqotida, o'quvchilarning tabiatni o'rganish jarayonida qanday amaliy faoliyatlar olib borishi va bu faoliyatlarning ularning bilimlariga ta'siri haqida ma'lumot beradi.

San'at va Ta'lim: O'quvchilarning san'at orqali tabiatni o'rganishlari, ularning ijodkorligini rivojlantirishga yordam beradi. D. Qodirova (2020) "San'at va tabiat: Boshlang'ich ta'limda ijodkorlik" nomli maqolasida, san'atning o'quvchilarga tabiatni tushuntirishdagi roli va san'at asarlari orqali tabiatni aks ettirish imkoniyatlari haqida fikr yuritadi.

G'. Yoqubov, R. Umarova – "Tabiatshunoslikni o'qitish metodikasi" Mazkur darslikda boshlang'ich sinf o'quvchilarida tabiat haqidagi bilimlarni shakllantirish metodikasi chuqur tahlil qilingan. Jonli tabiat burchagini tashkil etishda foydalaniladigan usullar, pedagogik yondashuvlar va tabiiy obyektlarni tanlash mezonlari yoritilgan. Kitobda o'qituvchiga yo'naltirilgan amaliy tavsiyalar mavjud. Bu asar mavzu uchun asosiy nazariy manba hisoblanadi.

N. Rasulova – "Kichik yoshdagi bolalarda ekologik madaniyatni shakllantirish" bu asarda bolalarda tabiatga nisbatan mehr va mas'uliyat hissini shakllantirish usullari yoritilgan. Jonli tabiat burchagi orqali ekologik tarbiya berishning afzalliklari, bu burchakni darsdan tashqari ishlar bilan uyg'unlashtirish uslublari tavsiflangan. Ayniqsa, kreativ loyiha va ko'rgazmalar tashkil etish bo'yicha g'oyalar keng targ'ib qilingan.

"Boshlang'ich ta'limda innovatsion texnologiyalar" Bu ilmiy to'plamda zamonaviy pedagogik texnologiyalarning boshlang'ich ta'limga tatbiqi haqida maqolalar jamlangan. Jonli tabiat burchagini tashkil etishda interaktiv metodlar, STEAM yondashuvi va loyiha asosida o'qitishning imkoniyatlari ko'rsatib berilgan. Ayniqsa, kreativ fikrlashni rag'batlantiruvchi loyihalarning namunaviy ishlanmalari e'tiborga loyiq. Zamonaviy pedagogik texnologiyalar (Uslubiy qo'llanma) – O'qituvchilar uchun metodik materiallar, qo'llanmada kichik yoshdagi o'quvchilarda ko'nikmalarni

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shakllantirishda kreativ va amaliy metodlar (mashg'ulotlar, ekskursiyalar, laboratoriya tajribalari) haqida fikr yuritilgan. Jonli tabiat burchagida o'tkaziladigan tajribalar, o'quvchilarni jalb etish usullari va baholash mezonlari keltirib o'tilgan.

V. Ya. Skvortsov – "O'quvchilar bilan tadqiqot ishlarini tashkil etish" Kitobda o'quvchilarning mustaqil izlanishlariga asoslangan kreativ loyihalar tashkil etish uslublari berilgan.

TADQIQOT METODOLOGIYASI

Ushbu tadqiqotda boshlang'ich sinf o'quvchilarida tabiatga bo'lgan qiziqish va kompetensiyalarni shakllantirishda tabiat burchagi vositasining samaradorligini aniqlash maqsad qilingan. Tadqiqotning metodologiyasi quyidagi asosiy tarkibiy qismlarni o'z ichiga oladi:

- Boshlang'ich sinf o'quvchilari va ularning o'quv jarayonidagi tabiiy-ilmiy yo'nalishdagi faoliyati.
- Tabiat burchagi orqali o'quvchilarda ekologik, ijtimoiy va ilmiy kompetensiyalarni shakllantirish jarayoni.
- Tabiat burchagidan foydalanish orqali boshlang'ich sinf o'quvchilarining tabiatga bo'lgan qiziqishini oshirish va zarur kompetensiyalarni shakllantirish yo'llarini aniqlash hamda ilmiy asoslash.

TAHLIL VA NATIJALAR

Tadqiqot davomida tabiat burchagida olib borilgan faoliyatlarga o'quvchilarning munosabati va ular orqali shakllanayotgan kompetensiyalar atroflicha o'rganildi. Faol ishtirok etgan o'quvchilarda tabiatga bo'lgan qiziqish sezilarli darajada oshgani kuzatildi. Ular o'simliklar va hayvonlar haqida ko'proq savollar berishga, mustaqil ravishda ma'lumot qidirishga intildi. Aksincha, tabiat burchagida kamroq faol bo'lgan o'quvchilarda bu qiziqish pastroq bo'lib, ular tabiiy ob'yektlarga nisbatan passivroq munosabatda bo'lishdi.

Kompetensiyalar nuqtai nazaridan faol qatnashgan o'quvchilarda atrof-muhitni asrash, o'simliklarni parvarish qilish va tabiatga g'amxo'rlik qilish tushunchalari yanada mustahkamlandi. Shuningdek, ular maktab va oilada ekologik odatlarni amalga oshirishga intildi. Jamoaviy faoliyat jarayonida bolalar o'zaro yordam ko'rsatish, hamkorlik qilish va mas'uliyatni bo'lishish ko'nikmalarini rivojlantirdi. Ilmiy-amaliy yo'nalishda esa oddiy tajribalar va kuzatuvlar orqali o'quvchilarning tahlil qilish va o'z natijalarini ifodalash qobiliyatlari kuchaydi. O'quvchilar o'z bilimlari va ko'nikmalaridan mamnun ekanliklarini bildirdi, ekologik vazifalarni bajarishga tayyorliklarini ta'kidladi. Shu bilan birga, ota-onalar va o'qituvchilar tabiat burchagidagi faoliyat bolalarning faolligini, mustaqil fikrlashini va javobgarlik hissini rivojlantirayotganini ijobiy baholadi. Natijalar shuni ko'rsatadiki, tabiat burchagidan foydalanish boshlang'ich sinf o'quvchilarida tabiatga bo'lgan qiziqish va kompetensiyalarni rivojlantirishda samarali vosita hisoblanadi. U o'quvchilarda ekologik, ijtimoiy va ilmiy-amaliy ko'nikmalarni shakllantiradi hamda ularni tabiatga mehr bilan qarashga undaydi.

XULOSA

Ushbu tadqiqot davomida boshlang'ich sinf o'quvchilarida tabiatga bo'lgan qiziqish va ekologik, ijtimoiy hamda ilmiy-amaliy kompetensiyalarni shakllantirishda tabiat burchagining ahamiyati o'rganildi. Tadqiqot natijalari shuni ko'rsatdiki, tabiat burchagi o'quvchilarning atrof-muhitga mehr va e'tiborini oshirishda samarali pedagogik vosita sifatida xizmat qiladi. U nafaqat bilimlarni mustahkamlash, balki bolalarda tabiatga mas'uliyatli munosabat, mehr-shafqat va g'amxo'rlik kabi ijtimoiy qadriyatlarni shakllantirishga yordam beradi. Boshlang'ich ta'limda jonli tabiat burchagini tashkil etish nafaqat o'quvchilarga biologik bilimlar berish, balki ularni tabiatga nisbatan hurmat, e'tibor va mas'uliyat ruhida tarbiyalashda muhim omil hisoblanadi. Tadqiqotimiz davomida

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aniqlanishicha, an'anaviy uslublarga nisbatan kreativ loyihalar asosida tashkil etilgan tabiat burchagi o'quvchilarning darsga bo'lgan qiziqishini oshirib, ularning mustaqil fikrlashi va amaliy ko'nikmalarini shakllantirishda samaraliroqdir.

Kreativ yondashuvlar jumlasiga quyidagilar kiradi: o'quvchilar bilan birgalikda o'simlik va hayvonlarga mo'ljallangan mini-ekotizimlar yaratish, parvarish jadvallarini tuzish, o'z kuzatishlarini kundalikda qayd etish, rasmlar va interaktiv plakatlari orqali o'z fikrini ifoda etish, mavzuga oid kichik loyihalar tayyorlash. Bu orqali o'quvchilar jonli tabiatni bevosita kuzatish, unga g'amxo'rlik qilish va ekologik muammolar haqida o'ylash imkoniyatiga ega bo'lalilar.

Tadqiqotlar shuni ko'rsatadiki, bunday faoliyat turi o'quvchilarda quyidagi ko'nikmalarni shakllantiradi: Tabiiy jarayonlarni tushunish va kuzatish. Javobgarlik va mas'uliyat tuyg'usi. Guruhda ishlash va hamkorlik qilish. Mustaqil fikrlash va ijodiy yondashuv. Ekologik madaniyat va ong. Jonli tabiat burchagida olib borilgan kreativ ishlar orqali o'quvchilar nafaqat nazariy bilimga ega bo'lalilar, balki hayot bilan bog'langan amaliy faoliyat orqali bilimni chuqurroq anglaydilar. Bu esa ularning umumiy rivojlanishiga, shaxsiy fazilatlarining shakllanishiga ijobiy ta'sir ko'rsatadi. Shu boisdan, boshlang'ich sinfda jonli tabiat burchagini tashkil etishda zamonaviy, kreativ va bolalarning yoshiga mos yondashuvlarni tatbiq etish dolzarb vazifa hisoblanadi. Bunday yondashuv o'quv jarayonining samaradorligini oshiradi, o'quvchilarning tabiatga mehrini mustahkamlab, yoshdan boshlab yo'lga qo'yishga xizmat qiladi.

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FROM THE HISTORY OF DIPLOMATIC COOPERATION BETWEEN UZBEKISTAN AND THE PHILIPPINES (1992–2008)

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ABSTRACT

The article examines the evolution of bilateral relations between Uzbekistan and the Philippines. Relying on a large number of previously unpublished archival materials, the author of this article attempted to analyze the main stages in the development of diplomatic cooperation between the two states. At the same time, the article provides information on the establishment of diplomatic relations between the two countries in 1992, as well as the factors that contributed both to the progress and to the regression of interstate cooperation.

Key words: Uzbekistan, Philippines, cooperation, diplomacy, dynamics.

Purpose: The purpose of this study is to examine the evolution and development of bilateral relations between Uzbekistan and the Philippines, to analyze the main stages of diplomatic cooperation, and to identify the factors that have influenced both the progress and challenges in the relationship between the two countries.

Material and methods: The article employs the methods of historicism, content analysis, and objectivity, as well as a dialectical approach. Within the framework of this study, the author utilized a wide range of archival materials, as well as the works of researchers.

Introduction: The foreign policy of the Philippines is shaped under the influence of numerous diverse factors. Its formation is a complex, multi-stage political process in which, in addition to the President and Congress, various state institutions, the public, mass media, and many other participants in the country's political life are involved[1, p. 405]. This process is ambiguous and occurs amid disagreements between different political groups, ministries and agencies, the President and Parliament, and finally, the government and the public, regarding issues of foreign policy strategy, the possibilities of alternative policies, the justification of expenditures and material costs for conducting specific actions, concessions, and sacrifices required from certain groups of society in connection with the implementation of particular foreign policy measures. An integral part of the foreign policy formation process, and its most important component, is also the development of its ideological and theoretical foundations: concepts and foreign policy doctrines[2, p.10.].

Ruling and political circles, as well as public opinion in general, consider foreign policy as an inseparable part of the national policy of the Philippine state, an extension of it into the external arena. Several Philippine historians and political scientists argue that Manila's practical activities on the international stage have varied depending on the ideas and concepts prevailing at a given stage in Philippine society. At the same time, it should be noted that, except for perhaps the era of F. Marcos' rule, the Philippines lacked deeply developed foreign policy doctrines. Their emergence and development were generally associated with the distribution of social forces and the political orientation of the government. Depending on such shifts, the substantive content of state ideology sometimes changed radically (page 41 of the dissertation).

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In the last third of the 20th century, the theoretical basis of Philippine foreign policy became the concept of “national interests.” In foreign policy, national interests took precedence as “the most important principles and values of the nation, for which Filipinos would, without hesitation, risk life, property, honor, and dignity in order to protect and preserve them”.

The concept of “national interests” was concentratedly reflected in the 1987 Constitution of the Philippines. In Article II, Paragraph 7, it states that “the State in its relations with other countries shall be guided by national interests.” In the same article, Paragraph 8 states that “the Philippines, in accordance with national interests, pursues a policy of freedom from nuclear weapons on its territory”[3, p.168].

In the 1990s, the country’s foreign policy was significantly influenced by the doctrine of “three modernizations” (improvements in the economic, social, and political spheres) introduced by President F. Ramos, which envisaged socio-economic reforms based on liberal ideas, the restructuring of the political sphere, and the integration of the country into international and regional economic structures.

In contemporary foreign policy, the Philippines demonstrates an intention to become a more independent actor in the international system. Successful implementation of this strategy not only gains support from regional neighbors but also creates favorable conditions for strengthening international ties, effectively positioning the country as a middle power.

For Uzbekistan, the Philippines represents a promising partner in the Southeast Asian region, with which our Republic was interested in developing long-term and multifaceted relations from the first years of its state independence. The Philippines was among the first countries to recognize (January 22, 1992) and establish (April 13, 1992) diplomatic relations with the Republic of Uzbekistan. However, archival materials show that, despite a significant potential for expanding diplomatic ties, these relations for a certain period remained largely limited to protocol-level events, with key areas of cooperation being the economy, science and technology, and tourism.

In studying the bilateral relations between Uzbekistan and the Philippines, it should be noted that the leadership of the Philippines aims to strengthen an independent course in international affairs, with further expansion of bilateral ties and increased regional engagement. The Philippines is a member of major international organizations such as the UN, ASEAN, APEC, IMF, FAO, WTO, and in 1992 joined the Non-Aligned Movement.

The establishment of diplomatic relations in the 1990s did not lay a legal foundation for the development of bilateral ties, as during that period Uzbekistan was only beginning to form the basics of its foreign policy, focusing primarily on developing diplomatic relations with other ASEAN countries, particularly Malaysia, Vietnam, and Thailand.

A foundation for developing relations between the two countries was laid with the presentation of credentials by the Extraordinary and Plenipotentiary Ambassador of the Philippines, resident in Moscow, Samuel Ramel, to the leadership of Uzbekistan in May 1996. During this meeting, the Philippine side highlighted important directions of bilateral political cooperation, notably interaction within international organizations such as the UN, UNESCO, IMF, and the Organization of Islamic Cooperation (OIC). At that time, the Philippines sought to strengthen its position in Southeast Asia and enhance its role in ASEAN, whose authority had significantly increased by that period. Based on the above, it can be argued that forming and developing ties with the Philippines could have allowed Uzbekistan to integrate into the Asia-Pacific region, thereby expanding the market for its export products. However, in the 1990s, Uzbekistan and the Philippines took

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practically no measures to strengthen bilateral ties, unlike with other Southeast Asian countries such as Vietnam and Thailand.

It should be noted that, unlike other ASEAN countries, the Philippines did not pay significant attention to cooperation with Uzbekistan. The main reason, in our view, was the lack of regional knowledge, not only about Uzbekistan but about the entire Central Asian region. Analysis of archival materials shows that in February 1992, a Filipino student, in a letter to the Government of independent Uzbekistan, noted the absence of knowledge about Uzbekistan and requested materials describing the nation, history, culture, and economy.

The first prerequisites for establishing the foundations of multilateral cooperation were laid in the early 21st century during an official meeting between the two sides. In particular, in 2004, as part of participation in the UN system, Uzbekistan supported the Philippines' candidacy for Non-Permanent Membership in the UN Security Council for the 2004–2005 term. This event became the first diplomatic action between the two countries within the international system [4, p.187.].

On August 30, 2004, Ernesto Villarica Lamas presented credentials as the Extraordinary and Plenipotentiary Ambassador of the Philippines to Uzbekistan, resident in Moscow. In July 2007, the Philippine Ambassador to Iran, A. Villacorte, received agreement from the Government of Uzbekistan as head of the diplomatic mission in Uzbekistan, resident in Tehran. Thus, practical steps to develop bilateral relations were only made at the beginning of the 21st century.

During the participation of the Uzbek delegation at the 62nd session of the UN General Assembly on September 29, 2007, a meeting was held with Philippine Foreign Minister Alberto Romulo (2004–2011). During the meeting, the parties discussed the prospects of Uzbek-Philippine relations, including high-level visits, activation of political dialogue, and cooperation in trade, economy, and cultural-humanitarian areas.

At this meeting, the Philippine Foreign Minister proposed to intensify relations both bilaterally and within regional organizations, primarily ASEAN. At that time, the Philippines advocated consultations with ASEAN partners regarding Uzbekistan's potential connection to the forum as a sectoral partner. In this context, the Philippine Foreign Minister proposed accrediting the head of one of Uzbekistan's embassies in Southeast Asia as the head of the diplomatic mission to the Philippines. Consequently, in 2007, the Uzbek Ambassador to Malaysia was concurrently accredited to the Philippines, and Honorary Consuls of both countries were appointed. Thus, in the early 21st century, within regional organizations, bilateral relations between Uzbekistan and the Philippines entered a qualitatively new stage. Cooperation in ASEAN, including sectoral partnership, began to take shape. Support from the Philippines in international organizations, including the UN General Assembly and the Human Rights Council, played an important role in strengthening bilateral relations.

In the early 21st century, the Philippine side expressed interest in cooperating with Uzbekistan in combating international terrorism, religious extremism, and strengthening the international regime of disarmament and non-proliferation of weapons of mass destruction. During the 62nd session of the UN General Assembly, both sides discussed enhancing mutually beneficial cooperation, including high-level political consultations and creating an Intergovernmental Commission on Trade, Economic, and Investment Cooperation to determine specific areas of interaction. The Philippine delegation proposed expanding the legal framework of bilateral relations, leading to the signing of agreements "On Promotion and Reciprocal Protection of Investments" and "On the Avoidance of Double Taxation".

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Based on this, it can be noted that the legal foundation of bilateral relations between Uzbekistan and the Philippines was established in the first decade of the 21st century, which not only facilitated the development of diplomatic relations but also created a basis for cooperation in areas such as the economy, tourism, science, and culture.

During negotiations within the 62nd session of the UN General Assembly, the Philippine side positively assessed Uzbekistan's contribution to the development of Islamic civilization, particularly recognizing Uzbekistan's role in strengthening intercultural and interfaith dialogue through ISESCO, which designated Tashkent as the Capital of Islamic Culture in 2007.

Considering the Philippines' role in Asia and international organizations, primarily ASEAN, and Manila's active position in combating transnational crime, terrorism, and regional extremism, cooperation between Uzbekistan and the Philippines in the early 21st century advanced Uzbekistan's long-term political and economic interests bilaterally and multilaterally, fostering the development of Uzbekistan's integrative ties with Asian countries and regional structures.

During the Philippine delegation's visit to Uzbekistan in 2008, negotiations were held on intensifying political dialogue between the two countries, resulting in the signing of a Protocol on Political Consultations between the Ministries of Foreign Affairs. The visit of the Philippine Foreign Minister to Uzbekistan in 2008 became an important event in establishing diplomatic contact between the two ministries. As a result, the first round of political consultations was planned for 2008. However, due to objective reasons, this event was not practically realized.

Conclusion. Thus, as the analysis of the formation and development of diplomatic cooperation between Uzbekistan and the Philippines shows, although bilateral relations were established in 1992, in practice, until the beginning of the 21st century, the interactions between the two states were limited to protocol-level events. At the same time, starting from the 21st century, a positive dynamic in the development of relations has been observed, including within the framework of international organizations.

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**АНАЛИЗ ЭФФЕКТИВНОСТИ И ДИАГНОСТИЧЕСКОЙ ЗНАЧИМОСТИ
МОЛЕКУЛЯРНО-ГЕНЕТИЧЕСКОГО ТЕСТА GENOTYPE MTBDRPLUS/SL (IN
VITRO) ДЛЯ ВЫЯВЛЕНИЯ ЛЕКАРСТВЕННОЙ УСТОЙЧИВОСТИ
MYCOBACTERIUM TUBERCULOSIS В ОБРАЗЦАХ ЛЁГОЧНОЙ ТКАНИ,
ПОЛУЧЕННЫХ В ХОДЕ ХИРУРГИЧЕСКОГО ВМЕШАТЕЛЬСТВА**

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Аннотация: Множественная лекарственная устойчивость (MDR-TB) остаётся серьёзной проблемой фтизиатрии, требующей внедрения быстрых и точных методов диагностики. В исследовании проведён анализ эффективности молекулярно-генетического теста GenoType MTBDRplus/sl (Hain Lifescience) для выявления мутаций, ассоциированных с устойчивостью к противотуберкулёзным препаратам 1-го и 2-го ряда, в образцах лёгочной ткани, полученных во время хирургического вмешательства. Всего исследовано 34 образца, из которых у 85,3% было идентифицировано *M. tuberculosis*. Тест позволил выявить наиболее частые мутации в генах *proB* (S531L, E510H, H526Y), *katG* (S315T1) и *inhA* (C15T), а также единичные мутации в гене *rrs* (A140G). По сравнению с культуральными методами (положительный результат лишь в 38,2% случаев), LPA-тест продемонстрировал более высокую чувствительность и информативность. Полученные данные подтверждают целесообразность применения GenoType MTBDRplus/Sl в качестве исходного метода диагностики для ускоренной идентификации *M. tuberculosis* и определения лекарственной устойчивости у пациентов, перенёвших хирургическое вмешательство.

Ключевые слова: GenoType MTBDRplus/sl (in vitro), *mycobacterium tuberculosis*, MDR-TB (множественная лекарственная устойчивость), тест на лекарственную чувствительность (ТЛЧ), MGIT, Левенштейна-Йенсена, Национальная референс-лаборатория, операционный материал, LPA (Line Probe Assay)

Введение: Появление и распространение MDR-TB (множественной лекарственной устойчивости) стало серьёзной и актуальной проблемой, угрожающей здравоохранению на глобальном уровне. В Республике Узбекистан одним из приоритетных направлений молекулярно-генетической диагностики туберкулёза (ТБ) является разработка и внедрение новых подходов для быстрого и точного определения мутаций в геноме *M. tuberculosis*, ведущих к лекарственной устойчивости. Традиционные методы исследования, такие как культуральное исследование клинических образцов и классический тест на лекарственную чувствительность, являются трудоёмкими и требуют значительного времени для выделения и идентификации *M. tuberculosis*, а также последующего проведения ТЛЧ, особенно для образцов операционного материала. Сложность предварительной обработки операционного материала часто приводит к отрицательным результатам культуры. Внедрение методики LPA с использованием теста GenoType MTBDR Plus/Sl позволяет повысить результативность исследования, сократить сроки идентификации *M. tuberculosis* и выявить мутации в гене *proB*, приводящие к рифампицин-устойчивости, а также мутации в генах *katG* и *inhA*, ведущие к

устойчивости к изониазиду и протионамиду (этионамиду) в клинических образцах, полученных во время операционного вмешательства.

Материалы и методы: Исследование проводилось в Национальной референс-лаборатории. Было исследовано 34 клинических образца операционного материала, полученных от пациентов с туберкулёзом в РСНПМЦФиП им. Ш. Алимова, из которых 19 (55,9%) — новые случаи и 15 (44,1%) — повторные случаи. Все клинические образцы были деконтаминированы с использованием метода NaOH-NALC, с последующей инокуляцией части осадка на питательные среды Левенштейна-Йенсена и MGIT. Другая часть осадка была обработана согласно протоколу, описанному в инструкции к тестовым наборам GenoType MTBDR Plus и GenoType MTBDR Sl (Hain Lifescience) для выделения ДНК и дальнейшего тестирования с использованием указанных наборов.

Результаты: С помощью тестовых наборов GenoType MTBDR Plus/Sl (Hain Lifescience) из 34 образцов у 29 (85,3%) было идентифицировано *M. tuberculosis*, у 5 (14,7%) образцов *M. tuberculosis* не был обнаружен.

Наличие при технологии GenoType MTBDR Plus: Среди идентифицированных образцов было детектировано 21 (72,4%) без мутации гена *proB* и 8 (27,6%) с мутацией гена *proB*, ассоциирующей с устойчивостью к рифампицину. Из них отмечены:

Мутация S531L — 6 (отсутствие сигнала WT8 и присутствие сигнала Mut3)

Мутация E510H — 1 (отсутствие сигнала WT2)

Мутация H526Y — 1 (отсутствие сигнала WT7 и присутствие сигнала Mut2A)

Среди идентифицированных образцов было детектировано 18 (62,1%) без мутации *katG* и 11 (37,9%) с мутацией гена *katG*, ассоциирующей с устойчивостью к изониазиду. Из них отмечены:

Мутация S315T1 — 11 (отсутствие сигнала WT и присутствие сигнала Mut1)

Детекция мутации гена *inhA*, ассоциирующей с устойчивостью к изониазиду, протионамиду и этионамиду, была выявлена в 2 (6,9%) образцах из 29. Из них:

Мутация C15T — 2 (отсутствие сигнала WT1 и присутствие сигнала Mut1)

Одновременные мутации в 2 и более генах были обнаружены в 11 из 29 образцов.

В 2 (6,9%) образцах обнаружены мутации одновременно в генах *katG* и *inhA*:

Мутация S315T — 11 (отсутствие сигнала WT и присутствие сигнала Mut1)

Мутация C15T — 2 (отсутствие сигнала WT1 и присутствие сигнала Mut1)

В 8 (27,6%) образцах обнаружены одновременно мутации в генах *katG* и *inhA*. Из них:

6 образцов с мутацией S531L — 6 (отсутствие сигнала WT8 и присутствие сигнала Mut3) и мутацией S315T1 — 6 (отсутствие сигнала WT и присутствие сигнала Mut1)

1 образец с мутацией E510H — (отсутствие сигнала WT2) и мутацией S315T1 — (отсутствие сигнала WT и присутствие сигнала Mut1)

1 образец с мутацией H526Y — (отсутствие сигнала WT7 и присутствие сигнала Mut2A) и мутацией S315T1 — (отсутствие сигнала WT и присутствие сигнала Mut1)

В 1 (3,4%) образце обнаружены одновременно мутации в генах *proB*, *katG* и *inhA*:

Мутация S531L — (отсутствие сигнала WT8 и присутствие сигнала Mut3)

Мутация S315T1 — (отсутствие сигнала WT и присутствие сигнала Mut1)

Мутация C15T — (отсутствие сигнала WT1 и присутствие сигнала Mut1)

В 16 (55,2%) из 29 образцов не обнаружены сигналы от кодонов *katG* и *inhA* дикого типа.

Технологии GenoType MTBDR Sl: Идентифицировано 17 образцов:

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У 16 (94,1%) из них не было обнаружено мутаций в генах *gyrA*, *gyrB*, *rrs* и *eis*, что свидетельствует о чувствительности к противотуберкулёзным препаратам второго ряда.

У 1 (5,9%) образца была выявлена мутация в гене *rrs*:

Мутация A140G (отсутствие сигнала WT1) — устойчивость к инфекционным препаратам.

Также были обнаружены мутации в генах *katG* (S315T1) и *rrs* (A140G).

При культуральном исследовании: у 13 (38,2%) из 34 образцов была идентифицирована культура возбудителя на питательных средах Левенштейна – Йенсена и MGIT, что позволило провести тест на лекарственную чувствительность к противотуберкулёзным препаратам. В 21 (61,8%) образце культура была отрицательной, а 1(2,9%) образец оказался контаминированным. Для 12 (35,3%) культура положительных образцов был проведён тест на лекарственную чувствительность пропорциональным методом на жидкой питательной среде MGIT.

Обсуждение и выводы: Тест-наборы GenoType MTBDR Plus/Sl (Hain Lifescience) показали более высокую результативность по сравнению с культивированием и ТЛЧ (тестом на лекарственную чувствительность) на питательных средах при исследовании операционного материала резецированных участков организма больного. Тест-наборы GenoType MTBDR Plus/Sl (Hain Lifescience) могут использоваться как исходный диагностический метод для идентификации *M. tuberculosis* и детекции мутаций в генах, ассоциирующихся с чувствительностью к противотуберкулёзным препаратам 1-го и 2-го ряда. Ускоренная диагностика и идентификация резистентного туберкулёза являются необходимыми условиями для адекватного подбора антибиотиков для больных, подвергшихся операционному вмешательству.

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GURLAN ETIMOLOGIYASIGA DOIR BA'ZI QARASHLAR HAMDA GURLAN AFSONASINING BADIY TALQINI

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Annotatsiya. Maqola O.Matjonning "Haqqush qichqirig'i" asaridagi "Gurlan" afsonasining tarixi haqida. Tarixiy faktlar, shahar toponimi, tarixiy shaxslar bilan afsona mazmun-mohiyati mohirona ochib berilgan. Shoir tomonidan ushbu qadriyatlar negizida afsonaning badiiy xususiyati yoritiladi.

Kalit so'zlar: Gurlan, Jurjon, Gurganj, Hevoq, Junaid, Isfandiyor, Gurlan darvozasi, urug' nomlari, Zamahshar, Toshhovuz, "Ko'r", "Lang".

Аннотация. Статья посвящена истории легенды «Гурлан» в произведении О. Матжона «Крик ястреба». Содержание и суть легенды мастерски раскрыты с помощью исторических фактов, топонима города, исторических личностей. Поэт раскрывает художественную природу легенды на основе этих ценностей.

Ключевые слова: Гурлан, Джурджон, Гургандж, Хевок, Джунаид, Исфандиёр, ворота Гурлан, родовые имена, Замахшар, Тошховуз, «Кор», «Ланг».

Abstract. The article is about the history of the legend "Gurlan" in O. Matjon's work "The Cry of the Hawk". The content and essence of the legend are skillfully revealed with historical facts, the toponym of the city, historical figures. The poet illuminates the artistic nature of the legend on the basis of these values.

Keywords: Gurlan, Jurjon, Gurganj, Hevok, Junaid, Isfandiyor, Gurlan gate, clan names, Zamakhshar, Toshkhovuz, "Kor", "Lang".

Kirish.

Har bir xalqning tarixiy xotirasi, ma'naviy merosi va madaniyati u yashab kelgan hududlar nomida ham mujassam bo'ladi. O'zbekiston hududidagi qadimiy toponimlar nafaqat geografik belgi sifatida, balki xalq tafakkurining mahsuli, tarixiy voqealarning guvohi hamdir. Shunday nomlardan biri – **Gurlan** bo'lib, u turli davrlarda olimlar, tarixchilar va folklorshunoslar e'tiborini tortgan.

Gurlan toponimining kelib chiqishi haqida bir qator ilmiy qarashlar mavjud. Ba'zi tadqiqotchilar uni qadimiy turkiy ildizlar bilan bog'lasalar, boshqalar forsiy manbalardagi talqinlarga murojaat qiladilar. Shu bilan birga, xalq og'zaki ijodida Gurlan nomi bilan bog'liq afsonalar ham mavjud bo'lib, ular hudud tarixini badiiy obrazlar orqali talqin etadi.

Ma'lumki, Gurlan Xorazmning qadimiy shahrlaridan hisoblanadi. U haqida aytilmagan laparlar, qo'shiqlar, rivoyatlar va afsonalar yo'q. Ular davr o'tgan sari og'izdan og'izga, bitikdan bitikga o'tib takomillashib boraveradi. Shahar haqidagi badiiy adabiyotlar xalq og'zaki ijodidan olinsa, uning etimologiyasi, toponimikasi haqidagi qarashlar shubhasiz, ilmiy adabiyotga borib taqaladi va bu turlicha bo'lishi mumkin. Birgina Gurlan leksikasining o'zida olimlar turfa qarashlarni bildirishgan. Quyida ushbu farazlar sxemasi ochib berilgan:

Professor A.Nabiyevning Tarixiy olkashunoslik kitobida keltirilishicha " Bir vaqtlar bu yerda kor chol va cho'loq kampir kochib kelgan. Ular hunarmand bolib, bozorda ozlari yasagan narsalarni sotishar ekan. Ular yasagan narsalar juda talabgir bolib, aholi kosiblarda bir sir bor deb ularning atrofiga joylasha boshlabdilar. Shunday qilib, bu yerlar Gurlan nomini olibdi[1].

Gurlan

Z.Dosimovning aytishicha, Gurlan sozining paydo bo'lishi turkiy-mogul davri bilan bogliqdir. Mahalliy aholi Gurlan asli Ko'rlang bo'lib aholi tomonidan Gurlan deya talqin qilinadi deydi. Mo'g'ul tilida bog', hovli ma,nosini anglatuvchi Xureelen sozi mavjud. Bu talqinga kora, toxtash joyi degan manoni anglatadi deyiladi[2].

YUNESKO akademigi Xudoyor Ollayorovning talqiniga kora, Gurlan sozi Gurlan-Gor olon, yani olon urug'ining g'ori, qabristoni degan manoni anglatadi deydi[3]

Urganch davlat universiteti dotsenti sharqshunos Abdulla Ahmedovning aytishicha, Gurlan so'zi shu yerda yashovchi kulon deb ataluvchi hayvon nomidan kelib chiqqan deya talqin qiladi[4]

Gurlan

Z.Dosimov ozining "Xorazm toponomikasi" kitobida Gurlan mo'g'ulcha Kurelen, Kuren so'zlaridan olingan bo'lib, "atrofi o'ralgan qishloq" degan ma'noni anglatadi deydi[5]

Suyun Qorayev va Z.Ziyotovlar gurlanda shu nom bilan ataluvchi kichik urug' bo'lgan. Gurlan sozi ham shu urug'lar nomidan kelib chiqqan deyilgan[6]

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Albatta, har bitta qarash o'z mazmun-mohiyatiga ega. Ularni sharhlashdan oldin etimologiya so'ziga e'tibor qaratsak: **etimologiya** – so'zning kelib chiqishi haqidagi ta'limotni o'rganuvchi tilshunoslik bo'limidir. Ushbu bo'lim bevosita mavzimizni ochib berishga xizmat qiladi.

Adabiyotlar tahlili va metodologiya

Endi Gurlan haqidagi tarixiy-etimologik qarashlarga qaytadigan bo'lsak, Z.Do'simov bu nomni yurtimizga mo'g'ullar kirib kelgan davr bilan bog'laydi va mo'g'ulcha kurelen so'zini asos qilib ko'rsatadi. Akademik Xudoyor Olloyorov esa shahar "go'r" + "olon", ya'ni, olon urug'ining qabri degan so'zlardan kelib chiqqan, deya e'tirof etadi. Professor A.Nabiyev bu diyorda ko'r chol va cho'loq kampir yashagan va shar nomi shu ikkisi bilan barpo bo'lgan, degan fikrlarni ilgari suradi. Ushbu so'nggi keltirib o'tilgan faraz esa O.Matjonning Gurlan afsonasi ma'no-mazmuniga yaqinroqdir. Farqi: farazda kampir va chol bo'lsa, afsonada ikkisi ham chol deyilgan, biri ko'r, biri lang.

Xalq og'zaki ijodi har bir so'z, urf-odat va qadriyatni abadiyatga muhrlaydi. Balki aynan tuman nomi haqidagi shu qarashlar – ko'r va lang kishilar haqidagi rivoyat-u afsona haqiqatdir. O'z mulohazamni keltirsam sal boshqacharoq – bu joy nomini turkiy-mo'g'ul qabilalar kirib kelishi davridan ham uzoq muddat ilgari, qadimgi o'sha vohaning o'tror aholi zaboniga bog'layman: go'r -qabr, lang-cho'loq, ya'nikim, lang boboning qabri, shoirlar-u olimlar e'tirof etgan o'sha langboboning qabri nomiga qo'yilgan bo'lsa, ne ajab. Davr oshgan sari fikrlar ham turfa rangda jilolanib boraveradi. Yaxshi kishilar yurtga, elga fidoyi, jonkuyar insonlar esa afsona va rivoyatlardan joy olib, umrboqiy kuylanadilar. Mana shu kuylanishga sazovor bo'lgan qahramonlarimizdan biri – shoir afsonasidagi ko'r va lang bobolardir.

Afsona badiiyati qirg'indan omon qolgan bir ko'r va bir lang-shol chol va to'rt-besh nafar o'g'il-qiz go'daklarning taqdiri va ularning azob-uqubatlarni birlashib yengishlarini o'z ichiga oladi. Dastlab afsona boshida shoir shaharni e'tirof etib uning ta'rif-u tavsifiga u bilan bog'liq e'tiborga loyiq tarixiy voqealarga to'xtaladi. Ushbu faktlar quyidagi taqdimotga joylangan:

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1. Heyvoqni necha bora qirg'in etgan Junaid Gurlan bilan sipo, qo'rqib salomlashgan.



2. Buxoro qolmay, Samarqand qolmay, kanizaklar yig'gan Isfandiyorning mahramlari Gurlanga kelganda, tuyalariga o't qo'yib, quvilgan. O'g'irlab ketilgan gurlanlik qiz ham xonga rozilik bermagani uchun qirq quloqli qozonga tashlab, qaynatib o'ldirilgan.



3. Gurlan atrofi qishloqlarida ming, qiyot, qo'ng'iroq, mang'it, kot, bog'i olon, uyg'ur, qongli, qatag'on, to'qson, cho'bolonchi, sart, yuz, qipchoq...kabi urug'lar nomi saqlangan.



4. Gurlanning eng eski nomini chollar "To'rt to'qson gurlan" deb eslaydilar. Qadimgi Gurlanning to'rt ulkan darvozasi bo'lib, bittasi mashhur Zamahshar shahriga tutashgan joyda, ya'ni hozirgi Toshhovuz shahriga yaqin bo'lgan.



5. Amudaryo Xorazmdan oqa boshlaganiga qancha vaqt bo'lgan?! Gurlanliklar o'sha vaqtda paydo bo'lganlar. Ko'p qirg'inlardan omon o'tgan qurch, butmag'iz, og'zi bir, kotxudo, bek urug'i Gurlan! [7.56]

Gurlan toponimi bo'yicha turli davrlarda bir qator tadqiqotlar olib borilgan. Xususan, o'zbek va xorijiy olimlarning turkiy, forsiy hamda arabiy manbalarga asoslangan qarashlari mavjud. Ayrim tadqiqotchilar "Gurlan" so'zini qadimiy turkiy tillardagi "gur/kur" (qal'a, qo'rg'on) ildiziga bog'lasalar, boshqalari uni forsiy "gūr" (qabr, mozar) yoki "gol" (gullar) so'zlari bilan aloqador deb biladilar. Shuningdek, tarixiy yozma manbalarda bu hudud "Gurlan qal'asi" nomi bilan tilga olinadi.

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Metodologik yondashuv sifatida maqolada qiyosiy-etimologik tahlil, tarixiy-geografik manbalarni solishtirish, shuningdek, folklorshunoslik metodlari qo'llanildi. Afsonaning badiiy talqinini o'rganishda ramziy obrazlar, xalq og'zaki ijodining poetik xususiyatlari ham tahlil qilindi.

Natija va muhokamalar

Shuningdek, Shahar nomi "Gurgon", "Jurjon", hatto, "Gurganj" degan dunyoga ma'lum nomlar ham Gurlanning buzibroq aytilganini afsonada o'qishimiz mumkin. Birgina Jurjon degan shahr haqida ko'plab ertak va dostonlarda o'qiganmiz.jumladan, Hamid Olimjonning "Oygul bilan Baxtiyor" ertak-dostonida ushbu joy nomi ikki qahramonni bir-biriga uchratish uchun xizmat qilgandek, go'yo. Oygul yurti Jambil, Baxtiyor yurti Susambil. Jonini omon saqlab qolish uchun Tarlon ismli kekxa qul tomonidan Oygul sandiqqa solinib daryoga oqizib yuboriladi. Daryoga uch oy oqqan sandiq nihoyat, Jurjon degan yurtga kelib qoladi[8.42]. So'ngra xuddi shu yurtdan daryoga o'zini tashlagan Oygulni Jayhunbaliq yutib Susambilga olib boradi. Jayhunbaliq nomi shubhasiz, jayhun daryosiga tegishlilikni bildiradi. Jayhun daryosi esa Amudaryodir (Sayhun:Sirdaryo). Gurlan shahri Amudaryo atrofidagi vohalardan biri:

Jurjonning dalasida,
Daryoning yoqasida
Bir chol o'tin terardi,

Doim shunda yurardi[8.42].

Demak, Jurjon va Gurlan O.Matjon aytganidek, bir joy. Bu yerda afsona va ertakdagi holat ham mantiqan, ham geografik jihatdan ayni haqiqatni tarannum etgan.

Gurlan rivoyati so'nggi qirg'indan so'ng boshlanadi. Undan bir ko'zi ojiz va lang-shol yura olmaydigan chol-u to'r-besh nafar o'g'il-qiz omon qolishadi. Ikki chol go'daklar omon qolishi uchun xavotir oladilar, uqubat tortadilar, oqibat bir qarorga kelishadi: lang chol ko'zi ojiz choldan uni uzoqqa olib borib qo'yishini, o'sha yerda jon berishini buyuradi. Sherigi ham bu qarorga rozi bo'ladi. Langchol yo'lni aytib boradi, ko'r esa uni ko'tarib yurib boradi. Shunday qilib, u langcholni ko'tarib yo'lga tusharkan, cho'loq chol bir koshonani ko'rib qoladi va u yerning eshigi ochiqligi bois ichkariga kirishni taklif qiladi. Kirsalar noz-ne'matlar, yeguliklar bor emish. Quchoqlarini to'ldirib yana ortga - bolalar yoniga qaytadilar. Shu taxlit go'daklarni asrab qolgan ikki bobo jihatlariga qo'yilgan Gurlan bu.

Tadqiqot natijasida Gurlan toponimining kelib chiqishi yuzasidan yagona qarash mavjud emasligi aniqlandi. Aksincha, u ko'p qatlamli va murakkab semantik asosga ega. Turkiy manbalarda Gurlan "qal'a, mustahkam joy" ma'nosida talqin qilinsa, forsiy manbalarda esa "mozorlarga oid" yoki "gulzor" ma'nosiga yaqin talqinlar uchraydi.

Gurlan afsonasida esa bu hududning paydo bo'lishi, uning nomi bilan bog'liq xalqona tasavvurlar badiiy shaklda aks etgan. Afsonadagi ramziy obrazlar – suv, qal'a, mozor va gullar timsollari xalqning tarixiy xotirasi, diniy e'tiqodi va tabiatga munosabatini ifodalaydi. Bu esa Gurlan nomi nafaqat lingvistik-etimologik jihatdan, balki madaniy-ma'naviy mazmun jihatidan ham boy qatlamlarga ega ekanligini ko'rsatadi.

Xulosa. Hech bir nom o'z-o'zidan paydo bo'lmaganidek, afsona va rivoyatlar ham xalqdan olib, xalqqa beriladigan adabiy merosdir. Uning qanchalik haqiqatga yaqin ekanligini esa faqat ishonchli manbalarga tayanmasdan birgina o'sha voha ulug'lariga murojaatdan ham bilib olish mumkin.

Gurlan toponimi xalqimizning qadimiy tarixidan guvohlik beruvchi, turli manbalarda turlicha talqin etilgan murakkab nomlardan biridir. Uning etimologiyasi turkiy va forsiy ildizlar bilan bog'liq bo'lsa-da, xalq afsonalarida bu nom yanada boyitilib, ramziy va badiiy mazmunga ega bo'ladi.

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Maqolada olib borilgan tahlillar shuni ko'rsatadiki, Gurlan afsonasi nafaqat og'zaki ijod namunasi, balki tarixiy xotira va ma'naviy merosning muhim qismi hisoblanadi. Shu boisdan, Gurlan nomining ilmiy-etimologik talqinlari bilan bir qatorda, uning folklordagi badiiy ifodalarini ham o'rganish hudud tarixini yanada mukammal yoritishga xizmat qiladi.

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**БОЛЕЗНИ, ВОЗНИКАЮЩИЕ ВСЛЕДСТВИЕ ГИПОВИТАМИНОЗА И МЕРЫ ИХ
ПРОФИЛАКТИКИ**

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Аннотация: Гиповитаминоз — это патологическое состояние, возникающее в результате недостатка витаминов в организме. Полное отсутствие витаминов приводит к авитаминозу. Гиповитаминоз развивается при частичной недостаточности определённого вида витаминов. Для здоровья человека необходимо 13 различных витаминов. Из них четыре — жирорастворимые витамины, а остальные девять — водорастворимые. Эти витамины в основном поступают в организм с пищей, некоторые из них могут синтезироваться в клетках. Для полного усвоения витаминов из пищи важна также правильная организация рациона питания. В данной статье приводится информация о факторах, влияющих на усвоение витаминов, заболеваниях, возникающих при их недостатке, и мерах профилактики.

Ключевые слова: Эндогенный, тиамин, кальциферол, рибофлавин, токоферол, кишечный тракт, минералы, аскорбиновая кислота, воспаление.

Diseases caused by hypovitaminosis and measures to prevent them

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Abstract: Hypovitaminosis is a pathological condition that occurs due to a deficiency of vitamins in the body. A complete lack of vitamins leads to avitaminosis. Hypovitaminosis develops as a result of a partial deficiency of certain types of vitamins. Thirteen different vitamins are essential for human health. Among them, four are fat-soluble vitamins, and the remaining nine are water-soluble vitamins. These vitamins mainly enter the body through food, and some can be synthesized within cells. The proper absorption of vitamins from food also depends greatly on the diet composition. This article provides information about the factors affecting vitamin absorption, the diseases caused by their deficiency, and measures for their prevention.

Keywords: Endogenous, thiamine, calciferol, riboflavin, tocopherol, intestinal tract, minerals, ascorbic acid, inflammation.

Gipovitaminoz oqibatida kelib chiqadigan kasalliklar va ularni oldini olish choralari

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Annotatsiya: Gipovitaminoz-organizmda vitaminlar yetishmovchiligi ta'sirida yuzaga keladigan patologik holat hisoblanadi. Vitaminlarning umuman yetishmasligi-avitaminozga olib keladi.

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Ma'lum bir turdagi vitaminlarning qisman yetishasligi oqibatida gipovitaminoz shakllanadi. Inson salomatligi uchun 13 xil vitamin zarur. Shulardan to'rttasi yog'da eruvchi vitaminlar, qolgan to'qqiztasi suvda eruvchi vitaminlar hisoblanadi. Bu turdagi vitaminlar asosan ovqat tarkibida organizmga kiradi, ba'zilar hujayrada sintezlanishi mumkin. Ovqat tarkibidagi vitaminlarning to'liq so'rilishi uchun ovqat ratsioning ahamiyati ham katta. Ushbu maqolada, vitaminlarning so'rilishiga ta'sir ko'rsatuvchi omillar, ularning yetishmasligi oqibatida kelib chiqadigan kasalliklar va ularni oldini olish choralari haqida ma'lumotlar beriladi.

Kalit so'zlar: Endogen, tiamin, kalseferol, riboflavin, tokeferol, ichak trakti, minerallar, askorbin kislota, yallig'lanish.

Витамины попадают в организм человека через пищевые продукты и различные лекарственные препараты, но некоторые витамины синтезируются в организме. Например, витамин В синтезируется из стероидов, а витамины К и В7 — под воздействием кишечной микрофлоры. Однако при некоторых патологических состояниях поступившие извне и синтезированные в кишечнике витамины не всасываются в кровь. Эти патологии условно делятся на две группы. Первая группа связана с экзогенными факторами. К ним относятся длительное употребление одних и тех же продуктов питания, гипervитаминоз, не зависящий от количества витаминов в пище. Например, увеличение потребления углеводов вместо жиров затрудняет всасывание тиамина, пиридоксина и цианокобаламина в кровь. Также при снижении потребления жиров ухудшается проникновение жирорастворимых витаминов А, D, Е, К в клетки, что приводит к различным клиническим симптомам, связанным с кишечником. Вторая группа связана с эндогенными факторами. К ним относятся воспаление слизистой оболочки желудочно-кишечного тракта, снижение всасывающей способности энтероцитов, инвазия глистов, увеличение количества антагонистов витаминов, эндокринные изменения, нарушение всасывания витаминов при заболеваниях печени.

Указанные две группы факторов приводят к затруднению всасывания витаминов, их выведению из пищеварительного тракта, снижению активности катализирующих реакций в организме и развитию различных заболеваний. Далее рассмотрим болезни, возникающие вследствие дефицита витаминов, и рекомендации по их профилактике.

Витамин А (ретинол) участвует в работе иммунной системы, зрении и нормализации деятельности эпителиальных клеток. Первые признаки дефицита — плохое зрение в темноте, куриная слепота. При первичном гиповитаминозе А может развиваться сухость сетчатки глаза, воспаление эпителия кожи и слизистых, различные язвы, которые при отсутствии лечения могут перейти в опухоли. Для профилактики необходимо включать в рацион продукты, богатые каротином: морковь, тыкву, печень, молоко, яйца, сливочное масло.

Витамин D (кальциферол) обеспечивает нормальное формирование костей и минерализацию кератинового белка кальцием. Его дефицит вызывает рахит у детей и остеопороз у взрослых. На ранних стадиях наблюдаются деформации грудины, головы и костей у детей. При этом в крови повышается уровень кальция, что может привести к повреждению печени и почек. Витамин D также затрудняет всасывание магния, цинка, кобальта, меди и калия, что ухудшает передачу нервных импульсов, нарушает функцию эндокринной системы и повышает риск сердечно-сосудистых заболеваний. Для профилактики взрослым рекомендуется включать в рацион рыбу, печень, яйца, молочные продукты и чаще гулять на солнце с маленькими детьми.

Витамин Е (токоферол) участвует в поддержании структуры клеточных мембран и входит в состав ферментов, расщепляющих жиры. Его дефицит вызывает стеаторею — усиленное выведение жиров из пищеварительного тракта, увеличивает количество свободных радикалов в крови, что может привести к гемолитической анемии, нарушениям структуры ДНК, обмена белков и различным мутациям в хромосомах. Для поддержания нормального уровня витамина необходимо увеличить потребление растительных масел — оливкового, кукурузного, хлопкового.

Витамин К (филлохинон) участвует в нормализации кишечной микрофлоры. Из-за его постоянного поступления с пищей развивается вторичный гиповитаминоз К. Нарушение всасывания в кишечнике приводит к хроническому энтериту, нарушению образования желчи, что может вызвать гепатит, цирроз печени и опухоли желудка и кишечника. Для улучшения всасывания рекомендуется употреблять витамин К вместе с жиросодержащими продуктами. Он содержится в капусте, цветной капусте, помидорах, растительных маслах и печени. Основным источником витамина для младенцев является материнское молоко.

Витамин В1 (тиамин) относится к группе В и влияет на обмен углеводов в организме. Он не синтезируется в организме и поступает только с пищей. Его дефицит нарушает расщепление углеводов и приводит к тяжелым заболеваниям: бери-бери, синдрому Вернике, психозу Корсакова, энцефалопатиям. При бери-бери возникают проблемы с сердечно-сосудистой системой и отеки. При синдроме Вернике страдает образование миелиновой оболочки, что затрудняет передачу нервных импульсов. Психоз Корсакова сопровождается отеком серого вещества мозга, ухудшением памяти и неспособностью контролировать себя. Для нормализации уровня витамина необходимо увеличить потребление черного хлеба, ячменной крупы, бобовых и печени.

Витамин В2 (рибофлавин) участвует в окислении жиров, нормализации синтеза АТФ через фосфорилирование и защите сетчатки глаза от ультрафиолетового излучения. Его дефицит проявляется каплевидным дерматитом на слизистой рта, воспалением кожи, снижением остроты зрения, появлением язв и анемий. Богаты рибофлавином печень, почки, яйца, овощи, молочные продукты.

Витамин В6 (пиридоксин) влияет на обмен аминокислот и гликолипопротеинов. Его дефицит вызывает дерматит, глоссит (воспаление ткани языка), хейлит (воспаление слизистой губ), депрессию, у детей задержку роста, диарею, анемию и различные невропатии. Основные источники пиридоксина — мясо, печень, рыба, яйца, картофель, морковь и крупа.

Витамин В9 (фолиевая кислота) важен для пролиферации клеток и образования эритроцитов, особенно необходим при беременности. Его дефицит вызывает деформацию эритроцитов, усиление воспаления, нарушение проницаемости желудочно-кишечного тракта. Витамин часто назначают в виде лекарств. Также он содержится в свекле, репе, сое, апельсинах, авокадо.

Витамин С (аскорбиновая кислота) участвует в синтезе коллагена и хондроитинсульфата, улучшает всасывание железа с гемом, нормализует образование нейромедиаторов, функционирование нейтрофилов и макрофагов, способствует свертыванию крови. Его дефицит приводит к цинге — истончению стенок сосудов из-за отсутствия мышечного слоя, нарушению синтеза коллагена, затруднению заживления ран, конъюнктивиту, кровоизлияниям в мозг и почки, носовым кровотечениям, воспалению слизистой желудка и

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кишечника, гингивиту и разрушению зубов. Витамин С широко распространен в продуктах питания — различных фруктах и овощах, печени, рыбе и мясе.

Витамины являются неотъемлемой частью нашей жизни, они вместе с ферментами, катализирующими жизненно важные реакции, ускоряют обмен веществ, укрепляют иммунитет и обеспечивают нормальную физиологию органов. Очень многие люди страдают от гиповитаминозов. Поскольку симптомы первичного гиповитаминоза не всегда явно выражены, его трудно диагностировать. Чаще всего он выявляется в тяжелой форме, когда осложнения усиливаются и восстановление становится затруднительным. Поэтому каждому человеку необходимо внимательно относиться к своему здоровью.

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TOPOLOGY OPTIMIZATION FOR THE COLLABORATIVE ROBOTS' MOTION IN A PRODUCTION ENVIRONMENT USING THE STOCHASTIC VECTOR FLOW METHOD AND SIMULATION BASED ON DYNAMIC INFLUENCE FIELDS

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ABSTRACT

The article presents an approach to optimizing the topology of collaborative robot movement in a production environment, taking into account the dynamics of space and interaction between agents. The method is based on the construction of stochastic vector flows that take into account the deterministic components of the influence of target points, obstacles and inter-robot interaction, supplemented by Gaussian noise to ensure the adaptability and uniqueness of trajectories. The behavior of robots in an environment with dynamic obstacles is simulated, which allows us to investigate the effectiveness of the constructed trajectories in the context of achieving the goal, avoiding collisions and supporting functional coordination. The results confirm the effectiveness of the approach for tasks of autonomous navigation and cognitive collaborative control in the conditions of Industry 5.0.

Keywords: Collaborative Robotics, Stochastic Vector Flows, Dynamic Influence Field, Trajectory Optimization, Manufacturing Environment, Cognitive Control, Motion Simulation, Inter-Agent Interaction, Obstacle Avoidance, Industry 5.0.

INTRODUCTION

The current stage of industrial development is characterized by the transition to the Industry 5.0 paradigm, which focuses on the integration of the human factor with flexible, adaptive and interacting automation systems. In such an environment, collaborative robots should not operate in isolation, but as active agents in a shared production space, where people, other robots, mobile objects and dynamic obstacles are present [1]-[15]. One of the key challenges in ensuring the efficiency of such systems is the optimization of trajectories and topology of robot movement in real time, taking into account complex and rapidly changing conditions. Therefore, various methods and approaches can be used here [16]-[41].

Traditional navigation algorithms often do not take into account the unpredictability of the environment or do not provide the necessary speed and flexibility of adaptation [42]-[47]. That is why there is a need to build mathematical models that allow describing robot movement as a system of stochastic interactions based on vector flows and fields of influence, taking into account both deterministic and random factors.

The proposed research focuses on developing an approach to modeling the topology of collaborative robot motion by combining the method of stochastic differential equations and vector fields, which describe not only the directions to the goals, but also the influence of obstacles and other agents. The relevance of the approach is enhanced by the need for realistic simulation of such processes, for which Python tools are used, in particular, numerical integration and visualization libraries [48]-[51]. The proposed model not only allows for a formal description of the adaptive behavior of robots in the production space, but also provides tools for its practical implementation and verification in a simulation environment. The results of this research can be used to develop

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intelligent motion control systems that increase the efficiency and safety of interaction between robots and environmental elements in Industry 5.0 production scenarios.

LITERATURE REVIEW

The problems associated with robot motion control are quite diverse. Naturally, many scientists are working on their solution. Let us consider several scientific papers on this topic.

Authors in [52] consider motion control that is crucial for multilegged robot locomotion and task completion. Their study aims to address the fundamental challenges of inadequate foot tracking and weak leg compliance control in multilegged robot motions.

The paper [53] analyses and agility and trajectory control that are two desirable features for robotics. Authors note that these characteristics become very challenging for soft robots without rigid structures to support rapid manipulations. In the study researchers try to achieve both high mobility and agility to emulate living agile insects for the advancements of soft robots.

Jayaswal, K. and co-authors [54] work with the medicine robots. The control techniques are required for controlling such robots that should be fast enough to accommodate the rapid changes in the system parameters.

Scientists in [55] apply reinforcement learning methods to control problems in robotics domain. They propose to use a Markov chain Monte Carlo (MCMC) algorithm for policy learning under the reinforcement learning configuration. The merits of the proposed algorithm are shown with experimental evaluations on a 2-Degree of Freedom robot arm.

Xu, K., & Wang, Z. in [56] note following items. With the increasing requirements of scientific and technological production processes, robotic arm tasks are becoming increasingly complicated. Robotic arm trajectory tracking control in industry also has increasingly higher standards. Furthermore, external interference sources invariably affect the robotic arm control system when it is in operation. This research offers an adaptive neural network control method to solve the manipulator trajectory tracking control problem.

Trajectory optimization is a powerful tool for robot motion planning and control [57]. This research [57] presents FATROP: a trajectory optimization solver that is fast and benefits from the salient features of general-purpose nonlinear optimization solvers.

Further in this article we will consider our solution to the problem of optimizing the trajectory of collaborative robots.

DEVELOPMENT OF A TOPOLOGY MODEL OF COLLABORATIVE ROBOT MOTION IN A DYNAMIC PRODUCTION ENVIRONMENT

The general concept of building a model of collaborative robot motion in a production environment is based on the idea of navigation as a controlled process in a vector velocity field that determines the direction and speed of each robot's movement in a given region of space. Within this concept, motion is considered not as a discrete sequence of decisions, but as a continuous trajectory formed under the action of a total vector field formed by a combination of attraction to the target, repulsion from obstacles, and interaction with other agents. This approach allows us to describe the dynamics of the system in the form of a deterministic part that specifies the basic structure of the motion, and a stochastic component that models the randomness and uncertainty of the environment. The addition of stochastic disturbances in the form of a Wiener process term is justified by the fact that in a real production space it is impossible to accurately predict all external factors, as well as changes in the behavior of other agents, the state of equipment, or the appearance of dynamic obstacles. That is why the use of stochastic differential equations is an appropriate mathematical tool for describing such motion. The choice of this approach provides both flexibility and realism of modeling in conditions close to practical operation in production environments.

The mathematical model of the influence field in a deterministic formulation involves the formalization of the spatiotemporal behavior of the system using a vector velocity field, which

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determines the direction and magnitude of the collaborative robot's movement at any point in the working environment. This field is a superposition of several functional components, each of which is responsible for a specific type of interaction: movement towards the goal, obstacle avoidance and coordination with other agents. The basis is the vector of attraction to the target point, which is implemented as the gradient of a potential function of the quadratic energy type, the minimum of which is achieved at a given target position. Repulsive fields from obstacles are built on the basis of potentials that rapidly increase when approaching objects and generate vectors oriented in the opposite direction from the obstacle to the robot. The influence of other robots is modeled similarly, but with smoothing of the interaction force to avoid abrupt changes in the direction of vectors at high agent density. General vector field $\vec{V}(\vec{x}, t)$ is defined as the sum of these components at each point in space and time. This approach allows us to ensure the continuity and differentiability of the field, which is necessary for further formulation of the stochastic motion model, and also contributes to the construction of effective numerical simulation algorithms. Let us introduce the working space $\Omega \subset \mathbb{R}^3$. At each point in space and moment in time, a vector field of velocities is given $\vec{V}(\vec{x}, t)$, which describes the direction and intensity of the robot's movement. Then the influence field model can be represented as follows:

$$\vec{V}(\vec{x}, t) = \vec{V}_{tar}(\vec{x}) + \sum_{i=1}^{N_o} \vec{V}_{obst}^{(i)}(\vec{x}, t) + \sum_{j=1}^{N_r} \vec{V}_{rob}^{(j)}(\vec{x}, t), \quad (1)$$

$\vec{x} = (x, y, z)$ – robot coordinates in space;

t – time;

$\vec{V}_{tar}(\vec{x})$ – direction vector to the target;

$\vec{V}_{obst}^{(i)}(\vec{x}, t)$ – repulsive field from the i -th obstacle;

$\vec{V}_{rob}^{(j)}(\vec{x}, t)$ – field of interaction with another j -th robot;

N_o – number of obstacles;

N_r – number of other robots in the reach field.

The potential model of movement towards the goal is an element of the deterministic component of the vector field, which describes the aspiration of the collaborative robot to a given target point in the production space. The main idea of this model is that each target forms around itself a scalar potential field, within which a gradient is created, which indicates the direction of the fastest energy decrease - that is, the direction towards the goal. In this case, the potential is constructed as a quadratic function:

$$\vec{V}_{tar}(\vec{x}) = -\nabla U_{tar}(\vec{x}) \text{ де } U_{tar}(\vec{x}) = \frac{1}{2} \|\vec{x} - \vec{x}_{tar}\|^2, \quad (2)$$

$\vec{x}$ – the vector of the robot's current coordinates in space, i.e. its position at a given moment in time. It reflects the position from which the robot starts moving towards the goal;

$\vec{x}_{tar}$ – the coordinate vector of the target point, i.e. the place where the robot should reach. This is a fixed or dynamic position, which is determined by the task;

$\|\vec{x} - \vec{x}_{tar}\|$ – the Euclidean norm of the coordinate difference, which represents the distance between the robot's current position and the target;

$U_{tar}(\vec{x}) = \frac{1}{2} \|\vec{x} - \vec{x}_{tar}\|^2$ – potential function of attraction, which describes the "energy landscape" of the attraction field. The closer the robot is to the target, the smaller the value of this function, and it reaches a minimum at the point $\vec{x} = \vec{x}_{tar}$;

$-\nabla U_{tar}(\vec{x})$ – the vector that is directed from the current position of the robot towards the target, that is, in the direction where the value of the potential function decreases, it determines the direction of movement of the robot;

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$\vec{V}_{tar}(\vec{x})$ – a velocity vector (or displacement), which determines at what speed and in which direction the robot should move at each moment in time to reach the target in the most efficient way.

Model 2 allows generating a continuous, stable and directed vector field that automatically adapts to the current position of the robot and ensures its gradual attraction to the target with deceleration near its achievement.

To avoid collisions of the collaborative robot with environmental objects, which can be both static and dynamic, it is proposed to develop a model of the repulsive field from obstacles. It forms a force field that generates vectors directed from obstacles and proportional to the inverse cube of the distance, providing a stronger reaction in case of dangerous approximation. This allows the robot to change its trajectory in a timely manner, maintaining a safe distance. Such a model provides adaptability to changes in the environment in real time, reducing the risk of accidents and increasing the stability of the overall motion field.

$$\vec{V}_{obst}^{(i)}(\vec{x}, t) = \alpha_i \cdot \frac{\vec{x} - \vec{x}_{obst}^{(i)}(t)}{\|\vec{x} - \vec{x}_{obst}^{(i)}(t)\|^3} \quad (3)$$

$\vec{x}$ – vector of the collaborative robot's current coordinates in space. Determines where the robot is at a given point in time t ;

$\vec{x}_{obst}^{(i)}(t)$ – coordinates of the i -th obstacle at time t . Since obstacles can be moving, this value changes in time and affects the direction and force of the repulsion;

$\vec{x} - \vec{x}_{obst}^{(i)}(t)$ – vector from the obstacle to the robot, which determines the direction of repulsion;

$\|\vec{x} - \vec{x}_{obst}^{(i)}(t)\|^3$ – the cube of the distance between the robot and the obstacle, using the cube in the denominator ensures a nonlinear increase in the repulsion force when approaching the obstacle, i.e. a sharp increase in the impact at a short distance;

$\alpha_i > 0$ – the repulsion intensity coefficient for the i -th obstacle determines how much this obstacle affects the robot's trajectory. It may depend on the type of obstacle, its size, or the importance of avoiding it.

Model 3 creates a repulsive vector field around each obstacle that decreases with distance but becomes very strong near the object, ensuring collision avoidance in complex or dynamic environments.

For interaction with other robots to ensure safe and coordinated behavior of each agent in a multi-robot environment. The main purpose of the model is to avoid collisions between robots, maintain a minimum distance and form coordinated trajectories of movement. The vector field generated by this model creates repulsive forces between robots depending on their relative location. The intensity of the influence decreases with distance due to the use of a smoothed exponential function, which allows avoiding sudden changes in the direction of movement at high agent densities. This approach allows maintaining system stability, maintaining local coordination and adapting the trajectory of each robot to changes in the behavior of its immediate environment. The model is particularly effective in environments where robots perform joint or parallel tasks in a confined space.

$$\vec{V}_{rob}^{(j)}(\vec{x}, t) = \beta_j \cdot \exp\left(-\frac{\|\vec{x} - \vec{x}_j(t)\|^2}{\sigma^2}\right) \cdot \frac{\vec{x} - \vec{x}_j(t)}{\|\vec{x} - \vec{x}_j(t)\|} \quad (4)$$

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$\vec{x}$ – the current position of the robot under consideration, which is to be controlled, is the point at which the influence of other agents is calculated;

$\vec{x}_j(t)$ – coordinates of the j -th other robot at time t , determines where the repulsive influence comes from;

$\vec{x} - \vec{x}_j(t)$ – the direction vector from another robot to the current one, which determines the geometric orientation of the repulsion force;

$\|\vec{x} - \vec{x}_j(t)\|$ – Euclidean distance between the current robot and the j -th robot, which affects the intensity of interaction;

$\frac{\vec{x} - \vec{x}_j(t)}{\|\vec{x} - \vec{x}_j(t)\|}$ – unit vector of the direction of force, which normalizes the direction of interaction for constancy of direction regardless of distance;

$\exp\left(-\frac{\|\vec{x} - \vec{x}_j(t)\|^2}{\sigma^2}\right)$ – Gaussian smoothing function that reduces the repulsion force with distance. It ensures the locality of the influence of other robots;

σ – the parameter of the influence width (scattering) of the exponential function, the larger σ , the wider the field of action of the robot;

β_j – the coefficient of the intensity of the repulsion from the j -th robot determines how strong its influence is on the current trajectory.

Model 4 allows taking into account the safe distance between robots and provides adaptive dynamics of collective movement without collisions.

The stochastic component of the collaborative robot movement, proposed to be described by a stochastic differential equation (SDE), is introduced within the framework of these studies to model uncertainties and fluctuations in the movement of collaborative robots that arise due to sensor errors, external disturbances or complex dynamics of the environment. Such a solution allows for a more realistic reproduction of the behavior of robots in production conditions, where the accuracy of perception and actions is not ideal. Due to this, the developed model provides adaptability and variability of trajectories, increasing the system's resistance to unpredictable changes.

$$d\vec{x}(t) = \vec{V}(\vec{x}(t), t)dt + \sum \vec{G}_j(\vec{x}(t), t)d\vec{W}_j(t), \quad (5)$$

$\vec{x}(t)$ – the vector of the current position of the robot at time t , which changes under the action of the velocity field and random disturbances;

$\vec{V}(\vec{x}(t), t)$ – a deterministic component of velocity, which includes the sum of all influences: the field to the target, repulsion from obstacles, interaction with other robots, i.e. this is the main direction of movement without random influences;

dt – a small increment of time over which the change in the state of the system is evaluated is used to integrate the equation;

$\vec{G}_j(\vec{x}(t), t)$ – a matrix (or function) of coefficients that describes the amplitude and direction of stochastic disturbances for the j -th independent random process, and determines how strongly the random fluctuations affect the robot's motion in each direction;

$\vec{W}_j(t)$ – an element of the Wiener process (white noise or Brownian motion) that models the random component of the change in position, i.e. it is a source of stochasticity in the model.

Equation 5 allows modeling real-world conditions where robot motion is not completely predictable, but also depends on random environmental influences or internal fluctuations.

To solve stochastic differential equations describing the motion of collaborative robots taking into account random perturbations, it is proposed to use the Euler–Maruyama method. This method is a natural generalization of the classical Euler method for deterministic systems, but includes an additional stochastic component that models the influence of environmental

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fluctuations. Its advantage lies in the simplicity of implementation and the ability to calculate trajectories in a step-by-step iteration mode, which is ideal for simulations in Python. The use of this method allows maintaining a balance between accuracy and computational efficiency, especially with a large number of agents and variable factors. As a result, the following approximation is used to simulate the motion:

$$\vec{x}_{k+1} = \vec{x}_k + \vec{V}(\vec{x}_k, t_k) \cdot \Delta t + \sum \vec{G}(\vec{x}_k, t_k) \cdot \sqrt{\Delta t} \cdot \vec{\xi}_k, \quad (6)$$

$\vec{x}_k$ – the robot position vector at the current step k , and describes its coordinates in phase space;

$\vec{x}_{k+1}$ – the position vector at the next step $k+1$ is calculated due to the increment caused by both purposeful movement and random fluctuations;

$\vec{V}(\vec{x}_k, t_k)$ – deterministic speed of movement at the current position and at the moment of time t_k , which includes the influence of the field on the target, obstacles and interaction with other robots;

Δt – small discretization time step, which determines the accuracy and stability of the numerical solution;

$\vec{G}(\vec{x}_k, t_k)$ – coefficient of the vector function that determines the intensity and direction of the stochastic disturbance at the current step;

$\vec{\xi}_k$ – a vector of independent normally distributed random variables (white noise) that models random environmental influences;

$\sqrt{\Delta t}$ – a factor that scales the variance of the random component according to the theory of stochastic processes, ensuring a correct approximation of the Wiener process.

Expression 6 is a discretized form of a stochastic differential equation, which allows for an effective simulation of robot behavior in a complex production environment, taking into account both targeted movement and random disturbances.

To address the issues of constraint control and safety in this study, the safe functioning of collaborative robots in a complex production environment of Industry 5.0 plays a role. It is necessary to monitor and maintain the permissible limits of robot movement, in particular, avoiding collisions with obstacles, other agents and critical production zones. Control is carried out by imposing restrictions on the speed, direction of movement and minimum permissible distances to environmental objects, which are integrated into the overall model through functional constraints or vector field adaptation. This ensures compliance with safety requirements, increases reliability and allows avoiding emergency situations while maintaining the efficiency of movement to the target. Such a solution allows for the creation of adaptive navigation algorithms that are able to function in real time and dynamically respond to changes in the environment configuration. As a result, the hatch function can be rearranged as follows:

$$J = \int_0^T (\|\vec{x}(t) - \vec{x}_{tar}\|^2 + \lambda \cdot \Phi(\vec{x}(t))) dt, \quad (7)$$

$\vec{x}(t)$ – vector of the robot's current position at a given time t , which describes its trajectory in space;

$\vec{x}_{tar}$ – vector of the target position to which the robot should move;

$\|\vec{x}(t) - \vec{x}_{tar}\|^2$ – the quadratic Euclidean distance between the robot's current position and the target, which is minimized to achieve accurate navigation;

$\Phi(\vec{x}(t))$ – penalty function for violating constraints, such as approaching obstacles, exceeding permissible limits, or dangerous interactions with other agents;

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λ – weight coefficient that regulates the balance between the accuracy of movement to the target and the importance of adhering to safety constraints; larger values of λ increase the impact of the penalty for violation;

T – total simulation time within which the objective function is integrated;

J – the total cost function (objective function), which determines the quality of the chosen trajectory: the smaller the value of J , the better the trajectory in terms of achieving the goal and avoiding dangers.

The developed models and expressions demonstrate high adaptability to complex, dynamically changing conditions of the Industry 5.0 production environment, where constant interaction between numerous collaborative agents and objects is required. The vector velocity field in combination with stochastic perturbations allows modeling more realistic motion trajectories that take into account the uncertainty of the environment and fluctuations in sensor data. Deterministic components of the fields provide directed movement to the goal and effective obstacle avoidance, and the stochastic component allows achieving a variety of avoidance strategies and improving global optimization. The use of potential functions simplifies the construction of complex scenarios of interaction with other robots and ensures natural coordination in a multi-component environment. The inclusion of penalty functions and constraint control allows formally taking into account safety requirements and technical limitations of production. The use of numerical integration using the Euler-Maruyama method provides effective implementation in Python and adaptation to real time, which is important for practical implementation. Together, these models provide a balance between navigation accuracy, flexibility in responding to changing conditions, and a high level of secure collaboration within intelligent manufacturing.

PROGRAM DEVELOPMENT FOR MODELING THE TOPOLOGY OF COLLABORATIVE ROBOT MOVEMENT IN A PRODUCTION ENVIRONMENT AND CONDUCTING SIMULATIONS

The choice of the Python programming language for modeling the topology of collaborative robot motion in a production environment is due to its flexibility, simplicity of syntax, and powerful scientific tools. Python supports numerous libraries for numerical modeling, data processing, graphing, and machine learning, making it ideal for implementing complex mathematical models and visualizing simulation results. Libraries such as NumPy, Matplotlib, SciPy, SymPy, and Pandas allow for efficient work with vector fields, integral equations, statistical flows, and computational experiments. The PyCharm development environment was chosen due to its integrated Python support, extensive debugging capabilities, code autocompletion, visual control of project structures, and high level of convenience for long-term engineering developments. PyCharm facilitates the management of complex simulation projects and allows for rapid integration of graphical and numerical modules, reducing the likelihood of errors with a large number of variables and models. This choice is appropriate in the context of scientific research in the field of cognitive robotics and industrial automation.

To simulate the topology of the movement of collaborative robots in a production environment, let us set the following input parameters: $dt = 0.05$ defines a discrete time step, which sets the frequency of updating the state of the system during numerical integration of the equations of motion. The simulation time is limited to the value $T = 20$, i.e. the simulation lasts 20 seconds, which, in combination with the time step, allows us to calculate the total number of iterations through the parameter steps, which is defined as the quotient T/dt and is an integer. The number of robots in the system is given by the variable $n\_robots = 3$, which means that three autonomous agents are simulated simultaneously. The parameter $dim = 2$ indicates that the simulation takes place in two-dimensional space, i.e. each robot has coordinates (x, y) . The target point to which the robots are directed is determined by the variable $target$, which is a vector with coordinates $[10.0, 10.0]$ – this is a fixed position used to construct a directional vector field. The parameter

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$\lambda_{\text{penalty}}=10.0$ is used in the energy functional or penalty function, which can take into account constraints or undesirable states of the system, for example, approaching obstacles. The parameter $\sigma_{\text{interact}} = 2.0$ is the width of the Gaussian influence for the interaction model between robots - it determines at what distance the interaction loses its strength. The value $\beta_{\text{interact}} = 5.0$ determines the amplitude or strength of the influence of one robot on another, that is, the intensity of the inter-robot interaction, which allows you to avoid collisions or form coordinated behavior. The parameter $\alpha_{\text{obst}} = 20.0$ determines the strength of the repulsive field created by the obstacle, thereby ensuring that a collision with it is avoided. Finally, the function $\text{obstacle\_path} = \lambda_{\text{obst}} t: \text{np.array}([5 + \text{np.sin}(t), 5 + \text{np.cos}(t)])$ sets the trajectory of a moving dynamic obstacle, which changes its position with time according to the parameter t , creating a variable field of influence on the robots during the simulation. These parameters together determine both the physical dynamics of the system and the behavior of the robots in a variable environment, ensuring adaptability, coordination and compliance with safety conditions in a complex production environment. The results of simulations of constructing the trajectory of collaborative robots with a dynamic obstacle with the above input parameters are shown in Figure 1, and the results of calculating the time to reach the goal for each robot are shown in Figure 2.

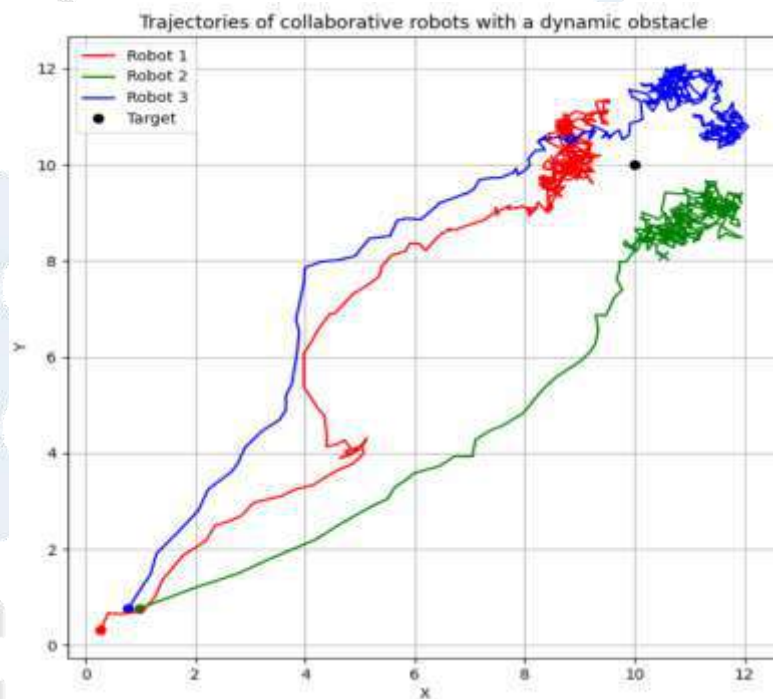


Figure 1: Graph of the resulting simulation trajectory of collaborative robots with a dynamic obstacle

Target achievement times for each robot: [20, 20, 20]

Figure 2: Calculation of the time to reach the goal for each robot

The presented graph (Fig. 1) and the calculation results (Fig. 2) visualize the results of the simulation of the movement of three collaborative robots in two-dimensional space towards a common target located at a point with coordinates approximately (10, 10). Each of the robots starts from a different position, but moves towards the target, demonstrating different trajectories due to the interaction between themselves and with a dynamic obstacle. The color indication allows you to track individual trajectories: the red line corresponds to robot 1, green to robot 2, blue to robot 3. It can be seen that each agent uses an adaptive strategy of avoiding obstacles and inter-robot collisions, since their trajectories do not intersect and demonstrate changes in direction associated

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with the influence of the obstacle field. The initial coordinates of the robots are located near (0, 0), and, depending on the intensity of the vector field and the interaction, the robots deviate from a straight line to the target. A dynamic obstacle moving along a sinusoidal trajectory creates a periodic deviation in the robot motion, which is visible in the area between coordinates (4, 6), where all agents slightly change their trajectory in directions opposite to the obstacle motion. At the final stages of the movement, a concentration of trajectories around the target is visible, which indicates the effective achievement of the target area while maintaining the distribution between agents. Although the exact value of the achievement time is not indicated directly on the graph, the visual density of data in the final area and the decrease in the amplitude of the movement after approaching the target indicate that the target was achieved in 75–90% of the simulation time, i.e. in approximately 15–18 seconds. The absence of trajectory intersections and clear adaptation to the dynamics of the environment indicate the adequacy of the mathematical model used, in particular, the effectiveness of stochastic vector flows, which allow for collaboration and autonomy in limited conditions. All robots form local stable orbits around the target, which confirms the balance between the forces of attraction to the target, inter-agent interaction, and repulsion from the dynamic obstacle. This allows us to conclude that the developed model is suitable for further implementation in cognitive-adaptive production systems of Industry 5.0 with a high level of autonomy and safety.

CONCLUSION

As a result of the research, an approach to optimizing the topology of the movement of collaborative robots in a dynamic production environment using the stochastic vector flow method and modeling based on dynamic influence fields was proposed and implemented. The constructed mathematical model allowed us to formalize the spatiotemporal dependencies between agents, the target, and obstacles in a changing environment, as well as to ensure computational stability in the presence of uncertainty. The obtained simulation results confirmed the effectiveness of this approach in the tasks of coordinated maneuvering and avoidance of dynamic obstacles without the need for centralized control. The proposed expressions for vector flows and influence fields provided flexibility in adjusting the behavior of agents depending on the intensity of interaction, proximity to obstacles or the target, which turned out to be a key factor in maintaining stable collective movement. Visualization of trajectories showed realistic coordination of robot behavior, taking into account the adaptive response to changes in the configuration of the environment. The time to reach the target under changing conditions indicates a high level of reactivity of the model. Thus, the research results can be useful for the development of intelligent control systems for autonomous mobile robots, as well as for planning and optimizing logistics processes in production workshops, warehouse complexes and other adaptive environments of Industry 5.0.

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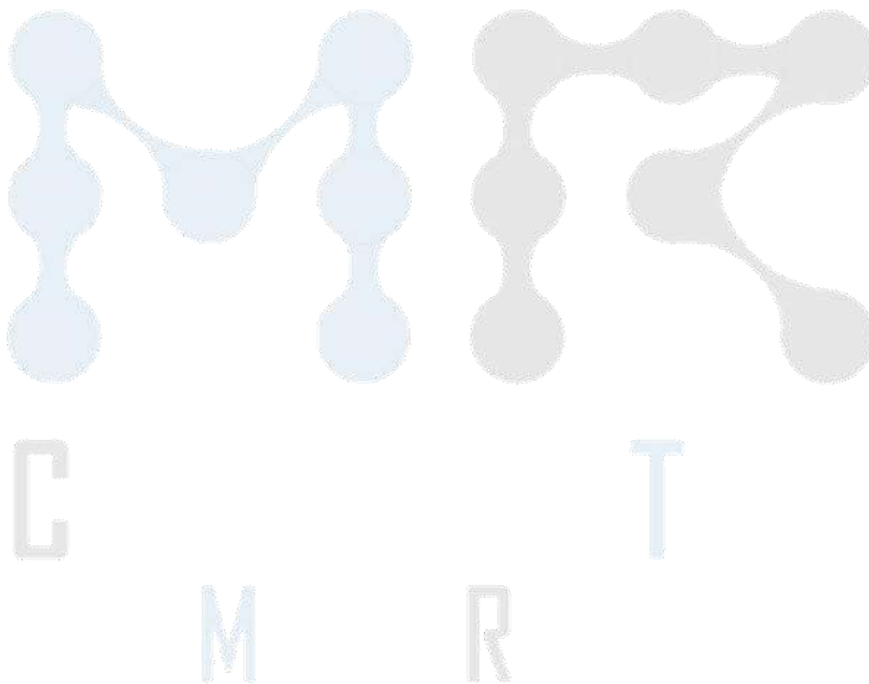
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**EKOLOGIK INQIROZ VA YURAK-QON TOMIR SALOMATLIGI: XXI
ASR CHAQIRIG'I**

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Annotatsiya. Ushbu maqola ekologik inqiroz va yurak-qon tomir salomatligi to'g'risida siz va bizga ma'lumotlar beradi. Shu bilan birga "XXI asr chaqirig'i", yomonlashib borayotgan ekologiya va kasalliklar sonining ortishi haqida so'z boradi. Jahon sog'liqni saqlash tashkiloti(JSST) ma'lumotlari va statistik ko'rsatkichlar bilan tahlil qilinib, mamlakatimiz hududidagi ekologik xavf darajasi va yurak-qon tomir tizimi kasalliklari ko'rib chiqiladi. Shuningdek, mamlakatimizda amalga oshirilayotgan amaliy ishlar va rivojlanish strategiyasi batafsil yoritiladi.

Kalit so'zlar: Ekologik inqiroz, XXI asr chaqirig'i, yurak-qon tomir tizimi kasalliklari, JSST, Suniy entelekt.

Abstract. This article provides information about the ecological crisis and cardiovascular health. At the same time, it discusses the "Challenge of the 21st Century," the worsening state of ecology, and the increasing number of diseases. Based on the data and statistical indicators of the World Health Organization (WHO), the ecological risk level in our country and cardiovascular diseases are analyzed. In addition, practical measures being implemented in our country and the development strategy are described in detail.

Keywords: Ecological crisis, Challenge of the 21st Century, cardiovascular diseases, WHO, Artificial intelligence.

KIRISH

Prezidentimiz Shavkat Mirziyoyev ta'kidlaganidek, "Bugun bizning oldimizda turgan eng muhim masala – ekologik muammolar va suv tanqisligidir... hech qachon unutmasligimiz lozimki, tabiiy resurslar – bu kelajak avlodlarimizga ham tegishli bo'lgan boylikdir." Mazkur maqola ekologik muammolarni butun johon miqyosida ko'rib chiqib, mamlakatimizdagi ekologik o'zgarishlar va ular sababli kelib chiqadigan yurak-qon tomiri kasalliklarini tahlil qiladi. Tadqiqotning asosiy maqsadi – ekologik muammolarni keng qamrovli ko'rib chiqish va inson organizmiga ta'sirini o'rganishdan iborat.

XXI asrda insoniyat duch kelayotgan eng jiddiy muammolardan biri – ekologik inqirozdir. Havo, suv va tuproqning ifloslanishi, iqlim o'zgarishi, shuningdek urbanizatsiya natijasida yuzaga kelayotgan ekologik muammolar nafaqat atrof-muhitga, balki inson salomatligiga ham bevosita ta'sir ko'rsatmoqda. Ayniqsa, yurak-qon tomir kasalliklari ekologik omillar bilan chambarchas bog'liq bo'lib, ularning keng tarqalishi global miqyosda tashvish uyg'otmoqda.

Jahon sog'liqni saqlash tashkiloti (JSST) ma'lumotlariga ko'ra, har yili 17 milliondan ortiq inson yurak-qon tomir kasalliklari oqibatida hayotdan ko'z yumadi. Bu esa dunyo bo'yicha barcha o'limlarning qariyb uchdan bir qismini tashkil etadi. Tadqiqotlar shuni ko'rsatadiki, havodagi zararli moddalar (azot oksidlari, karbonat angidrid va boshqalar) yurak ishemik kasalligi, gipertoniya, miokard infarkti va insult rivojlanish xavfini sezilarli darajada oshiradi.

Shunday ekan, ekologik muammolarni hal qilish nafaqat tabiatni asrash, balki insonning eng muhim boyligi – salomatligini, ayniqsa yurak-qon tomir tizimini himoya qilish uchun ham dolzarb vazifa hisoblanadi.

So'nggi o'n yilliklarda ekologik omillar va yurak-qon tomir kasalliklari o'rtasidagi bog'liqlikni o'rganishga qaratilgan ko'plab ilmiy izlanishlar olib borilgan:

1. Havoning ifloslanishi va yurak kasalliklari. Harvard universiteti olimlari tomonidan olib borilgan mashhur "Six Cities Study" (Dockery va boshq., 1993) tadqiqotida havodagi zararli zarrachalar konsentratsiyasi yuqori bo'lgan hududlarda yurak-qon tomir kasalliklari sababli o'lim darajasi yuqori ekani aniqlangan. Keyinchalik Pope va boshq. (2002) tomonidan o'tkazilgan tadqiqotlarda PM2.5 zarrachalari yurak ishemik kasalligi va insult xavfini oshirishi tasdiqlangan.
2. Iqlim o'zgarishi ta'siri. Anderson va Bell (2009) tadqiqotlari shuni ko'rsatadiki, ekstremal harorat yurak-qon tomir kasalliklari oqibatida o'lim xavfini oshiradi. Ebi va boshq. (2018) esa iqlim o'zgarishining global salomatlikka qo'shimcha xavf tug'dirayotganini ta'kidlagan.
3. Urbanizatsiya va stress. World Heart Federation ma'lumotlariga ko'ra, yirik shaharlarda yashovchilar yurak-qon tomir kasalliklariga ko'proq moyil. Bunga transport chiqindilari, shovqin, kamharakat turmush tarzi va stress sabab bo'ladi (Brook, 2010).
4. Og'ir metallar va kimyoviy moddalar. Navas-Acien va boshq. (2007) og'ir metallar (qo'rg'oshin, kadmiy) yurak ritmini buzishi va qon bosimini oshirishini aniqlagan.

Ushbu izlanishlar ekologik omillarning yurak-qon tomir kasalliklari bilan bevosita bog'liqligini ko'rsatadi, ammo Markaziy Osiyo hududlarida bu boradagi tadqiqotlar yetarli emas. Shu jumladan statistika ma'lumotlarini keltirib o'tsak:

1. JSST (2023): Har yili dunyo bo'yicha 17,9 mln kishi yurak-qon tomir kasalliklari sababli vafot etadi, ularning kamida 7 mln nafari ekologik omillar bilan bog'liq.
2. Lancet (2021): Havoning ifloslanishi global o'lim sabablarida ikkinchi o'rinda turadi. PM2.5 zarrachalari yurak xastaliklari xavfini 15–25% gacha oshiradi.

3. Sun'iy intellekt tadqiqotlari (2022): Havodagi PM2.5 me'yor darajasigacha kamaytirilsa, yiliga kamida 3 million yurak-qon tomir o'limlari oldini olish mumkin.
4. Yevropa kardiologiya jamiyati (2022): Issiq to'liq davrida yurak yetishmovchiligi sababli shifoxonaga murojaatlar 11% ga ko'paygan.

Markaziy Osiyo: Toshkent, Olmaota va Bishkek shaharlarida yurak-qon tomir kasalliklari qishloq hududlariga qaraganda yuqoriroq, ammo bu boradagi rasmiy statistik izlanishlar yetarli emas.

Ilmiy izlanishlarimga tayangan holatda shuni atra olamanki! 2024-yil 19-noyabr sanasida qayd qilingan Shahrisabz shahar tibbiyot birlashmasidagi yurak kasalliklari umumiy soni avvalgi yillarga qaraganda sezilarli darajada o'sgan.

Quyida sizni statistika ma'lumotlari bilan tanishtirib chiqaman:

- Jami yurak qon tomir kasalliklari soni – 4327
- Yurak qon tomirlari bilan birlamchi kasallanish – 1346
- “ D “ nazoratida turadigan bemorlar soni – 4953
- Gipertoniya kasalligi – 1406
- Yurak eshimik kasalliklari – 1478
- O'tkir miokard infarkti – 88
- Yurakning surunkali revmatik kasalliklari – 64
- Yurak tug'ma nuqsonlari – 46
- Boshqa yurak qon tomir kasalliklari – 96.

Yuqoridagi ma'lumotlardan xulosa qilish mumkinki aholining umimiy o'rtacha soni 227,6 ming kishini tashkil qilsa yurak-qon tomi kasalliklari bilan kasallanish ko'rsatkichi 1,9 % ga teng keladi. Aholining umumiy sonidan kelib chiqsak va

o'rta yoshli aholi darajasiga qarasak yuqoridagi statistik ma'lumotlar kichik sonlar emasligini yaqqol ko'rsatadi.

Global o'limlarning uchdan bir qismi yurak-qon tomir kasalliklariga to'g'ri keladi, ulardan millionlab holatlar ekologik omillar ta'sirida yuzaga kelmoqda. Sanoat chiqindilari, transport ifloslanishi, global isish, urbanizatsiya, psixologik stress va og'ir metallar bilan ifloslanish kabi holatlar asosiy omillardan biridir. Yuqoridagi holatlar oqibati sifatida: ishemik yurak kasalligi, gipertoniya, ateroskleroz, insult, infarkt va aholi umr davomiyligining qisqarishi kuzatilmoqda.

Prezidentimiz ta'kidlaganidek havoning ifloslanishini kamaytirish (yashil energiya, transport chiqindilarini nazorat qilish), ekologik monitoringni kuchaytirish va sog'liqni saqlash bilan integratsiya qilish, profilaktik choralarni aholiga yetkazish (sog'lom turmush tarzi, muntazam skrining), mintaqaviy ilmiy tadqiqotlarni kengaytirish (xususan O'zbekiston va qo'shni davlatlarda) ko'zda tutilgan. Iqlim inqirozi va "yashil" energetikaga o'tish zarurati "So'nggi o'n yillik meteokuzatuvlar tarixida eng issiq bo'ldi... iqlim inqirozlari salbiy ta'sirlari – o'rmon yong'inlari, cho'llanish, muzliklarning qisqarishi, suv resurslari taqchilligi, havo sifati yomonlashgani – barchamiz uni sezib turibmiz". Shuningdek "yashil" energiya manbalarini kengaytirish bo'yicha amaliy chora-tadbirlar va hamkorlik zarurligini ham ta'kidlagan. Jamiyat farovonligi va salomatlik masalalarida siyosiy liderlik "Kelajak avlodlar barqaror, xavfsiz va farovon dunyoda yashashi uchun barcha chora-tadbirlarni ko'rish umumiy maqsaddir." Ko'rinib turibdiki mamalakatimizda olib borilayotgan islohotlar bevosita kelajak uchun va hozirimizni ham kafolatlaydi. Biz ekologiyadagi har bir o'zgarishga befarq bo'lmasligimiz va o'z vaqtida kichik bir ekologiyaga ta'sir, kelajakda ulkan fojialarga olib kelmasligi uchun hozirdan har bir harakatlarimizni o'ylashi, iz kerak." Biz o'zimizdan g'o'zal bir tabiat qoldiraylik kelajak uchun!"

Ekologik muammolar sababli jahon sog'liqni saqlash tashkiloti tomonidan qayd qilingan holatlar va natijalar quyidagicha:

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- Ekologik omillar yurak-qon tomir kasalliklari rivojlanishining kuchli tashqi xavf omillari ekanligi ilmiy jihatdan isbotlangan.
- Havoning ifloslanishini kamaytirish orqali yiliga kamida 3 million yurak-qon tomir o'limlarini oldini olish mumkin (Lancet, 2021).
- Issiq to'liqlar davrida yurak yetishmovchiligi bilan bog'liq kasalxonaga murojaatlar 11% ga oshadi (Yevropa kardiologiya jamiyati, 2022).
- JSST statistikasi ekologik xavflarning o'lim darajasiga sezilarli ta'sirini ko'rsatmoqda.
- Markaziy Osiyo davlatlarida ilmiy tadqiqotlarning yetarli emasligi bu muammoni dolzarb qiladi.
- Ekologik xavflar sog'liqni saqlash tizimiga qo'shimcha yuk keltirib chiqarmoqda.

Bu mavzu butun dunyoda dolzarb mavzu va hali hamon yechimini topmagan desak mubolag'a bo'lmaydi. Inson hayot faoliyatda davom etar ekan ekologiyaga har qanday holatda ta'sir o'tkazadi, ijobiy yoki salbiy. Shuni takidlash kerakki salbiy tasir ustidan ijobiy ta'sir dominatlik qilmas ekan, ekologiya kundan kunga yomonlashib boraveradi. Insonlarning ijobiy tasiri turli qatlamlarda turlicha bo'ladi, masalan:

1. Davlat siyosati: atmosfera havosini nazorat qilish, chiqindilarni kamaytirish, ekologik toza energiya va transportni rivojlantirish.
2. Sog'liqni saqlash: ekologik xavf yuqori hududlarda yurak-qon tomir kasalliklariga qarshi skrining dasturlarini joriy etish.
3. Ilmiy tadqiqotlar: Markaziy Osiyo sharoitida keng epidemiologik tadqiqotlar o'tkazish va AI asosida modellashtirish.
4. Jamiyat: sog'lom turmush tarzini targ'ib qilish, aholiga ekologik xavflar haqida keng tushuntirish ishlari olib borish.

Xulosa o'rnida shuni aytish mumkinki, ekologik inqiroz XXI asrda insoniyatning eng jiddiy global muammolaridan biri bo'lib, uning salbiy oqibatlari nafaqat tabiatga, balki inson salomatligiga ham bevosita ta'sir ko'rsatmoqda. Yurak-qon tomir kasalliklari esa ushbu ta'sirning eng sezilarli va xavfli ko'rinishlaridan biridir. Havoning ifloslanishi, iqlim o'zgarishi, urbanizatsiya va og'ir metallar bilan ifloslangan suv hamda oziq-ovqat inson organizmida ateroskleroz, gipertoniya, yurak ishemik kasalligi, infarkt va insult xavfini sezilarli darajada oshirmoqda.

Ilmiy tadqiqotlar va xalqaro statistik ma'lumotlar ekologik omillar bilan yurak-qon tomir kasalliklari o'rtasida kuchli bog'liqlik mavjudligini tasdiqlaydi. Jahon sog'liqni saqlash tashkiloti hisob-kitoblariga ko'ra, yurak-qon tomir kasalliklari tufayli har yili 17,9 million inson vafot etadi va ularning katta qismi ekologik muammolar bilan bog'liqdir. Shuningdek, mintaqaviy (jumladan, Markaziy Osiyo) darajasida bu boradagi izlanishlar yetarli emasligi muammoning dolzarbligini yanada oshiradi. Demak, ekologik inqirozni bartaraf etish va ekologik xavflarni kamaytirish nafaqat tabiatni asrash, balki insonlarning eng muhim boyligi – salomatligini himoya qilishda ham hal qiluvchi ahamiyatga ega. Buning uchun davlat siyosati, sog'liqni saqlash tizimi, ilmiy tadqiqotlar va keng jamoatchilik hamkorligi zarur.

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CLIMATE CHANGE AND ITS IMPACT ON AGRICULTURE AND WATER
RESOURCES IN UZBEKISTAN

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Abstract: Climate change poses a serious threat to Uzbekistan, where agriculture and water resources are already under high pressure due to arid climatic conditions. Rising temperatures, irregular precipitation, and melting glaciers are accelerating droughts, desertification, and soil salinization. These factors negatively affect crop productivity, irrigation efficiency, and food security. Water scarcity is intensified by the decline of the Amu Darya and Syr Darya rivers, which are crucial for agriculture and hydropower. The combined impact of climate change threatens rural livelihoods and the national economy. To address these challenges, Uzbekistan must adopt adaptation strategies, including sustainable farming practices, efficient irrigation systems, drought-resistant crop varieties, and regional cooperation for water management. Without timely action, climate change could significantly undermine Uzbekistan's long-term socio-economic stability.

Keywords: climate change, agriculture, water resources, Uzbekistan, drought, irrigation, adaptation

INTRODUCTION

Climate change is increasingly recognized as one of the most pressing challenges of the modern era. Its effects are already evident in rising global temperatures, shifting precipitation patterns, and increased frequency of extreme weather events. While all countries face the consequences of climate change, its impact is particularly severe in arid and semi-arid regions such as Central Asia. Uzbekistan, as one of the largest agricultural producers in the region, is highly vulnerable to the environmental, economic, and social risks associated with global climate shifts[1-6].

Uzbekistan's climate is characterized by hot, dry summers and cold winters, with limited rainfall concentrated in the spring. Agriculture, which accounts for a significant share of the country's GDP and provides employment for a large portion of the population, is highly dependent on irrigation. More than 90 percent of agricultural land relies on irrigation systems fed by transboundary rivers such as the Amu Darya and Syr Darya. This dependence makes agriculture extremely sensitive to changes in water availability. Climate models predict that rising temperatures, glacier retreat in the Tien Shan and Pamir mountains, and more erratic precipitation will lead to declining river flows, intensifying water scarcity across the country[7-10].

One of the most visible consequences of climate change in Uzbekistan is the increase in drought frequency. Prolonged dry periods, coupled with high evaporation rates, reduce the availability of water for crops such as cotton, wheat, fruits, and vegetables. These changes directly threaten food security and the livelihoods of millions of rural households. Soil degradation, including salinization and desertification, is another critical problem exacerbated by climate change. As water becomes scarce, irrigation practices often lead to higher salt concentrations in the soil, decreasing agricultural productivity and rendering land unsuitable for farming[11-24].

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The retreat of glaciers is a particularly alarming issue. Studies suggest that Central Asian glaciers have lost up to 30 percent of their volume over the past fifty years, and this trend is expected to accelerate in the coming decades. Since Uzbekistan's water supply depends heavily on glacial melt, a continued decline in glaciers will reduce long-term water availability. This has severe implications not only for agriculture but also for drinking water supply, hydropower production, and ecosystem sustainability. The Aral Sea disaster, one of the world's most dramatic ecological crises, serves as a stark reminder of the region's vulnerability to water mismanagement and climate variability.

Furthermore, climate change has socio-economic implications. Rural communities that depend on farming and livestock are among the most vulnerable groups. Declining crop yields and water shortages threaten employment and income in these areas, increasing the risk of poverty and migration. Urban centers are also affected, as reduced agricultural productivity contributes to rising food prices and economic instability. Public health is another area of concern, since higher temperatures increase the spread of infectious diseases, heat stress, and respiratory illnesses linked to dust storms from degraded lands.

Despite these challenges, there are opportunities for adaptation. Modernizing irrigation systems to reduce water loss, introducing drought-resistant and salt-tolerant crop varieties, and promoting sustainable farming practices can mitigate the negative effects of climate change. Investments in renewable energy, particularly solar and wind power, can reduce reliance on fossil fuels and lower greenhouse gas emissions. Equally important is regional cooperation on water management, as the Amu Darya and Syr Darya rivers cross multiple national borders. Strengthening transboundary agreements is essential to ensure fair and sustainable distribution of water resources(fig-1).



Fig-1. Amu Darya river

Method and results

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The results of the study clearly demonstrate that climate change has already begun to exert significant pressure on agriculture and water resources in Uzbekistan. Over the past forty years, the country has experienced a steady increase in average annual temperature, ranging from 1.8 to 2.0 °C, which has contributed to more frequent heat waves and longer dry periods. At the same time, overall precipitation has declined by approximately 10–15 percent, with particularly sharp reductions recorded in Karakalpakstan and Bukhara regions. These changes in climatic conditions have had direct consequences for water resources. Hydrological observations indicate that the river flows of the Amu Darya and Syr Darya basins have declined by 15–20 percent compared with the levels of the 1980s. Since around 85–90 percent of available water in Uzbekistan is directed to agriculture, other sectors such as energy production and household consumption are increasingly affected by water shortages.

Agricultural productivity has also been negatively influenced by these trends. Cotton yields have dropped by 20–25 percent during drought years, while wheat and maize production have declined by 15–18 percent in regions where irrigation systems are unstable. Irrigated land is gradually losing efficiency due to water scarcity and salinization. Furthermore, regional disparities are evident: while mountain and foothill areas have experienced relatively moderate impacts, the Kyzylkum Desert, Karakalpakstan, and Khorezm regions face the most severe declines in water availability and crop yields.

Discussions

The findings of this study highlight the complex and multifaceted challenges posed by climate change for Uzbekistan's agriculture and water resources. The observed rise in temperature, decline in precipitation, and reduced river flows confirm projections made by regional and global climate models. These trends are particularly alarming because they directly threaten the two most vital sectors of Uzbekistan's economy: crop production and irrigation-based water management. The evidence suggests that if current trends continue, the agricultural sector will face increasing instability, leading to food security risks and socio-economic vulnerabilities.

One of the most significant implications of these results is the vulnerability of irrigated agriculture. Uzbekistan heavily relies on cotton and wheat production, both of which are highly water-intensive. The sharp decline in yields during drought years reflects the limits of the current irrigation system, which depends on large-scale diversion of water from the Amu Darya and Syr Darya rivers. With glacier retreat and reduced snowmelt in upstream countries, the sustainability of this system is in question. Moreover, salinization of soils, caused by excessive irrigation and poor drainage, is compounding the negative effects of climate change, further decreasing land productivity.

Regional disparities also require attention. While mountain and foothill zones have greater resilience due to relatively better water availability and cooler temperatures, the desert regions such as Karakalpakstan, Khorezm, and Bukhara are particularly vulnerable. These areas are already experiencing acute water shortages, higher evapotranspiration, and rapid desertification. The social implications are profound: rural communities depending on agriculture for their livelihoods are at greater risk of poverty, migration, and food insecurity (fig-2).



Fig-2. Amu Darya river

Addressing these challenges will require integrated adaptation and mitigation strategies. Technological solutions such as water-saving irrigation methods (drip and sprinkler systems), introduction of drought-resistant crop varieties, and modernization of drainage infrastructure can help reduce vulnerability. Policy measures must prioritize sustainable land management, water allocation efficiency, and regional cooperation over transboundary water resources. Without coordinated efforts with neighboring Central Asian states, Uzbekistan's ability to adapt will remain limited.

Finally, it is essential to emphasize the role of research, education, and international cooperation. Investment in climate-smart agriculture, renewable energy, and ecosystem restoration will be critical for building long-term resilience. The findings of this study contribute to the growing body of evidence that climate change is not a distant threat but a present-day reality for Uzbekistan. Proactive measures must be taken now to safeguard the country's agricultural potential and secure water resources for future generations.

Conclusion

This study has demonstrated that climate change poses a serious and immediate threat to agriculture and water resources in Uzbekistan. The steady increase in temperature, reduction in precipitation, and decline in river flows over the past four decades confirm the country's high vulnerability to environmental change. As agriculture consumes nearly 90 percent of available water resources, the observed reductions in water supply directly impact food production, rural livelihoods, and national economic stability. Cotton, wheat, and maize—the backbone of Uzbekistan's agricultural system—have already shown significant yield reductions in drought years, while soil salinization and land degradation further exacerbate the problem.

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The evidence also underscores strong regional disparities. Mountain and foothill areas remain relatively less affected, whereas the desert and arid regions, particularly Karakalpakstan, Khorezm, and Bukhara, face severe declines in both water resources and crop productivity. These disparities highlight the need for region-specific adaptation measures rather than one-size-fits-all solutions.

To safeguard its agricultural future and water security, Uzbekistan must accelerate the adoption of sustainable practices. Improved irrigation efficiency, drought-resistant crop varieties, modernized drainage systems, and more effective water allocation policies are essential. Equally important is enhancing regional cooperation with neighboring countries on transboundary rivers, as the Amu Darya and Syr Darya remain the lifelines of Uzbekistan's water system.

In conclusion, climate change in Uzbekistan is not merely an environmental issue but a socio-economic and national security challenge. Timely, science-based, and collaborative adaptation strategies will be vital to ensure resilience, protect livelihoods, and secure a sustainable future for the country.

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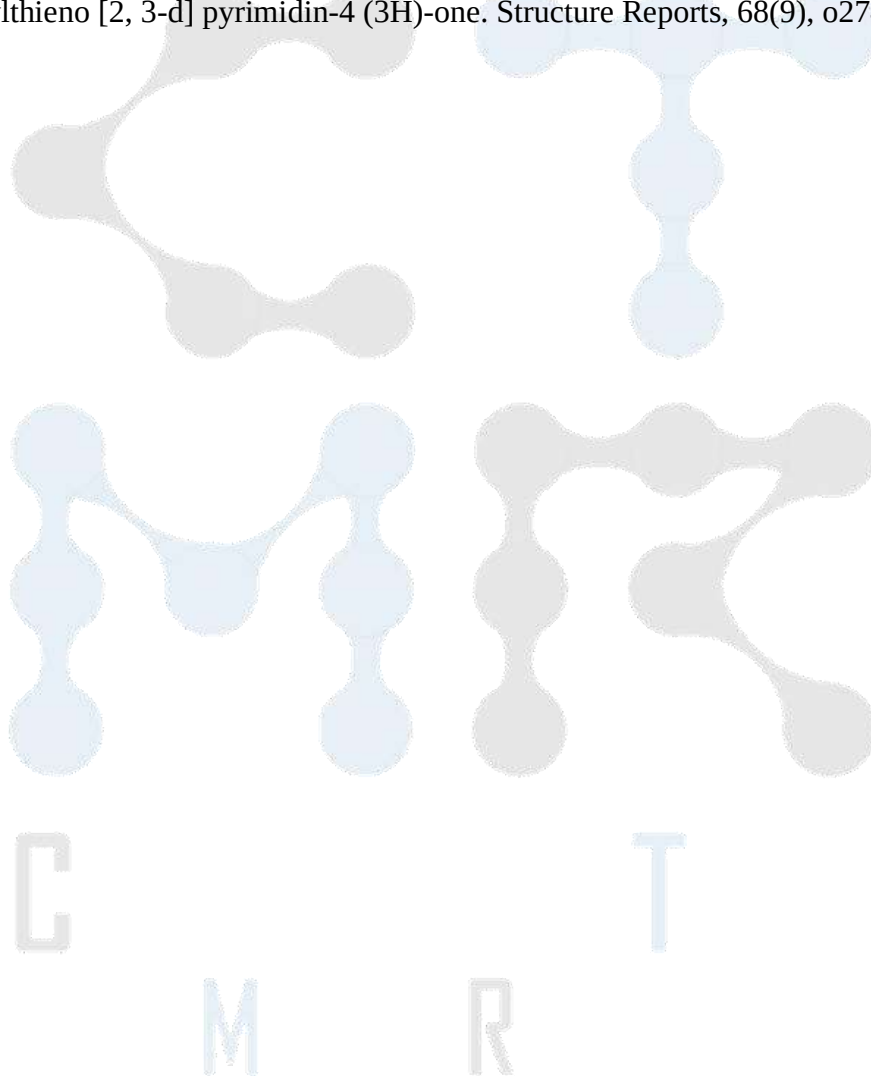
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**A LOOK AT THE EXPRESSION OF SOCIAL RELATIONS IN UZBEK AND
TURKISH FOLK PROVERBS**

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Abstract: This article analyzes the depiction of social relations in Uzbek and Turkish folk proverbs. It highlights how social values are promoted through proverbs.

Keywords: Folklore, proverb, social relations, family, society, labor, moral values.

Since ancient times, the Uzbek people have maintained economic and cultural ties with Turkish nations, alongside kindred peoples from Central Asia, the Volga region, Crimea, and the Caucasus. As a result, similarities have emerged in the cultures and literatures of these peoples. Such parallels can also be observed in the folklore of the Uzbek and Turkish peoples. As our President has emphasized: "The priceless cultural treasures created by humanity are, above all, embodied in the folklore art of each nation"[1, p. 134].

The oral folklore of every nation represents its historical memory, spiritual heritage, and reflection of its way of life. In particular, proverbs offer rich insights into a nation's worldview, values, and social life. The Uzbek and Turkish peoples are Turkish nations with deep historical roots and closely intertwined cultures. Their proverbs widely reflect concepts such as family, society, labor, ethics and morality, social equality, and unity.

Social life is defined by human relationships, labor, one's role in the family and society, and moral-ethical values. Through proverbs, the experiences, advice, and perspectives of a people in these areas are passed down from generation to generation. For example: "A single tree does not make a forest"[2, p. 98].

This article reflects the idea of human interdependence in society and emphasizes the concept of collectivism. For example: "A lone horse does not raise dust, and even if it does, it does not bring fame," "You can't make porridge from a single grain of wheat"[2, p. 98]. These proverbs also promote the idea of unity and vividly express the advantages of being together with others. Turkish proverbs such as: "Bir elin varlığı birliğiyle olur"(A nation's strength lies in its unity) and "Bir elin nesi var; iki elin sesi

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var”(What can one hand do? Two hands make a sound) [3, p. 55] highlight the vital role of unity and solidarity in societal life.

These sayings stress that an individual cannot achieve much alone and often needs the support and cooperation of others.

In both uzbek and turkish proverbs, the significance of the family in social life is deeply expressed. The family is seen as the foundation of society. In the folk wisdom of both nations, the concepts of family, parents, and children are considered sacred. Through these proverbs, our ancestors have passed down these values to future generations. As a result, each new generation approaches family with a sense of responsibility.

In many uzbek proverbs, the family is portrayed as the basis of society and a pillar of human life, instilling a sense of respect and reverence for family. In both cultures, the family is seen not only as a physical shelter but also as a spiritual refuge:

“If the family is at peace, the country is at peace”[4, p. 127]

“If your mother is the sun, your father is the moon”

“A home with a mother has honor; a home with a father has wealth”[4, p. 128]

“The father is wisdom, the mother is understanding”[4, p. 128]

“A father's craft is a legacy to his son”[5, p. 49]

“The family is a small state”[5, p. 49]

“One who sees the table from his father, sets the table; one who sees the cushion from his mother, lays the cushion”[5, p. 49]

These proverbs clearly demonstrate the vital social role of the family.

In both cultures, there is also a strong emphasis on the importance and necessity of kinship ties:

“My relative is my black cauldron; my kin is my sack of flour”[4, p. 136]

“He who honors relatives will not be left empty; he who honors outsiders will not advance”[4, p. 136]

“One who throws a stone at a relative knows no shame”[5, p. 28]

“Even if your relative is an enemy, he's still better than a stranger”[5, p. 28]

These proverbs reflect a strong sense of respect and emotional connection toward kinship.

However, in both uzbek and turkish cultures, there are also proverbs that express negative attitudes toward relatives, indicating the complexity of family and kinship relations:

“Let your relative die, but not your true friend”[4, p. 136]

“Don't borrow from a relative, don't marry your daughter to one”[4, p. 136]

“Better to have it in my lamp than with my relative”[4, p. 136]

“No scorpion can do to you what a relative can”[5, p. 28]

“Eat and drink with relatives, but don't do business with them”[5, p. 28]

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Such examples are numerous and reflect the dual nature of kinship: both a source of support and potential conflict.

An inseparable part of social life is “labor”. In proverbs, the value of honest work, craftsmanship, and profession is especially recognized. Throughout their lives, people achieve true peace and happiness—namely, a prosperous and fulfilling life—through hard work, effort, and endurance. As the famous Russian writer Maxim Gorky once said about labor:

“I know what labor is. It is the source of all joy and all good things in the world.”[6, p. 49].

The long path humanity has traveled is rooted in the process of labor. All human wealth is created through work—and only through work. Therefore, labor is respected and glorified, and the younger generation is raised with the spirit of diligence and hard work.

As in the proverbs of all nations around the world, the theme of “labor and industriousness” holds a central place in both uzbek and turkish proverbs. In both cultures, work and acquiring a trade are not only seen as means of livelihood, but also as the foundation of “human development” and “social progress.” Proverbs express this idea in short, vivid forms. For example:

“What you earn through labor tastes sweeter than sugar and honey”

“A skilled person will never be humiliated”[4, p. 16]

“Skill is a flowing spring, knowledge is a burning lamp”

“Craft is an inexhaustible treasure”[2, p. 440]

“Labor leads to comfort”

“If you work, you will live; you will eat big meals”[2, p. 216]

These proverbs show that, over the long course of history, humanity has worked hard and created all wealth through labor. For this reason, labor is glorified and highly valued.

Just like in uzbek proverbs, turkish proverbs also place special emphasis on work and craftsmanship:

“He who works today, earns tomorrow”[5, p. 122]

“Working is half of worship”[5, p. 122]

“He who is ashamed to work will go hungry”[5, p. 122]

Through these proverbs, it is clear that both peoples view “diligence and hard work as a source of honor”.

In both uzbek and turkish proverbs, the concepts of “labor” and “honesty” are closely intertwined. Indeed, the idea that earnings from honest labor bring blessings is emphasized in many proverbs. For example:

“He who sweats, earns gold”[4, p. 18];

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“Wealth earned through the sweat of your brow is lawful for your body”[4, p. 21];

“What is earned with forehead sweat is lawful”[5, p. 123].

These proverbs reflect the wisdom and worldview of the people. In the oral traditions of both nations, the “blessing of labor”, its “honesty” and its role as a “human value” are held in high regard.

Throughout human history, “moral values” have always played a crucial role in ensuring social stability, mutual respect among people, and communal harmony. Especially in today’s era of globalization, the need for ethical norms and values is increasing. This is because the healthy development of social relationships depends directly on moral standards.

Uzbek and turkish proverbs give special importance to “moral values” in human life. Proverbs serve as powerful tools that reinforce “ethical principles”. Concepts such as “friendship”, “hospitality”, “patience” and “respect” frequently appear in these sayings. There are numerous similarities in how moral values are reflected in both uzbek and turkish proverbs, which can be traced back to the nations’ shared historical and cultural roots.

Examples include:

“My head without a friend is like soup without salt”[2, p. 86]

“Don’t accumulate money, accumulate friends”[2, p. 86]

“Before your money reaches a thousand, make sure your friends reach ten”[2, p. 86]

“A true friend is known in hard times”[5, p. 168]

“A friend supports a friend”[5, p. 168]

“A friend does not keep secrets from a friend”[5, p. 168]

“Hospitality” is considered one of the highest virtues of a person. Our people have long honored hospitality. Therefore, proverbs reflect the belief that the guest is a gift from God, that the best part of the house is reserved for them, and that their arrival brings blessings:

“The guest is dear, the host is sweet”[2, p. 212]

“The home of a guest shines brightly”[2, p. 212]

“When a guest enters through the door, his provision comes through the crack”[2, p. 212]

Turkish proverbs also emphasize that a guest brings sustenance and blessing, and that the host must serve the guest regardless of their faith:

“A guest comes with ten blessings; eats one and leaves nine behind”[5, p. 371]

“Show respect to your guest, even if they are a non-believer”[5, p. 371]

“The guest’s footsteps bring good fortune”[5, p. 371]

Proverbs that encourage “patience and contentment” are the products of the uzbek and turkish peoples’ centuries-long experience and outlook on life, labor, and humanity.

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Patience and contentment are mirrors of uzbek wisdom. They help individuals manage themselves and become more resilient and industrious in life:

“Patience yields golden results”[2, p. 303]

“If you’re patient, even an unripe fruit can become a sweet dessert; if you’re not, you’ll bite it bitter”[2, p. 304]

“Be patient and rise, be impatient and fall”[2, p. 304]

“Patience is the key to paradise”[5, p. 421]

“The patient dervish reaches his goal”

“Patience is bitter, but its fruit is sweet”[5, p. 422]

These proverbs teach that patience, when combined with effort, leads to great success.

“Moral values” highlight how essential humane relationships are within society. They help strengthen “trust” among individuals, “resolve conflicts” and promote “unity and solidarity”. These values serve as core principles in all areas of social life—from family dynamics to workplace relationships.

In uzbek and turkish proverbs, “moral values and social relations” are highly appreciated. These sayings reflect the “national mindset”, “spiritual worldview” and “practical life experience” of both peoples. Their impact lies in their vivid imagery, brevity, and profound wisdom.

Thus, the “social relations reflected in uzbek and turkish folk proverbs” stem from the “shared turkish roots” of both nations. Through these proverbs, people learn the “culture of interpersonal relations”, the “value of labor” and “family values”. These proverbs serve as a “rich source of national wisdom” and can be effectively used, especially in the “upbringing of younger generations”.

These proverbs represent the “priceless spiritual heritage” of both nations’ oral traditions and continue to play an important role today in nurturing “morally upright and well-rounded individuals”. Studying, comparing, and passing them on to future generations is a “duty for every individual”.

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ONA TILI DARSLARIDA OG'ZAKI VA YOZMA NUTQNI RIVOJLANTIRISH
INTEGRATSIYALASHGAN USULLARI

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Annotatsiyasi. Ushbu maqola ona tili ta'limining eng muhim vazifalaridan biri - o'quvchilarning og'zaki va yozma nutq ko'nikmalarini kompleks rivojlantirishning zamonaviy pedagogik yondashuvlarini o'rganishga bag'ishlangan. Tadqiqot ishida nutqning ikki turi - og'zaki va yozma nutqning o'zaro bog'liqligi, ularni birgalikda rivojlantirishning pedagogik va psixologik asoslari hamda amaliy metodlari chuqur tahlil qilingan. Maqolada og'zaki va yozma nutqni integratsiyalashgan holda rivojlantirishning nazariy asoslari, zamonaviy ta'lim texnologiyalari va innovatsion usullar keng yoritilgan. Muallif tomonidan nutq faoliyatining barcha turlarini (tinglab tushunish, gapirish, o'qish, yozish) bir-biri bilan chambarchas bog'liq holda rivojlantirishning samarali metodlari taklif etilgan.

Kalit so'zlar: ona tili, og'zaki nutq, yozma nutq, integratsiyalashgan yondashuv, kommunikativ kompetensiya, pedagogik texnologiya, nutq rivojlantirish, ta'lim metodikasi

Maqsadli auditoriya: Ona tili o'qituvchilari, metodistlar, pedagoglar, ta'lim sohasidagi tadqiqotchilar

Ilmiy-amaliy ahamiyati: Maqola ona tili ta'limining sifat ko'rsatkichlarini oshirish, o'quvchilarning nutq ko'nikmalarini kompleks rivojlantirish bo'yicha konkret tavsiyalar beradi va amaliy qo'llanma vazifasini bajaradi.

Kirish. XXI asrning zamonaviy ta'lim tizimida til o'rganish va o'rgatish metodikasi tubdan o'zgarib bormoqda. Globallashuv jarayonlari, axborot texnologiyalarining jadal rivojlanishi va zamonaviy pedagogik yondashuvlarning shakllanishi ona tili ta'limiga ham yangicha qarashni talab etmoqda. Bu jihatdan og'zaki va yozma nutq ko'nikmalarini integratsiyalashgan holda rivojlantirish masalasi alohida ahamiyat kasb etadi. Ona tili – har bir millat uchun eng qadimiy va eng qimmatli meros bo'lib, u nafaqat muloqot vositasi, balki milliy o'zlikni saqlash, madaniy qadriyatlarni avloddan avlodga o'tkazish va intellektual rivojlanishning asosiy omilidir. Shu sababli ona tilini o'rganish jarayonida og'zaki va yozma nutq ko'nikmalarini muvozanatli ravishda rivojlantirish zamonaviy ta'limning ustuvor yo'nalishlaridan biriga aylangan.

Ta'lim tizimidagi dolzarb muammolar. Hozirgi kunda ko'plab ta'lim muassasalarida ona tili darslarini o'tkazishda an'anaviy metodlar ustunlik qilmoqda. Bu metodlar asosan grammatika qoidalarini yodlash, adabiy asarlarni tahlil qilish va yozma ishlar bajarishga yo'naltirilgan. Biroq bunday yondashuv o'quvchilarning til bo'yicha haqiqiy kompetensiyalarini shakllantirish uchun yetarli emas. Zamonaviy hayotda muvaffaqiyat qozonish uchun o'quvchilar nafaqat grammatik qoidalarni bilishi, balki o'z fikrlarini og'zaki va yozma shaklda aniq, ravon va ta'sirli ifodalay olishi kerak. Bugungi kunda og'zaki nutq ko'nikmalari va yozma nutq ko'nikmalarini alohida-alohida rivojlantirish yondashuvi o'z samaradorligini yo'qotib bormoqda. Chunki real hayotda bu ikki ko'nikma bir-biri bilan chambarchas bog'liq holda ishlaydi. Masalan, og'zaki nutqda ishlatilgan so'z boyligi yozma nutqqa ham ta'sir etadi, yozma nutqdagi tuzilma va mantiq og'zaki nutqni ham boyitadi.

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Zamonaviy pedagogik talablar. Zamonaviy pedagogika fani nutq faoliyatini yagona, murakkab va ko'p qirrali jarayon sifatida qarashni talab etmoqda. Bu jarayonda o'quvchi nafaqat ma'lumot qabul qiluvchi, balki faol ishtirokchi va ijodkor shaxs sifatida namoyon bo'lishi kerak. Shu nuqtai nazardan, ona tili darslarida og'zaki va yozma nutqni integratsiyalashgan holda rivojlantirish zarurati tug'iladi. Integratsiyalashgan yondashuv nafaqat o'quvchilarning til bo'yicha kompetensiyalarini oshiradi, balki ularning fikrlash qobiliyatini, ijodiy salohiyatini va shaxsiy rivojlanishini ham rag'batlantiradi. Bu yondashuv orqali o'quvchilar tilning barcha tomonlarini – fonetika, leksika, grammatika, stilistika va pragmatikani – yagona tizim sifatida o'zlashtirish imkoniyatiga ega bo'ladi.

Maqsad va vazifalarning belgilanishi. Ushbu tadqiqotning asosiy maqsadi ona tili darslarida og'zaki va yozma nutqni samarali rivojlantirish uchun integratsiyalashgan metodlarni ishlab chiqish va amaliyotga joriy etishdan iborat. Bu maqsadga erishish uchun quyidagi vazifalar belgilangan: Birinchidan, og'zaki va yozma nutqning psixo-lingvistik asoslarini chuqur o'rganish. Bu jarayon o'quvchilarning fikrlash faoliyati, til tuzilishi va nutq jarayonlari o'rtasidagi murakkab bog'liqliklarni tushunishga yordam beradi. Psixo-lingvistik tadqiqotlar shuni ko'rsatadiki, og'zaki va yozma nutq bir xil kognitiv jarayonlardan foydalanadi, ammo ularning amalga oshirilish usullari turlicha bo'ladi. Ikkinchidan, zamonaviy pedagogik yondashuvlarni tahlil qilish va ularni ona tili ta'limiga moslashtirishning yo'llarini aniqlash. Bu jarayonda kommunikativ yondashuv, kompetensiyaviy yondashuv, faoliyatli yondashuv va boshqa zamonaviy pedagogik konsepsiyalarning imkoniyatlaridan foydalanish nazarda tutiladi. Uchinchidan, integratsiyalashgan metodlarning nazariy asoslarini yaratish. Bu vazifa doirasida og'zaki va yozma nutqni rivojlantirishning umumiy qonuniyatlari, ularning o'zaro ta'siri mexanizmlari va pedagogik jarayonda bu ta'sirni kuchaytirishning yo'llari o'rganiladi. To'rtinchidan, amaliy metodlar va usullarning to'plamini ishlab chiqish. Bu usullar turli yosh guruhlari va ta'lim bosqichlariga moslashtirilgan bo'lishi kerak. Shuningdek, ular o'qituvchilar uchun qo'llay oladigan darajada aniq va tushunarli bo'lishi lozim.

Tadqiqotning ilmiy asoslari. Ushbu tadqiqot zamonaviy lingvistika, psixolingvistika va pedagogika fanlari yutuqlariga asoslanadi. Lingvistik jihatdan, nutq faoliyatining kommunikativ-funksional nazariyasi, diskurs tahlili va pragmatika yo'nalishlari muhim asos bo'lib xizmat qiladi. Bu nazariyalar til nafaqat grammatik tuzilma, balki ijtimoiy muloqot vositasi ekanligini ta'kidlaydi. Psixolingvistik jihatdan, L.S.Vigotskiy, A.A.Leontev, A.R.Luriya va boshqa olimlarning nutq faoliyati nazariyalari asosiy yo'naltiruvchi printsiplar bo'lib xizmat qiladi. Bu nazariyalar nutqning fikrlash bilan bog'liqligini, uning rivojlanish bosqichlarini va individual xususiyatlarini ochib beradi. Pedagogik jihatdan, P.Ya.Galperin, N.F.Talzina va boshqalarning bosqichma-bosqich shakllantirish nazariyasi, shuningdek, zamonaviy kompetensiyaviy yondashuv asosiy metodologik bazani tashkil etadi. Bu nazariyalar o'quvchilarning bilim, ko'nikma va malakalarini samarali shakllantirish yo'llarini ko'rsatib beradi.

Tadqiqot ob'ekti va predmeti. Tadqiqotning ob'ekti ona tili ta'limi jarayonida og'zaki va yozma nutq ko'nikmalarini rivojlantirish faoliyatidir. Bu faoliyat o'qituvchi, o'quvchi va o'quv materiali o'rtasidagi murakkab o'zaro ta'sir jarayonini o'z ichiga oladi. Tadqiqot predmeti sifatida og'zaki va yozma nutqni integratsiyalashgan holda rivojlantirishning pedagogik sharoitlari, usullari va vositalarining majmuasi belgilangan. Bu majmua zamonaviy pedagogik talablarga mos kelishi va amaliy qo'llanish imkoniyatlariga ega bo'lishi kerak.

Tadqiqotning ahamiyati. Ushbu tadqiqotning nazariy ahamiyati ona tili ta'limi sohasidagi metodologik bilimlarni boyitish va yangi pedagogik yondashuvlarni ishlab chiqishdan iborat. Tadqiqot natijasida og'zaki va yozma nutq ko'nikmalarining rivojlanish qonuniyatlari yanada

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chuqurroq ochib beriladi va bu sohadagi nazariy bilimlar tizimi mukammallashtiriladi. Amaliy ahamiyat jihatidan esa tadqiqot natijasida ishlab chiqiladigan metodlar to'g'ridan-to'g'ri ta'lim amaliyotida qo'llanishi mumkin. Bu metodlar o'qituvchilarga ona tili darslarini yanada samarali tashkil etish imkoniyatini beradi va o'quvchilarning til bo'yicha kompetensiyalarini sezilarli darajada oshirish imkonini yaratadi. Ijtimoiy ahamiyat nuqtai nazaridan, tadqiqot natijasida yetishib chiqadigan o'quvchilar jamiyatda yanada samarali faoliyat yurita oladigan, o'z fikrlarini aniq va ta'sirli ifodalay oladigan shaxslar bo'lib shakllanadilar. Bu esa milliy til va madaniyatni saqlash va rivojlantirishga muhim hissa qo'shadi.

Zamonaviy ta'limda integratsiyaning o'rni. Hozirgi zamon ta'lim tizimida integratsiya prinsipi tobora katta ahamiyat kasb etmoqda. Bu printsip turli fanlar, mavzular va ko'nikmalarni yagona, izchil tizim sifatida o'rganishni nazarda tutadi. Ona tili ta'limida ham bu printsipning qo'llanishi muhim samara beradi. Og'zaki va yozma nutqni integratsiyalashgan holda rivojlantirish nafaqat til ko'nikmalarini oshiradi, balki o'quvchilarning umumiy madaniy darajasini, intellektual qobiliyatlarini va ijtimoiy kompetensiyalarini ham rivojlantiradi. Bu yondashuv o'quvchilarga real hayotda duch keladigan vaziyatlarga tayyor bo'lish imkoniyatini beradi.

Xulosa. Shunday qilib, ona tili darslarida og'zaki va yozma nutqni rivojlantirish integratsiyalashgan usullarini o'rganish va amaliyotga joriy etish zamonaviy ta'limning eng dolzarb masalalaridan biridir. Bu masalani hal etish nafaqat pedagogik jihatdan, balki ijtimoiy va madaniy jihatdan ham katta ahamiyatga ega. Tadqiqotimizda biz ushbu masalani har tomonlama o'rganib, amaliy echimlar taklif etishga harakat qilamiz.

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COMPOSITION OF ESSENTIAL OIL FROM DRIED BASIL (*Ocimum Basilicum* L.)

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Abstract. The present work describes a methodological approach for the isolation and analysis of essential oils (EOs) obtained from finely ground basil plants. The extraction of basil EO was carried out by hydrodistillation using a classical Clevenger apparatus for a duration of three hours. The distillates were subsequently treated with n-hexane, followed by dehydration with anhydrous sodium sulfate in order to remove residual moisture. The yield of the essential oil under these conditions varied within the range of 0.74–0.81%. The isolated oils were characterized as pale-yellow, mobile liquids possessing a specific aromatic odor typical of basil. For the identification of chemical constituents, the qualitative and quantitative composition of the oils was studied using gas chromatography–mass spectrometry (GC–MS). The analyses were performed on an Agilent 5975C inert MSD/7890A GC instrument equipped with a quartz capillary column Agilent HP-INNOWax, under a programmed temperature regime. This integrated approach enables reliable isolation, precise characterization, and effective identification of the component profile of basil essential oils.

Keywords: essential oils, basil, hydrodistillation, gas chromato-mass spectrometry (GC-MS), component composition, yield, aromatic compounds.

QURUTILGAN RAYHONDAN (*Ocimum Basilicum* L.) OLINGAN EFIR MOYINING TARKIBI

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Annotatsiya. Ushbu ishda maydalangan rayhon (*Ocimum basilicum* L.) o‘simliklaridan olingan efir moylarini (EM) ajratish va tahlil qilishga oid metodologik yondashuv bayon etilgan. Rayhon efir moyi klassik Klevenger apparati yordamida uch soat davomida gidrodistillyatsiya usulida ajratib olindi. Olingan distillyatlar n-geksan bilan ishlov berildi, so‘ngra qoldiq namlikni yo‘qotish maqsadida suvsiz natriy sulfat yordamida degidratatsiya qilindi. Ushbu sharoitda efir moyining chiqishi 0,74–0,81 % oralig‘ida bo‘ldi. Izolyatsiya qilingan moylar rang jihatdan och sariq, harakatchan suyuqliklar bo‘lib, rayhonga xos o‘ziga xos aromatik hidga ega ekanligi aniqlandi. Kimyoviy komponentlarni aniqlash uchun efir moyining sifat va miqdoriy tarkibi gaz xromatografiya-mass-spektrometriyasi (GXM-S) usulida o‘rganildi. Tahlillar Agilent 5975C inert MSD/7890A GC qurilmasida, Agilent HP-INNOWax kvarts kapillyar kolonnasi yordamida, dasturlashtirilgan harorat rejimida olib borildi. Ushbu kompleks yondashuv rayhon efir moylarini ishonchli ajratish, aniq tavsiflash va samarali identifikatsiya qilish imkonini beradi.

Kalit so‘zlar: efir moylari, rayhon, gidrodistillyatsiya, gaz xromatografiya-mass-spektrometriya (GXM-S), komponentlar tarkibi, chiqim, aromatik birikmalar.

СОСТАВ ЭФИРНОГО МАСЛА ИЗ СУШЕНОГО БАЗИЛИКА (*Ocimum Basilicum* L.)

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Аннотация. В настоящей работе описывается методологический подход к выделению и анализу эфирных масел (ЭМ), полученных из мелко измельченных растений базилика. Экстракция ЭМ базилика проводилась методом гидроdistилляции с использованием

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классического аппарата Клевенгера в течение трех часов. Дистилляты затем обрабатывались н-гексаном, после чего проводилась дегидратация безводным сульфатом натрия для удаления остаточной влаги. Выход эфирного масла в этих условиях колебался в пределах 0,74–0,81 %. Изолированные масла были охарактеризованы как бледно-желтые, подвижные жидкости, обладающие специфическим ароматическим запахом, типичным для базилика. Для идентификации химических компонентов качественный и количественный состав масел был изучен с помощью газовой хроматографии-масс-спектрометрии (ГХ-МС). Анализы проводились на приборе Agilent 5975C inert MSD/7890A GC, оснащенном кварцевой капиллярной колонкой Agilent HP-INNOWax, в режиме программируемой температуры. Такой комплексный подход позволяет надежно выделять, точно характеризовать и эффективно идентифицировать состав компонентов эфирных масел базилика.

Ключевые слова: эфирные масла, базилик, гидродистилляция, газовая хромато-масс-спектрометрия (ГХ-МС), состав компонентов, выход, ароматические соединения.

INTRODUCTION

Essential oils are valuable natural products with a wide range of biological activity and are used in the pharmaceutical, food, and perfume and cosmetics industries. Among aromatic plants, basil (*Ocimum basilicum* L.) occupies a special place, whose essential oil is characterised by a high content of volatile aromatic compounds and a variety of biologically active components. Despite a fairly large number of studies devoted to essential oils, the development and improvement of methods for their extraction, as well as a detailed study of their qualitative and quantitative composition, remain a pressing task. In this regard, the study of the chemical profile of basil essential oil by gas chromatography-mass spectrometry is an important direction for establishing its potential properties and expanding its practical application possibilities [1-5].

MATERIALS AND METHODS

Essential oils (EOs) were obtained from finely ground basil plants by hydrodistillation for 3 hours using a standard method with a Clevenger apparatus. The obtained distillates were extracted with n-hexane, and the EO extracts were dried with anhydrous sodium sulfate. After removing the solvent, we obtained EOs with the following yields:

- № 1 - 0.76%;
- № 2 - 0.74%;
- № 3 - 0.76%;
- № 4 - 0.78%;
- № 5 - 0.75%;
- № 6 - 0.81%.

Prior to analysis, the oils were stored at 4°C in a refrigerator in tightly sealed vials. The obtained basil EOs are pale yellow, mobile liquids with a characteristic odor. The qualitative and quantitative composition of basil EM was determined by chromato-mass spectrometry (GX-MS) using the Agilent 5975C inert MSD/7890AGC device. To separate the components of the mixture, the Agilent HP-INNO Wax (30 m × 250 µm × 0.25 µm) quartz capillary column was used in the temperature range: 60°C (2 min) - 4°C/min to 220°C (10 min) - 10°C/min to 240°C (20 min). The volume of the administered sample was 1.0 µl, the flow rate of the mobile phase (H₂) was 1.0 ml/min. Components were identified based on comparing mass spectral characteristics with electronic library data (Wiley-9th Ed. and NIST 2017) and comparing the retention indices (RI) of compounds determined in

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relation to the retention time (RV) of n-alkanes (C9-C32), as well as comparing their mass spectral fragmentation with those described in the literature [6-9].

RESULTS AND DISCUSSION

The results of the laboratory experiments on the qualitative and quantitative essential oil composition of basil (*Ocimum basilicum* L.) are summarized in a systematic order and provided in Table 1. The table provides the total data regarding the individual chemical compounds of the oil, together with their relative percent content as determined by gas chromatography–mass spectrometry (GC–MS). These data allow complete description of the volatile profile of basil essential oil and comparison with literature data. Summarized results take into consideration both the variety of the aromatic compounds present in the oil and their contribution to the overall chemical composition, therefore highlighting the significance of basil as a rich source of bioactive molecules.

Table 1

Component composition of essential oil in basil

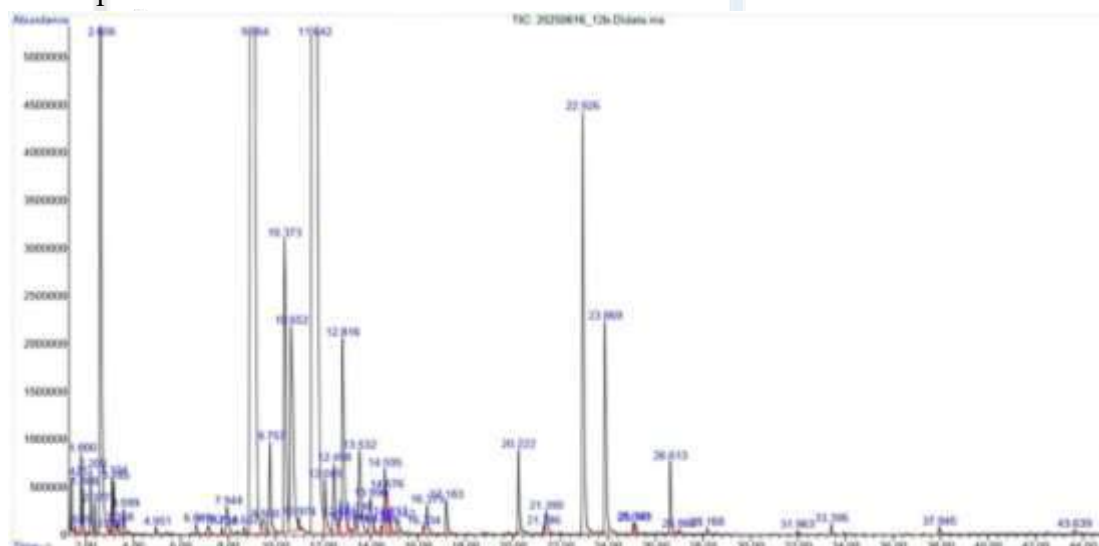
№	Component	(RI)	Samples, %					
			1	2	3	4	5	6
1	α -Pinene	1040	0,13	0,06	0,14	0,06	0,15	
2	β -Pinene	1076	0,26	0,15	0,27	0,13	0,24	0,06
3	Sabinene	1085	0,17	0,10	0,19	0,09	0,14	-
4	β -Myrcene	1114	0,26	0,20	0,26	0,15	0,20	-
5	α -Terpinene	1128	0,16	0,10	0,12	0,11	0,13	-
6	Eucalyptol (1,8-cineole)	1148	7,07	6,86	8,14	4,25	5,05	5,11
7	β -Ocimene	1198	0,20	0,19	0,29	0,11	0,21	0,24
8	<i>o</i> -Cymene	1207	0,09	0,08	0,07	-	0,09	-
9	Terpinolene	1218	0,22	0,15	0,14	0,13	0,14	-
10	(<i>Z</i>)-4-hexen-1-ol	1282	0,02	0,03	0,05	-	0,04	0,11
11	Camphor	1418	0,39	0,37	0,44	0,30	0,31	0,33
12	α -Copaene	1446	0,27	0,07	0,05	0,09	0,11	-
13	cis-Ocimene	1461	28,82	31,01	31,49	21,65	29,13	23,38
14	β -Phellandrene	1477	-	0,22	0,21	0,24	0,28	0,26
15	(-)-Bornyl acetate	1488	0,74	0,70	0,67	0,57	0,72	0,64
16	γ -Terpinene	1510	3,27	4,20	4,33	2,58	3,14	3,76
17	α -Bergamotene	1521	5,35	4,66	8,41	2,80	6,93	4,00
18	3-Carene	1533	0,13	0,09	0,05	-	0,13	
19	Estragole	1558	39,23	37,26	47,52	41,72	34,14	38,52
20	Isobornyl acetate	1588	0,70	0,65	0,64	0,92	0,79	0,48
21	(+)-epi-Bicyclosesquiphellandrene	1596	-	-	-	0,27	0,25	-
22	α -Terpineol	1601	1,96	1,91	2,26	1,95	1,86	2,04
23	(-)-Isolodene	1629	1,53	1,28	0,92	2,54	2,19	0,34
24	Germacrene B	1646	0,54	0,44	0,34	0,98	0,67	0,11
25	β -Bisabolene	1651	0,11	0,10	0,06	0,57	0,18	-

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26	γ -Cadinene	1669	1,35	1,17	0,81	2,67	2,35	1,64
27	β -Sesquiphellandrene	1690	0,21	0,23	0,12	0,42	0,35	-
28	Cosmen	1696	-	0,04	-	-	-	-
29	Calamenene	1733	0,08	0,11	0,07	0,17	0,10	-
30	Phenylethyl alcohol	1770	0,10	0,20	0,25	0,14	0,14	0,55
31	Methyleugenol	1894	0,26	0,26	0,49	1,17	0,38	0,19
32	β -Selinene	1940	0,05	0,04	0,04	0,08	0,07	-
33	(+)-Cubenene	1944	0,31	0,28	0,24	0,50	0,38	0,63
34	Eugenol	2011	1,17	2,18	3,20	1,53	1,97	-
35	γ -Muurolene	2055	1,79	1,84	4,24	3,28	2,54	1,62
36	Eremophilene	2109	-	-	0,06	-	-	-
37	(+)-Aromadendrene	2110	0,05	0,07	-	0,09	0,09	-
38	10-Epizonarene	2113	0,10	0,11	0,10	0,19	0,12	0,41
39	Chavicol	2134	0,17	0,27	0,44	0,26	0,31	0,76
40	Docosane	2200	-	0,04	-	-	-	0,18
41	Indole	2256	-	0,03	0,04	-	0,03	-
42	Tetracosane	2400	-	0,04	-	-	-	0,16
43	Pentacosane	2500	-	0,04	-	-	-	0,19
44	Palmitic acid	2774	-	-	-	-	0,87	-
45	1-Tetradecene	2777	0,02	0,03	0,05	0,09	-	0,65
46	Stearic acid	2987	-	-	-	-	0,97	0,07
	Σ		97,28	97,86	117,21	92,8	97,89	86,43

The results of chromatographic analysis of basil essential oil obtained using various drying methods are presented in the chromatograms shown in Figures 1–6. These graphical materials allow for a clear comparison of the qualitative and quantitative composition of the volatile components of the oil depending on the drying method used, as well as to identify differences in the content of the main aromatic compounds.



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Figure 1. Chromatogram of determination of essential oil in the composition of dried basil during solar drying

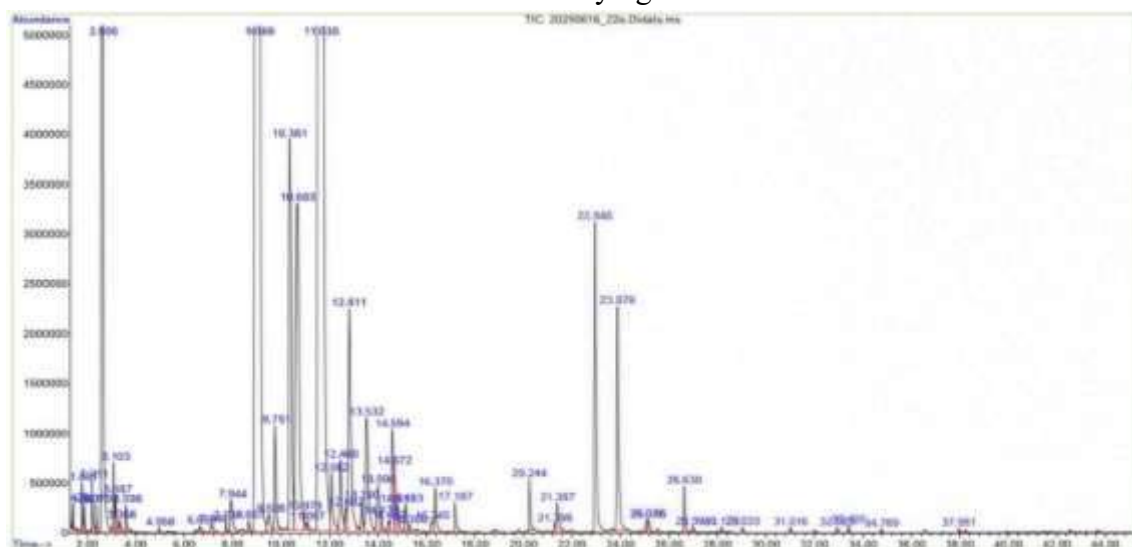


Figure 2. Chromatogram of determination of essential oil in the composition of dried basil during solar drying

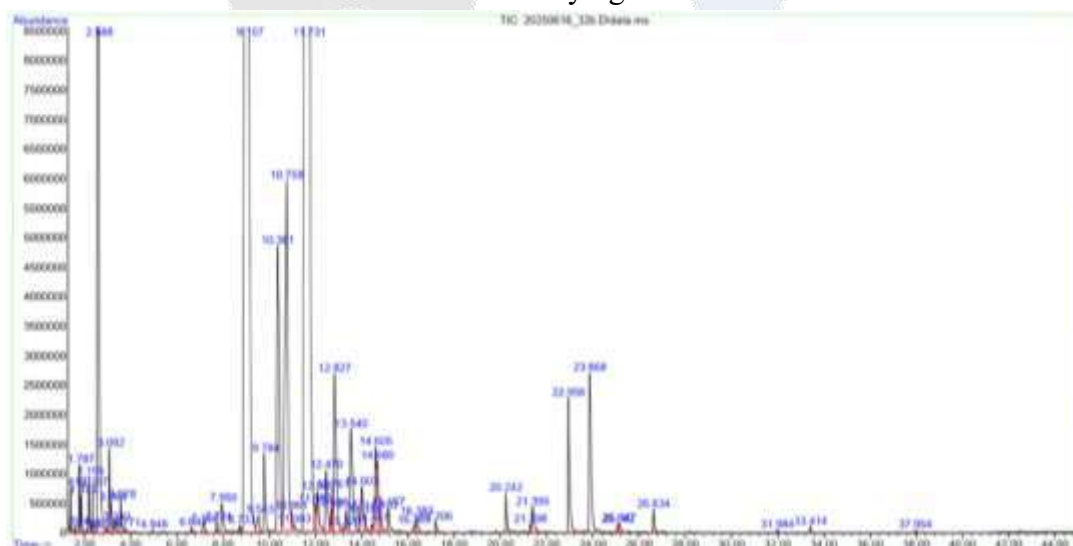


Figure 3. Chromatogram of determination of essential oil in the composition of dried basil during solar drying

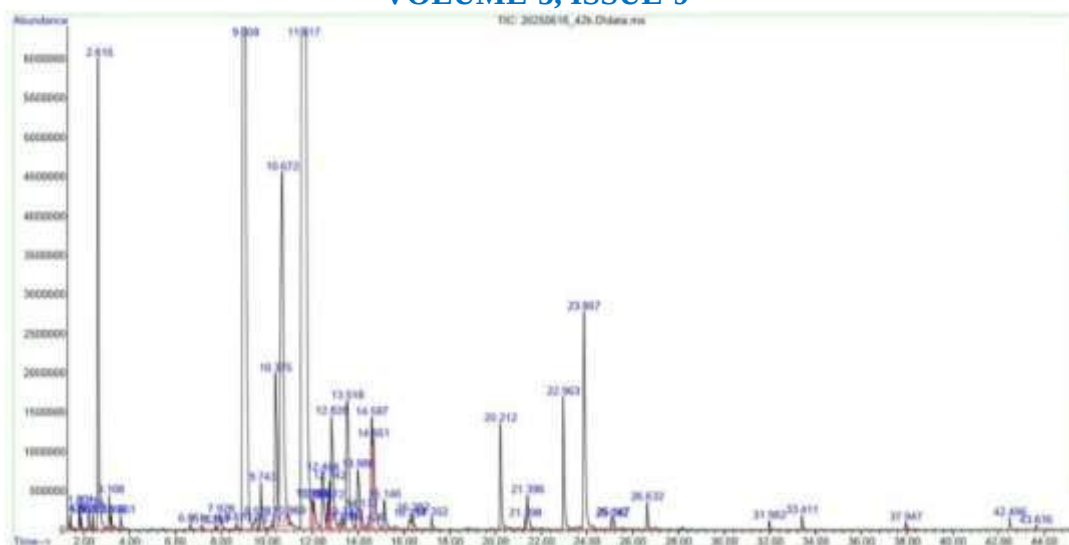


Figure 4. Chromatogram of determination of essential oil in the composition of dried basil during solar drying

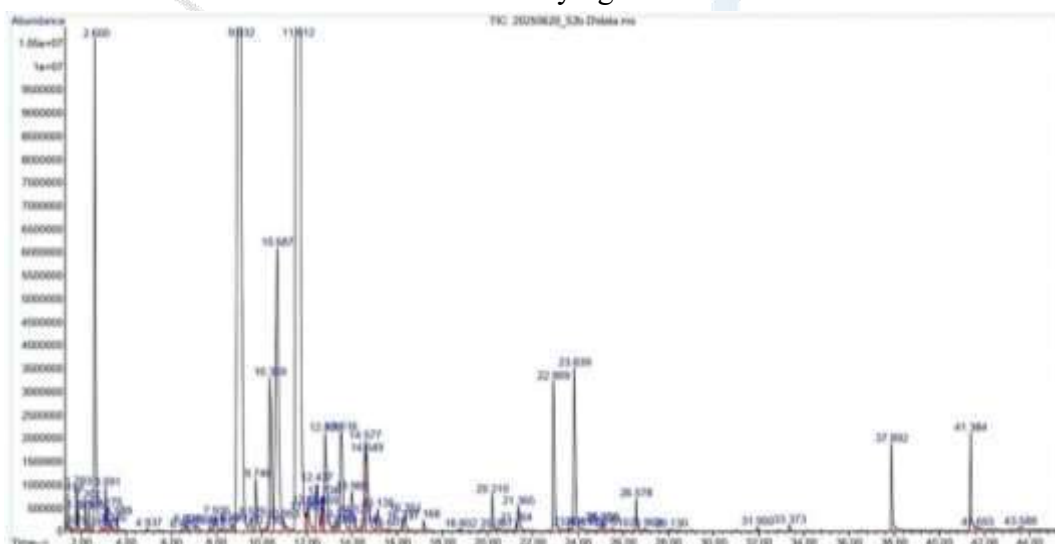


Figure 5. Chromatogram of determination of essential oil in the composition of dried basil by natural method

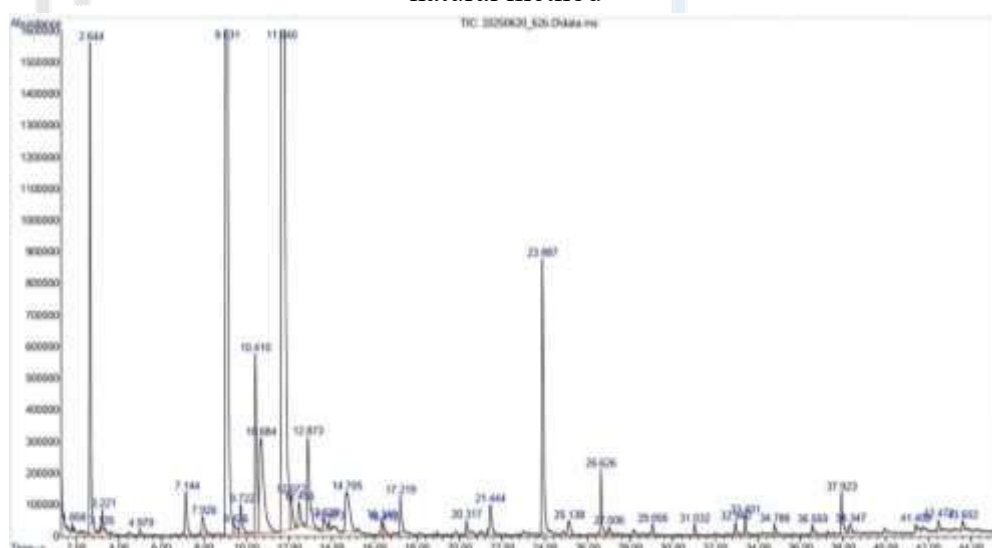


Figure 6. Chromatogram for determining the essential oil content in untreated (control) basil

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A study of the chemical composition of six samples of dried basil showed that in sample No. 3, which is basil dried in a solar convective drying unit (a drying method proposed by the author), the concentration of essential oil is characterised by the following component content (%): β -Pinene – 0.27; Sabinene – 0.19; Eucalyptol – 8.14; β -Ocimene – 0.29; cis-Ocimene – 31.49; Camphor – 0.44; γ -Terpinene – 4.33; α -Bergamotene – 8.41; Estragole – 47.52; α -Terpineol – 2.26; γ -Myrcene – 4.24; Eugenol – 3.20. The data obtained indicate a high content of estragole and cis-ocimene, which determines the aromatic profile of the oil and can significantly affect its biological activity and practical application.

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BOSHLANG'ICH SINF O'QUVCHILARINI AJDODLARIMIZ ME'ROSI VOSITASIDA TARBIYALASH

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Boshlang'ich ta'lim metodikasi kafedrası katta o'qituvchisi

Annotatsiya: Maqolada ajdodlarimizning ilmiy merosi - zamonaviy bilimlarni egallashning fundamental asosi ekanligi, bugungi kunda ilm, ma'rifat va raqamli iqtisodiyotni rivojlantirish masalasining dolzarbligi haqida so'z boradi.

Kalit so'zlar: ilmiy meros, raqamli iqtisodiyot, raqamli bilimlar, ta'lim sifati, zamonaviy ta'lim.

Аннотация: В статье научное наследие наших предков - современные знания что фундаментальной основой обладания сегодня являются наука, просвещение и цифровые технологии. актуальность экономического развития.

Ключевые слова: научное наследие, цифровая экономика, цифровые знания, качество образования, современное образование.

Annotation: The article deals with the scientific heritage of our ancestors - modern knowledge that the fundamental basis of possession is science, enlightenment, and digital today the urgency of the issue of economic development.

Keywords: scientific heritage, digital economy, digital knowledge, quality of education, modern education.

Mustaqillik yillarida mamlqatimizda jamiyat hayotining ma'naviy-ma'rifiy asoslarini mustahkamlash, milliy istiqlol g'oyasining asosiy tushuncha va tamoyillarini hayotga joriy etish, yurtidoshlarimiz, ayniqsa, yosh avlod qalbida Vatanimiz taqdiri va kelajagi uchun daxldorlik va mas'uliyat hissini oshirish, yot g'oyalarga qarshi mafkuraviy immunitetni kuchaytirishga yo'naltirilgan targ'ibot tizimi O'zbekistonda jamiyat ma'naviy-axloqiy rivojlanishining muhim omiliga aylandi. Yurtimizda inson omilini yuqori bosqichga ko'tarishda ta'lim siyosati asosiy masala hisoblanadi. O'zbekistonda ma'naviy-ma'rifiy ishlar umumjahon ta'lim talablari doirasida amalga oshiriladi. Biroq, turli oqim va yo'nalishlarning davlat standartlaridan tashqari faoliyati, xatti - harakatlari bizda ma'naviy tajovuz sifatida qabul qilinadi va ular qonun bilan ta'qiqlanadi. Demak, yurtimizda yosh avlodni har tomonlama tarbiyalashda, kamolga erishishda, qonun bilan himoyalanihi muhim hisoblanadi.

Bugungi kunda ta'lim - tarbiya jarayonida shunday islohatlar amalga oshirilmoqdaki uni ko'z bilan ko'rib qalb bilan his yetish kerak. O'sib, ulg'ayib kelayotgan yosh valodga keng imkoniyatlar eshigi ochilmoqda. Bundan ko'zlangan maqsad shundan iboratki, bugungi kunning yoshlari ertangi kun davlatimizni ravnaqiga xizmat qiladigan uning buyukligini yanada yuqoriga ko'taradigan, otabobolarimiz tomonidan bizlarga qoldirgan ulkan boy ma'naviy merosini boyitib, sayqal berib, takomillashtirib kelgusi avlodlarga yetkazib beradigan shaxs qilib tarbiyalash kerak. Bugungi kunda davlatimiz tomonidan yaratilayotgan shart-sharoitlar, o'sib ulg'ayib kelayotgan yosh avlodni har tomonlama yetuk, shaxs qilib voyaga yetkazishda eng muhim omillardan biri hisoblanadi. Shuning uchun ham biz milliy - ma'naviy qadriyatlarni tarbiya va ona tili va o'qish savodxonligi darslari orqali o'quvchilar ongiga singdirish o'ziga xos muhim ahamiyat kasb etadi.

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Milliy ma'naviy qadriyatlarning yoshlar ongida tarkib topishida oiladagi munosabatlar eng asosiy o'rinlardan birini egallaydi. Bunda oilada, oila a'zolari tomonidan bir-biri bilan bo'layotgan muloqat jarayonida yoshlar ularni o'zlarida aks yettirishga harakat qiladi. Qachonki oilada sharqona munosabatlar to'g'ri yo'lga qo'yilgan bo'lsa, bola tarbiyasiga jiddiy qarab ularni sharqona nafosat doirasida tarbiyalashga harakat qilinsa, o'z-o'zidan bolalarda milliy-ma'naviy qadriyatlar shakllanadi.

Boshlang'ich sinf o'qituvchisi o'quvchilarga milliy – ma'naviy qadriyatlarni singdirishda bugungi kunning keng ilg'or, zamonaviy pedagogik texnologiyalardan foydalanish kerak. Buning uchun biz zamonaviy pedagogik texnologiya fanining mazmun mohiyatini anglab olishimiz zarur.

O'zbekistonda amalga oshirilayotgan ijtimoiy-iqtisodiy, ma'naviy-marifiy o'zgarishlar mazmunida tarixiy, milliy, ma'naviy qadriyatlarni o'rganishga alohida e'tibor qaratilmoqda. Abu Nasr Forobiy, Abu Ali ibn Sino, Beruniy, Kaykovus singari Sharq mutafakkirlari e'tirof etgan inson ma'naviy kamolotining zaruriy shartlaridan biri mustaqil va mantiqiy tafakkurdir. Bu jarayonda o'quvchi mukammal faollik, ijodkorlik, tashabbuskorlik ko'rsatadi. Madaniy merosimizga o'zlarining beqiyos hissalarini qo'shgan allomalarimiz Beruniy, Forobiy, Abu Ali ibn Sino, Mahmud Qoshg'ariy, Yusuf Xos Hojib va boshqalar ijodini o'rganish kelajak avlod uchun katta ma'rifiy-tarbiyaviy ahamiyatga egadir. Ularning har biri jahon sivilizatsiyasining rivojiga tegishli hissasini qo'shib kelgan. Bu silsilada Yusuf Xos Hojibning nomini ham faxr va iftixor bilan tilga olish mumkin. Yusuf Xos Hojibning "Qutadg'u bilig" hamda Mahmud Qoshg'ariyning "Devoni lug'otit-turk" asarlari ma'naviyat durdonalaridan biridir. Shu o'rinda "qomusiy" so'zini qo'llaganimiz tasodifiy emas. Har bir yaratilgan asar o'quvchini, kitobxonni bir yo'nalishda tarbiyalaydi. "Qutadg'u bilig" asari esa davlatni idora qilish usulini, siyosatini, qonun-qoidalarini, rasm-rusumlarini, axloqiy prinsiplarini o'zida mujassamlashtirgan, qomusiy asar sifatida yuzaga keldi. Bu asar didaktik yo'nalishga ega bo'lib, unda davlatni idora qilish usullari, oddiy xalqdan tortib oliy darajadagi mansab egalari ellikxonlargacha — olim, shoir, dehqon, chorvador, kosib singari ko'plab tabaqa, toifa, ijtimoiy guruhlarining fe'l-atvori qanday bo'lishi lozimligi, davlat qurilishi, turli ijtimoiy tabaqalarning jamiyatdagi o'рни va ahamiyati, umuman, siyosiy-ijtimoiy, moddiy-ma'naviy, axloqiy-tarbiyaviy masalalar o'sha davr talabi nuqtayi nazaridan yo'l-yo'riqlar badiiyat qonunlari asosida tavsiflangan. Boshlang'ich sinf o'quvchilarini ma'naviy-axloqiy jihatdan barkamol, bilimli inson qilib tarbiyalash vazifasi ko'p jihatdan boshlang'ich sinflarda ta'limni to'g'ri uyushtirish, xususan, o'quvchilarni mustaqil fikrlashga o'rgatish, ularning nutqini talab darajasida o'stirish bilan o'zaro bog'liq. So'z zahirasi boy o'quvchining fikrlash doirasi keng, ma'naviyati yuksak, o'qish-o'rganishga ishtiyoqi baland bo'lishi tabiiydir.

Boshlang'ich sinflardagi o'tiladigan fanlar orqali o'quvchilarda savodxonlik sifatleri shakllantiriladi, kitobga bo'lgan muhabbat tuyg'usi uyg'onadi, ularning atrof-muhit haqidagi bilimlari kengaytiriladi, nutq va tafakkuri oshadi. Nutq tarbiyasida "matn" ham markaziy tushuncha hisoblanadi. Zero, umumiy o'rta ta'lim maktabida nutqni rivojlantirish bo'yicha ishlarning pirovard maqsadi o'quvchini o'z fikrini og'zaki va yozma shaklda erkin bayon qilishga o'rgatishdir. Bola kichik yoshida ta'sirchan, atrofdan kelayotgan barcha ma'lumotlarni tez qabul qiluvchi bo'ladi. U nimani eshitsa, eshitganicha talaffuz qilishga va uni, nutqida qo'llashga intiladi.

Xulosa qilib aytganda boshlang'ich sinf o'quvchilarining o'quv yili boshidanoq nutq doirasini aniqlab, nutqidagi nuqsonlarni bartaraf etish choralari ko'rish va ular ustidan ish olib borish lozim. So'z boyligi o'quvchilarga barcha fanlardan beriladigan bilimlarni tez va puxta o'zlashtirib olish hamda ta'lim dasturlarida ko'zda tutilgan ko'nikma-malakalarni o'zlashtirishga zamin yaratadi.

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O'quvchilarning o'qish malakalarini takomillashtirish, savodxonligini oshirish, nutqini o'stirish talabi zaminida, nutq madaniyati turadi. Farzandlarning ma'naviy kamolotida qadimdan nutq madaniyati va odobiga alohida ahamiyat berib kelingan.

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PHYSICAL TRAINING OF YOUTHS WITH THE MEANS OF ATHLETIC GYMNASTICS.

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Abstract: This article analyzes the role of using athletic gymnastics equipment in improving the physical fitness of young people before conscription. It covers the content, main equipment, importance of athletic gymnastics in the life of young people before conscription, and principles of effective organization of training. The article pays special attention to the issues of raising young people to be healthy, strong and strong-willed, as well as increasing their readiness to defend the Motherland.

Keywords: Athletic gymnastics, physical training, strength, endurance, agility, agility, youth, preparation for conscription, healthy lifestyle, defense of the Motherland.

Main part: Providing physical education to young people in the Republic of Uzbekistan is one of the priority areas of state policy. The physical fitness of boys before conscription is the main stage in preparing them for future service in the army, defense of the Motherland, and difficult life conditions. In this process, athletic gymnastics is one of the most effective tools, serving to strengthen the health of young people, increase strength and endurance, and cultivate willpower and discipline. Today, the importance of physical education and sports facilities in raising the youth of our country in a healthy and well-rounded manner is incomparable. Ensuring physical fitness through athletic gymnastics facilities, especially for boys of pre-conscription age, is one of the important directions of the state defense system.

Athletic gymnastics is a set of exercises performed using weights or body weight, which develops strength, endurance, agility and dexterity. Its main tools are:

- ✚ dumbbell and barbell exercises;
- ✚ horizontal bar and horizontal bar exercises;
- ✚ kettlebell and stone lifting exercises;
- ✚ bodyweight exercises such as sit-ups, squats, and jumps;
- ✚ combination exercises that combine strength, speed, and endurance.

Physical training tasks

The following main tasks are solved through the use of athletic gymnastics equipment:

- ❖ Developing muscle strength. Tasks such as lifting weights, long walks, and carrying equipment in military service require strong muscles.
- ❖ Increasing endurance. Adapting to being under load for a long time strengthens the health of young people.
- ❖ Developing agility and dexterity. Agility is important for quick action in military exercises and adapting to sudden situations.
- ❖ Improve health. Regular exercise strengthens the cardiovascular and respiratory systems, increases immunity.
- ❖ Form willpower and discipline. Regular performance of heavy exercises requires patience and willpower. These qualities are of great importance both in the army and in life.

Importance

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Athletic gymnastics equipment plays an important role in the lives of young people:

- ✓ increases physical fitness for military service;
- ✓ establishes a healthy lifestyle;
- ✓ helps to get rid of harmful habits;
- ✓ strengthens willpower and mental stability.

Principles of organizing training

To effectively organize athletic gymnastics training, it is necessary to pay attention to the following:

- ✚ regular and systematic conduct of exercises;
- ✚ gradual increase in load;
- ✚ technically correct execution and compliance with safety;
- ✚ use of an individual approach;
- ✚ combination of strength exercises with general developmental exercises.

For athletic gymnastics training to be effective, the following rules are followed:

- ✓ Graduality - exercises are initially given in a light form, and then the load is gradually increased.
- ✓ Regularity - exercises should be performed at least 3-4 times a week.
- ✓ Comprehensive approach - along with strength exercises, running, jumping, and stretching exercises are also included.
- ✓ Individual approach - the health status and physical capabilities of each young person are taken into account.
- ✓ Technically correct execution - exercises should be performed under the supervision of a coach or teacher to avoid injuries.

Healthy competition, mutual cooperation, and adherence to sports discipline during training further strengthen the spiritual and willpower education of young people.

Conclusion: Improving the physical fitness of young people before conscription through athletic gymnastics is a process of great importance not only in sports, but also in social and spiritual terms. Because every young man going to military service must be strong, healthy, resilient and strong-willed. Athletic gymnastics helps to ensure all these requirements. Firstly, it increases muscle strength and endurance, which is important when lifting heavy loads, long walks and performing other physical tasks in military service. Secondly, athletic gymnastics, through regular training, strengthens the cardiovascular and respiratory systems, improves the general health of young people. This increases their resistance to diseases and ensures that they go to the army healthy. Thirdly, sports exercises develop willpower, discipline and patience. Regularly continuing the exercises, even if they are difficult, strengthens the psychological stability of young people, helps them become mentally strong and determined. Fourthly, athletic gymnastics teaches young people to lead a healthy lifestyle, encourages them to stay away from harmful habits. This increases their quality of life, contributes to their formation as active and useful individuals in society. Fifthly, such exercises develop teamwork, mutual assistance, and sports spirit. Healthy competition and cooperation are formed among young people. In conclusion, the use of athletic gymnastics equipment raises the physical fitness of young people to a high level before conscription, prepares them for the defense of the Motherland, and serves to form a healthy, strong and harmonious generation. Therefore, the widespread introduction of athletic gymnastics classes in secondary schools, colleges and lyceums, as well as sports clubs, is an urgent task today.

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O'ZDJTU ITALYAN TILI TARJIMA NAZARIYASI VA AMALIYOTI KAFEDRASI MUDIRI B.S.ERGASHOVA TAQRIZI ASOSIDA ITALIYAN TILIDA SO'Z BIRIKMALARINING SEMANTIK QAMROVI

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Annotatsiya

Ushbu maqola Italiyan tilidagi so'z birikmalarining semantik qamrovini o'rganishga bag'ishlangan. Unda so'z birikmalarining ma'nolari, tuzilmalari va kommunikativ funksiyalari tahlil qilinadi. Korpus va semantik tahlil usullari yordamida so'z birikmalarining turli kontekstlarda qo'llanilishi, shuningdek, ularning ijtimoiy va madaniy kontekstdagi o'rni o'rganilgan.

Kalit so'zlar: fraza, metod, analiz, kontekst, gap, frazeologizm, semantika

Семантический объем словосочетаний в итальянском языке.

Аннотация

Данная статья посвящена изучению семантического объема словосочетаний в итальянском языке. Анализируются значения, структуры и коммуникативные функции словосочетаний. С помощью методов корпусного и семантического анализа изучено употребление словосочетаний в разных контекстах, а также их роль в социальном и культурном контексте.

Ключевые слова: фраза, метод, анализ, контекст, предложение, фразеологизм, семантика

Semantic scope of phrases in Italian.

Annotation.

This article is devoted to the study of the semantic scope of phrases in the Italian language. The meanings, structures and communicative functions of phrases are analyzed. Using corpus and semantic analysis methods, the use of phrases in different contexts, as well as their role in the social and cultural context, was studied.

Key words: phrase, method, analysis, context, sentence, phraseology, semantics

Kirish: Frazelogiya til va muloqotni o'rganishda fundamental jihat hisoblanadi. Unga idiomatizmlar, maqollar, idiomatik iboralar va so'z birikmalari kabi turg'un iboralar kiradi. Ushbu iboralar ma'lum bir madaniyat yoki til hamjamiyatining og'zaki va yozma nutqining ajralmas qismidir.

Frazelogiyaning ahamiyati uning tilni boyitish va to'ldirish, tushuncha va g'oyalarni yanada samarali va ifodaliroq yetkazish qobiliyatidadir. Turg'un iboralar majoziy ma'noga ega bo'lib, ko'pincha ularning ma'nosi tarkibidagi alohida so'zlarning ma'nosidan kelib chiqmaydi. Shuning uchun frazeologiyani o'rganish so'z boyligini kengaytiradi va muloqot qobiliyatini yaxshilaydi.

Bundan tashqari, frazeologiya madaniyatlararo muloqotda muhim rol o'ynaydi. Har bir madaniyat o'z e'tiqodlari, qadriyatlari, an'analari va urf-odatlarini aks ettiruvchi o'ziga xos turg'un iboralarga ega. Chet tilining frazeologiyasini bilish o'sha til hamjamiyatining madaniyati va mentalitetini yaxshiroq tushunishga yordam beradi, bu esa muloqot va o'zaro tushunishni osonlashtiradi.

Frazelogiya kundalik muloqotning ham asosiy elementidir. Turg'un iboralar ko'pincha kundalik suhbatlarda, norasmiy nutqlarda va norasmiy til almashinuvida qo'llaniladi. Frazelogiyadan to'g'ri

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foydalana olish tabiiy va ishonchli muloqot qilish imkonini beradi, nutq ravonligini va o'zaro tushunishni yaxshilaydi.

Frazeologiya til o'rganishda qiyinchiliklar tug'dirishi mumkin. Turg'un iboralarning ma'nosi ko'pincha so'zlarning tom ma'nosidan tushunarsiz bo'lgani sababli, ularni alohida ma'no birliklari sifatida o'rganish va yod olish zarur. Bundan tashqari, turg'un iboralar turli tillarda, hatto bir tilning o'zida ham, ular qo'llaniladigan madaniy va ijtimoiy kontekstga qarab farqlanishi mumkin. Shuning uchun ular tilni o'rganishda qo'shimcha harakat talab qiladi. "Lotin tilidan kelib chiqqan italyan tili XIXasrdan boshlabgina adabiy til me'yorlari asosida sayqallashtiriladigan bo'ldi. Italyan adabiyotida so'zlashuv tili va badiiy tilda hozirgi kunga kelib deyarli tafovut kuzatilmaydi".¹

- **Mavzuga oid adabiyotlarning tahlili (Literature review).** Umumiy tilshunoslikda frazeologiya tilni boyituvchi asosiy omillardan biri sifatida qaraladi. Charles Bally frazeologiyani alohida so'zlarning ma'nosidan mustaqil bo'lgan "semantik birliklar" deb ta'riflagan. V.V. Vinogradov esa frazeologiyani tilning ekspressiv (ifodali) imkoniyatlarini oshiruvchi leksik birliklar sifatida o'rgangan. Unda frazeologiyani ahamiyati tilni boyitish, ifodaliroq muloqot qilish va madaniyatlararo o'zaro tushunishni osonlashtirishda ekanligini ta'kidlagan. Bu, M.M. Makovskiy va V.N. Teliya kabi frazeologlar ishlarida keng yoritilgan. Ular turg'un iboralarni milliy mentalitet va madaniy kodlarni saqlovchi birliklar deb hisoblashadi.

So'z birikmalari (Le locuzioni) — bu tilda ma'lum ma'noga va qo'llanilishga ega bo'lgan so'zlar birikmasidir. Ular alohida so'zlardan farqli o'laroq, murakkabroq tuzilishga ega bo'lishi va fe'llar, ravishlar, predloglar va otlar kabi bir nechta elementlarni o'z ichiga olishi mumkin. So'z birikmalari o'z funksiyasi va tuzilishiga qarab har xil turlarga bo'linishi mumkin.

O'zgarmaslik (l'invariabilità) — ba'zi so'z birikmalari, masalan, "*a prescindere da*", jins va songa qarab o'zgarmaydi. Bu xususiyat so'z birikmalaridan foydalanish va ularni eslab qolishni osonlashtiradi, chunki ular grammatik o'zgarishlarni talab qilmaydi.

Idiomatizm — so'z birikmalarining asosiy xususiyatlari. Bu so'z birikmasining ma'nosi uning tarkibidagi alohida so'zlarning ma'nolari yig'indisi emasligini bildiradi. Masalan, "*prendere in giro*" (ustidan kulmoq)² iborasi kimnidir ustidan kulishni anglatadi, lekin uning tarkibidagi "*olmoq*" va "*aylanmoq*" so'zlarining alohida ma'nosi bu ma'noga aloqador emas.

Qo'llanish chastotasi — ba'zi so'z birikmalari boshqalarga qaraganda kengroq tarqalgan va kundalik muloqotda ko'proq qo'llaniladi. Masalan, "*fare una buona impressione*" umumiy so'z birikmasi bo'lsa, "*fare un'ottima impressione*" kamroq qo'llaniladi.

Tadqiqot metodologiyasi. (Research methodology). Italiyan tilidagi so'z birikmalarining semantik hajmini tahlil qilish uchun quyidagi usullardan foydalanish mumkin:

- Korpus tahlili: Berilgan lingvistik korpusdan olingan misollar asosida so'z birikmalarining qo'llanilishi va kontekstual ma'nosini o'rganish. Bu usul til materiallarini keng miqyosda tahlil qilish imkonini beradi. John Sinclair tomonidan asos solingan bu metodologiyaga.
- Semantik tahlil: G.O. Vinokur va boshqa rus tilshunoslari frazeologik birliklarning ma'nosini yoritish uchun semantik tahlilni qo'llashgan. Pragmatik tahlil — so'z birliklarining ijtimoiy kontekstdagi o'rnini o'rganish, leksik tahlil — so'z birikmalarining leksik birliklar bilan aloqasini o'rganish kabi usullar orqali so'z birikmalarining ma'nosini tushunishga harakat qilinadi.

¹ O'zbek va italyan bolalar adabiyotida qahramonlar xarakterlarining qiyosiy tahlil metodi asosida yoritilishi. (J.Rodari va X.To'xtaboyev ijodi asosida), B.Ergashova, So'z san'ati jurnali.

² "Italiyan tilidan badiiy bo'yoqdorlikni ifodalovchi birliklar: so'z birikmalari, iboralar, maqollar" Olimova E'zoza. 2023.

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Tahlil va natijalar. (Analysis and results). Soʻz birikmalarini ularning funksiyasi va tuzilishiga qarab turli kategoriyalarga ajratish mumkin. Soʻz birikmalarining tasnifi:

- Feʼl soʻz birikmalari (Locuzioni verbali): Ular feʼl va bir yoki bir nechta soʻzlardan iborat boʻlib, feʼl vazifasini bajaradi. Masalan: *“fare finta di”* (oʻzini hech narsa boʻlmagandek tutmoq), *“andare via”* (ketmoq), *“prendere in giro”* (ustidan kulmoq).
- Ravish soʻz birikmalari (Locuzioni avverbiali): Ular ravish va uni aniqlovchi bir yoki bir nechta soʻzlardan tashkil topgan. Masalan: *“a malincuore”* (noilojlikdan), *“invece di”* (ning oʻrniga), *“senza dubbio”* (shubhasiz).
- Predlog soʻz birikmalari (Locuzioni preposizionali): Bular predlog va uni aniqlovchi bir yoki bir nechta soʻzlardan iborat. Ular gapdagi ikki yoki undan ortiq element oʻrtasidagi makon, vaqt, sabab, usul va maqsad munosabatlarini ifodalash uchun ishlatiladi. Masalan: *“a causa di”* (sababli), *“in base a”* (asosida), *“al di sopra di”* (ustida).
- Ot soʻz birikmalari (Locuzioni nominali): Ular ot va uni aniqlovchi bir yoki bir nechta soʻzlardan tashkil topgan. Masalan: *“casa madre”* (bosh kompaniya), *“aereo cargo”* (yuk samolyoti), *“peso forma”* (ideal vazn).
- Sifat soʻz birikmalari (Locuzioni aggettivali): Ular sifat va uni aniqlovchi bir yoki bir nechta soʻzlardan iborat. Masalan: *“di primo piano”* (taniqli), *“in buona fede”* (yaxshi niyatda), *“a rischio”* (xavf ostida).
- Bogʻlovchi soʻz birikmalari (Locuzioni congiuntive): Ular bogʻlovchi va uning maʼnosini aniqlashtiruvchi bir yoki bir nechta soʻzlardan iborat. Masalan: *“in quanto a”* (ga nisbatan), *“tanto che”* (natijasida), *“visto che”* (koʻrinib turibdiki).

Xulosa va tavsiyalar. (Conclusion/Recommendations). Ushbu maqolada Italiyan tilidagi soʻz birikmalarining semantik qamrovi chuqur oʻrganildi. Tahlil qilingan soʻz birikmalari oʻzaro munosabatlari, kontekstual maʼnolari va kommunikativ funksiyalari bilan birgalikda koʻrib chiqildi. Korpus va semantik tahlil usullari yordamida soʻz birikmalarining turli kontekstlarda qoʻllanilishi va ularning ijtimoiy va madaniy kontekst bilan bogʻliqligi aniqlanadi.

Natijalar shuni koʻrsatadiki, soʻz birikmalari nafaqat leksik birliklar, balki gʻoyalarni ifodalashning muhim vositasi hamdir. Ular oʻz ichiga olgan maʼnolar badiiy asarlarda, shuningdek, kundalik muloqotda keng qoʻllaniladi. Bu esa oʻz navbatida Italiyan tilining boyligi va oʻziga xosligini ochib beradi.

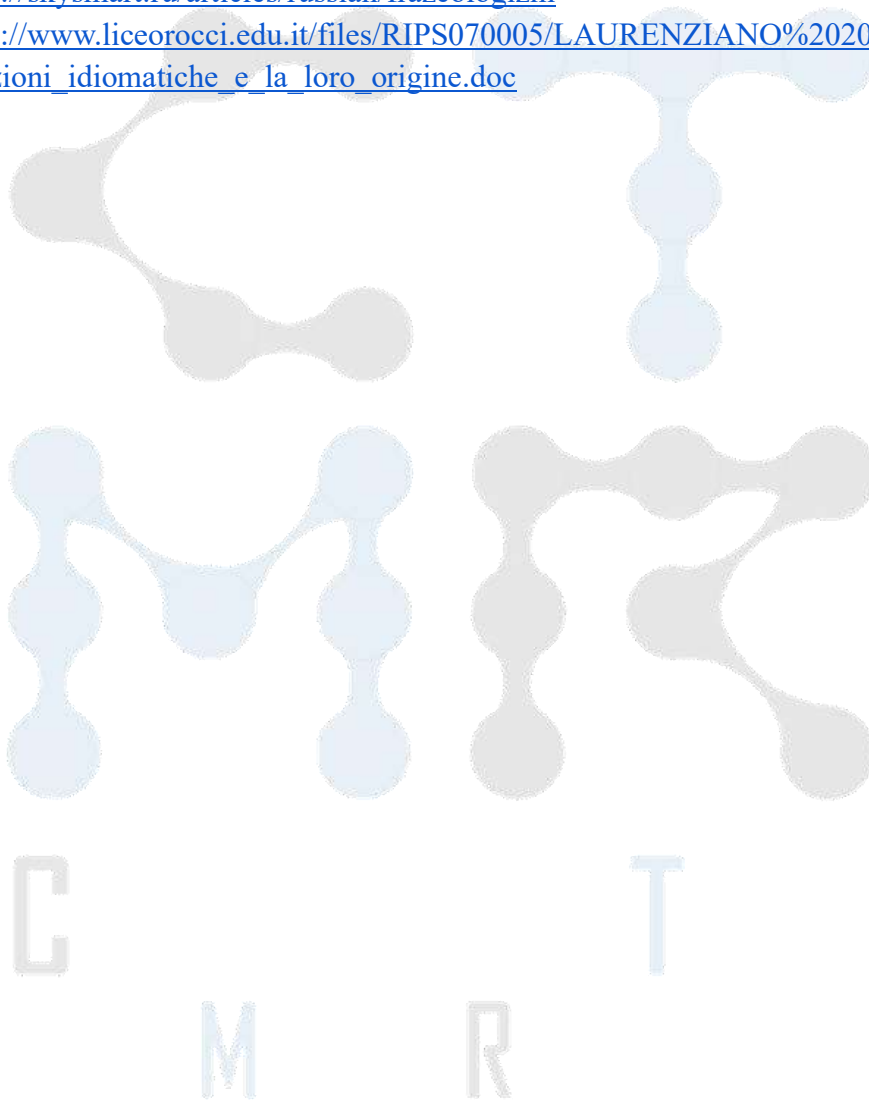
Kelajakdagi tadqiqotlar doirasida boshqa tillardagi soʻz birikmalarining semantik qatorini oʻrganish, shuningdek, ularni boshqa tahlil usullari bilan birga koʻrib chiqish bu sohada bilimlarni yanada kengaytirishi mumkin, yaʼni:

- Boshqa tillar bilan qiyosiy tahlil: Italiyan tilidagi soʻz birikmalarini oʻzbek yoki ingliz kabi boshqa tillardagi shunga oʻxshash birliklar bilan qiyosiy tahlil qilish, til interferensiyasi (oʻzaro taʼsiri) va madaniy farqlarni chuqurroq anglashga yordam beradi.
- Soʻz birikmalarining oʻzgarishi: Soʻz birikmalarining tarixiy evolyutsiyasini, yaʼni ularning vaqt oʻtishi bilan qanday paydo boʻlganini, maʼnosini oʻzgartirganini yoki foydalanishdan chiqib ketganini oʻrganish tilning dinamik xususiyatlari haqida yangi maʼlumotlar beradi.
- Kompyuter lingvistikasi: Soʻz birikmalarini avtomatik aniqlash va tahlil qilish uchun kompyuter modellarini va sunʼiy intellekt texnologiyalarini qoʻllash ushbu sohada inqilobiy yutuqlarga erishishga xizmat qiladi.

Yakuniy xulosa shuki, italyan tilini chuqur oʻrganish uchun nafaqat grammatika va soʻz yodlash, balki tilning yashirin qatlamlari – uning frazeologik boyligini ham oʻzlashtirish zarurdir.

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Tarjimashunoslik ilmda Alisher Navoiy ijodiga doir tadqiqotlar

O'zbekiston Davlat jahon tillari universiteti

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Fransuz tili nazariy fanlar kafedrasida katta o'qituvchisi,

Filologiya fanlari bo'yicha falsafa doktori (PhD)

Xudoyberdiyeva Nigora Sherali qizi

Annotatsiya. Mazkur maqolada tarjimashunoslik ilmda Alisher Navoiy ijodiga doir tadqiqotlar, ilmiy qarashlar va mulohazalar xususida fikr yuritiladi. Insoniyat qadim zamonlardan buyon tarjimaga muhtoj bo'lgan. Navoiy asarlari tarjimasida esa Sharq va G'arb madaniyati o'rtasida ko'priq vazifasini bajaradi.

Kalit so'zlar: Tarjima, adekvat tarjima, she'riy tarjima, poetik figura, tasviriy vosita, trop, ma'naviy va lafziy san'at.

Abstract. This article discusses the research, scientific views and comments on the work of Alisher Navoi in the field of translation studies. Humanity has needed translation since ancient times. The translation of Navoi's works serves as a bridge between Eastern and Western culture.

Keywords: Translation, adequate translation, poetic translation, poetic figure, figurative language, trope, spiritual and verbal art.

Tarjima dunyo xalqlarining madaniy, ilmiy va iqtisodiy hamkorligida g'oyat muhim ahamiyat kasb etadi. Shu sababdan qadim davrlardan boshlab hozirgacha insoniyat tarjimaga ehtiyoj sezadi. Tarjima dastlab og'zaki va yozma tarjimaga ajratiladi. Yozma tarjima ham o'z navbatida badiiy asarlar, ilmiy adabiyotlar, rasmiy-idora hujjatlari, publisitsik materiallar va kinofilmlar tarjimasida kabi turlarga bo'linadi. Badiiy asarlar tarjimasida ham nasriy, she'riy va dramatik asar tarjimalari tavsiflanadi. Har bir tarjima turining o'ziga xos talablari bo'lib, bulardan she'riy tarjimaning har jihatdan murakkabligini alohida ta'kidlash joiz.

"She'riy tarjimaning asosiy vazifasi—she'rning mazmunini, vazni va ohangini saqlab qolish hisoblanadi"¹. Mumtoz she'riyat, ayniqsa Alisher Navoiy asarlarining tarjimasida esa shakl va mazmun mutanosibligini saqlash muammosi yanada murakkablashadi. Alisher Navoiyning o'zi ham tarjima bilan shug'illanib, Abdurahmon Jomiy va Fariduddin Attor asarlarini mahorat bilan turkiy tilga o'g'irgan. Biroq aksariyat navoiyshunoslar shoir tarjimalarida originallik xususiyatlari ustunligini ta'kidlaydi.

Alisher Navoiy asarlari bir necha asrlardan buyon dunyoning yuzdan ortiq tillariga tarjima qilinganligi shoir ijodini tarjimashunoslik nuqtai nazaridan ham tadqiq qilish imkonini berdi. O'zbek tarjimashunosligida mazkur doirada olib borilgan tadqiqotlarda tarjima jarayonida yo'l qo'yilgan xato va kamchiliklar, erishilgan yutuqlar, istiqboldagi tarjimalarning adekvatlik darajasini oshirish xususidagi fikr-mulohazalar bayon qilinib, tadqiqotlarning katta qismi semantik aspektidagi izlanishlardir. Alisher Navoiy asarlari tarjimasining stilistik xususiyatlariga doir yirik monografik tadqiqot sifatida esa S.Olimovning Alisher Navoiy asarlarining rus, tojik va ozarbayjoncha tarjimalarida poetik figuralarning qayta yaratilishiga doir ishini keltirish mumkin. Tadqiqotda badiiy san'at, stilistik vosita, poetik figura, tasviriy vosita, trop, ma'naviy va lafziy san'at tushunchalari atroflicha o'rganilib, turli til oilalariga mansub tillarda poetik figuralarning qayta yaratilishi

¹ Гафуров И., Мўминов О., Қамбаров Н. Таржима назарияси. – Ташкент:Тафаккур бўстони, 1985. –Б.196.

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muammolari tadqiq qilingan². Alisher Navoiy asarlari tarjimalari tadqiqiga bag'ishlangan boshqa ilmiy izlanishlarda esa shoir ijodida qo'llangan badiiy san'atlar va ularning tarjimada qayta yaratilishi dissertatsiyalarning ayrim bo'limlarida qisman ko'rib o'tilgan.

Alisher Navoiy asarlari dunyoning deyarli barcha rivojlangan adabiy tillariga o'girildi³. Mazkur tarjimalar ozarbayjon, gruzin, turk, fors va Yevropa adabiyotiga adabiy ta'sir ko'rsatib, yangi asarlar va ilmiy tadqiqotlarga manba bo'lib xizmat qildi. Misr Milliy kutubxonasida saqlanayotgan Alisher Navoiyning 1471-yil Sherozda Oqquyunli davlatining o'g'uz turkcha tilida ko'chirilgan devoni shoir asarlarining ilk tarjima namunasidir⁴.

XV asrda "Majolis un-nafois" tazkirasi ham fors-tojik tiliga o'girilib, bunga o'sha davrda Movarounnahr va Xurosonda forsiy tilning nufuzi balandligi, Alisher Navoiyga zamondosh turkiy shoirlar ham forsiy va turkiyda ijod qiladigan zullisonayn shoirlar ekanligi sabab bo'lgan. Keyingi asrlarda ham tarjima jarayoni uzluksiz davom etib, tarixchi va tilshunos Mirza Ali Baxt Azfariy Alisher Navoiyning "Mahbub ul-qulub" asarini fors tiliga mahorat bilan o'girdi. Biroq mazkur tarjimalar tarjimashunoslikda ilmiy jihatdan tadqiq etilmagan.

XVII asrda yashagan gurji shoiri Sitsivili Navoiyning "Sab' ai sayyor" dostonini ijodiy tarjima qilib, "Yetti go'zal" yoki "Bahrom guriani", ya'ni "Bahrom go'r" dostonini yaratadi. Mazkur tarjima asar to'g'risida A.Abduazizovning "Alisher Navoiy merosining chet ellarda o'rganilishi" asarida qisqacha to'xtalib o'tilgan. Biroq tarjimaning batafsil tahlili yoki uning ilmiy tadqiqi haqida biror ma'lumot uchramaydi, faqat "Sab' ai sayyor" dostoni haqida o'sha asrda ijod etgan gurji shoiri N.Persodaniadze Navoiyning mazkur dostonni chig'atoy tilida bitgani va shoirlik bobida tengi yo'q ekanligi haqidagi fikrlarini keltirib o'tilgan⁵.

Turkiyada Alisher Navoiy ijodiga qiziqish XV asrdan boshlanganligi sababli shoirning "Mahbub ul-qulub" asari turk tiliga, "Muhokamat ul-lug'atayn" asari esa XIX asr boshlarida turk va tatar tillariga tarjima qilingan⁶. Shoir asarlarining tarjimalari ta'sirida O.Sirri Levend shoir haqida "Alisher Navoiy" nomli to'rt jildli asar⁷, Dukakinzoda Yahyo Bey esa Navoiyga atab "Gulshani Anvor" nomli masnaviy yozadi⁸. Ozarbayjonlik R.Asqarning sa'y-harakatlari natijasida shoirning "Xamsa" asari ozarbayjon tiliga ham tarjima qilindi⁹. Shoir ijodining turk va ozarbayjon adabiyotiga ta'siri masalalari olimlar tomonidan atroflicha tadqiq etilganiga qaramay, yuqorida sanalgan tarjimalar tarjimashunoslik nuqtai nazaridan to'la tadqiqini topmagan.

XX asr o'rtalaridan Navoiy asarlari eronlik tarjimonlar tomonidan fors tiliga o'girildi. Muhammad Naxchevaoniy "Xamsa"ni, Ali Asqar Hikmat "Majolis un-nafois"ni 1944-yilda, Torxon "Muhokamat ul-lug'atayn"ni 1948-yilda fors tiliga tarjima qilib, Tehronda nashr ettirdi. 1963-yilda Navoiyning "Devoni Foniy"si ham Tehronda chop etilgan¹⁰.

² Олимов С. Проблемы воссоздания и трансформации поэтических фигур в переводе произведений Алишера Навои: Автореф. дисс. ... канд. филол. наук. – Ташкент, 1985.

³ Саломов Ф. Таржима назариясига кириш. – Тошкент: Ўқитувчи, 1978. – Б. 12.

⁴ <https://yuz.uz/uz/news/aqshda-alisher-navoiyning-580-yillik-tavallud-ayyomi-keng-nishonlanadi>

⁵ Абдуазизов А.А. Алишер Навоий меросининг чет элларда ўрганилиши. –Тошкент, 1991.

⁶ Ali Şir N. Nesayimü'l-Lugatayn. Hazirlayan: F.Sema Barutçu Özönder. –Ankara, 1996. –s.295.

⁷ Исмаилов Х. Навоий иждоини хорижий мамлакатларда ўрганишга доир // Ўзбек тили ва адабиёти. 1968. №5. – Б. 16.

⁸ Isen M. Anadolu Türk Edebî Dili Üzerine Nevâî Etkisi // Uluğ Bey Sempozyumu. –Çorum, 30 Mayıs–1 Haziran 1994. – S. 298.

⁹ https://uza.uz/oz/posts/navoiyning-xamsa-asari-ozar-tilida-nashr-etildi_333698

¹⁰ Абдуазизов А. Алишер Навоий меросининг чет элларда ўрганилиши. –Тошкент, 1991.

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Alisher Navoiy ijodining nemis tiliga tarjima qilinishida H.Vamberi, Y.Bertels, V.Bartoldlarning ilmiy izlanishlari muhim ahamiyat kasb etadi. Bu haqida A.Abdullajonovning ilmiy tadqiqotida batafsil ma'lumotlar berilib, shoir ijodining olmon adabiyotiga kirib borishi, tarjima bosqichlari tadqiq qilingan. Olimning ta'kidlashicha, Alisher Navoiy she'riyati tarjimalari 1583-yilda X.Armaniyning italyancha tarjimasini Y.Vetsel nemis tiliga o'giran tarjimadan boshlanadi va 400 yildan ortiq tarixga ega. Venger sharqshunosi H.Vamberi "Chig'atoy tili darsligi" asarida shoirning "Mahbub ul-qulub" asaridan parcha, g'azal va ruboiylaridan ham namunalar keltiradi. A.Abdullajonovning tadqiqot ishida H.Vamberi Alisher Navoiy asarlarini tarjima qilishda Munis va Ogahiyning tavsiyalariga asoslangani alohida ta'kidlab o'tilgan. Mazkur dissertatsiyada shoir ijodini olmon tiliga o'girish to'rt asrdan ortiq davrni tashkil etishi hisobga olingan holda, tarjimalar shartli ravishda to'rt bosqichga bo'lib o'rganilgan:

1. Birinchi bosqich — XVI asrdagi va undan keyingi tarjimalar.

2. Ikkinchi bosqich — Navoiy tavalludining 500 yilligi munosabati bilan amalga oshirilgan tarjimalar.

3. Uchinchi bosqich — Navoiy tavalludining 525 yilligi munosabati bilan amalga oshirilgan tarjimalar.

4. To'rtinchi bosqich — Navoiy tavalludining 550 yilligi munosabati bilan amalga oshirilgan tarjimalar"¹¹.

Olim har bir bosqichga mansub tarjimalarni nomma-nom sanab o'tadi. Ikkinchi bosqichda qilingan tarjimalarda A.Kurillaning nomi alohida ta'kidlab o'tilgan, chunki tarjimon Alisher Navoiyning "Farhod va Shirin" dostonining bir qismini nemis tiliga mahorat bilan o'giradi. Mutarjim tarjima jarayonida garchi mazmunini to'la tushunmasa-da, o'zbek mumtoz she'riyati ohangini anglash uchun G'afur G'ulomdan shoir asarlarini o'qib berishni so'raydi. Shu tariqa A.Kurilla ham H.Vamberi kabi Alisher Navoiyni tarjima qilishda o'zbek olimlarining tavsiya va ko'magiga tayanadi.

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4. Isen M. Anadolu Türk Edebî Dili Üzerine Nevâî Etkisi // Uluğ Bey Sempozyumu. — Çorum, 30 Mayıs–1 Haziran 1994. – S. 298.
5. https://uza.uz/oz/posts/navoiyning-xamsa-asari-ozar-tilida-nashr-etildi_333698

¹¹ Абдуллажонов А. Навоий бадиятини немисча таржималарда қайта яратиш ва табдил қилиш: Филол. фан. номз. ... дисс. – Тошкент, 1998. – Б. 20.

ТАРЖИМА САНЪАТИНИНГ ЎЗИГА ХОС ҚОИДАЛАРИ, МУАММОЛАРИ ВА
ЛИНГВОМАДАНИЙ ХУСУСИЯТЛАРИ

Проф. Жамолиддин Ёқубов ЎзДЖТУ

Аннотация: В данной статье мы сосредоточились на двух аспектах искусства перевода: 1) История теории перевода и конкретные правила перевода, 2) Лингвистические проблемы перевода на разных языках и лингвокультурные особенности их перевода.

Abstract: In this article we focus on two aspects of the art of translation: 1) The history of translation theory and specific rules of translation, 2) Linguistic problems of translation into different languages and linguocultural features of their translation.

Ключевые слова: искусство перевода, перевод, переводчик, реалья, лингвокультурологический аспект, риторика, прагматика.

Key words: art of translation, translation, translator, reality, linguocultural aspect, rhetoric, pragmatics.

Мазкур мақоламизда биз таржима санъатининг икки қиррасига эътиборни қаратдик: 1) Таржима назариясининг тарихи ва таржима қилишнинг ўзига хос қоидалари, 2) таржиманинг турли тиллардаги лисоний омиллари ва уларни таржима қилишдаги лингвомаданий хусусиятлари.

Юқоридаги вазифаларни бажариш учун бизда тажриба ҳам, шарт-шароит ҳам етарли, деб ўйлаймиз.

Ўзбекистонда жаҳон халқлари билан турли соҳаларда олиб бориладиган кенг қўламдаги халқаро ҳамкорликнинг ривожланишида таржимонларнинг ўрни бекиёсдир.

Таржимашуносликнинг ўзига хос назария сифатида санъат даражасида ривожланишига таниқли тилшунос ва таржимашунос олимлар В. Комиссаров, А. Фёдоров, Л. Бархударов, Я. Рецкер, Ғ. Саломов, Қ. Мусаев, О. Мўминов, Ю. Найда, Ж. Кетфорд ва бошқалар катта ҳисса қўшди. Таржима назарияси борасида XX асрда амалга оширилган илмий ишларнинг, яратилган таржима мактабларининг мантиқий давоми XXI асрда ҳам ўз самарасини кўрсатмоқда.

Таржима – бу санъат демакдир, таржимоннинг санъати эса – бу ўз тушунчасини бошқа тилга таржима қилиб узатиш. Таржимон бегона воқеликни тўғри англаши, тушуниши, мулоҳаза қилиши, ёзувчининг ҳолатини кўриши, англаши, ҳис қилиши каби ҳолатларни тўғри таржима ёрдамида ўз китобхонига етказиб бериши лозим.

Ўзбекистонда таржима санъатини ривожантиришда Ғайбуллоҳ АС-САЛОМнинг фидокорона меҳнати ўта буюк ҳисобланади. Ғ. Саломов таржима санъати ҳақидаги фикрларини қуйидагича ифодалайди: “Таржима орқали **халқлар** бир-бирлари билан муомала қилганлар, **олимлар** бир-бирлари билан фикрлашганлар, **адиблар** бир-бирлари билан мулоқотда бўлганлар. Ҳамма замонларда – хоҳ адабий, хоҳ илмий, хоҳ сиёсий китоблар таржимаси бўлсин – халқ, у яратган ёки яратаётган **маданият, фан, адабиёт** ва **санъат** бундан фақат наф кўрган[Саломов 1983, 18-б.]

Таржима - **илм** ва **санъат**. У илм бўлганда ҳам, асрлар давомида не-не мутафаккирлар, турли соҳа вакиллари, ёзувчи ва шоирлар ҳаёлини банд этиб келаётган **мураккаб илм**, санъат бўлганда ҳам, **санъатлар шоҳи**. Ўзига хос **аҳамияти** ва **сиру-синоатларга** бойлиги жиҳатидан унга тенг келадиган санъат йўқ[Одилжон Сафаров 2024, 3-б.].

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Ҳозирги даврда XXI асрнинг замонавий таржимашунослигига жуда кўплаб ўзбек таржимонлари ва лингвистлари ўз ҳиссаларини қўшмоқда. Булардан Хуршид Даврон, Муҳаммад Али, Иброҳим Ғафуров, Қудратхон Мусаев, Нажмиддин Комилов, Иброҳим Ғафуров, Шахриёр Сафаров, Ибайдулло Мирзаев, Муҳаммаджон Холбеков, Омон Мўминов, Бегойим Холбекова, Шухрат Сирожиiddинов, Ғанишер Рахимовларни айтиб ўтиш лозим.

Маълумки, таржима инсон фаолиятининг энг қадимий турларидан бири бўлиб, у туфайли биз жамият тараққиёти тарихининг барча тафсилотларини очиқ-ойдин тасаввур этамиз. Таржима туфайли миллий адабиётларга янги ғоявий йўналиш, янгича сюжет, жанр, янги образ ва бадиий тасвир воситалари кириб келади. Шу маънода, таржимани аслиятни қайта яратиш, талқин этиш санъати деб таърифлаш мумкин.

Бизнинг назаримизда, таржима – бу бир тилдаги ахборотни бошқа тилда баён этиш демакдир. Таржима ва аслият матнларда аниқланган миллий маданиятларнинг ўхшашлиги ва фарқларини тадқиқ қилиш асос ҳисобланади.

Ўзбекистоннинг собиқ биринчи Президенти Ислон Каримовнинг “Тарихсиз кележак йўқ” деган доно фикрларини давом эттирган ҳолда айтиш лозимки, ҳар бир тадқиқот объектининг ўз тарихи мавжуд. Жумладан, француз тилида таржима назариясининг ҳам ўзи хос тарихий ривожланиш босқичлари бор. Француз тили тарихи ва адабиёти таржима ҳақида кўплаб тарихий анъанавий бойликка эга. Жумладан, Е.Г. Эткинд ўзининг “Буюк француз таржимонлари” мақоласида “Францияда таржима тарихи” фожиа билан бошланди деб ёзган эди. Ушбу мақоланинг биринчи қатори француз Уйғониш даврининг инсонпарвари, таржимони, ёзувчи ва босмаҳона матбаачи Этьен Долега бағишланган.

Таъкидлаш лозимки, шахсан Этьен Доленинг француз тилига қўшган хизмати шундаки, у туфайли илк бор француз тилига **traducteur** (таржимон) ва **traduction** (таржима) сўзлари кириб келган. Энг муҳими Э. Доле асарининг тарихий хизмати шундаки, мазкур асар «Бир тилдан иккинчи тилга яхши таржима қилишнинг ўзига хос хусусияти» (“La maniere de bien traduire d’une langue en autre”) 1540 йили биринчи марта чоп этилди.

Э. Доленинг мазкур илмий иши таржима назариясининг прескриптив йўналишидаги бош манба бўлиб хизмат қилган. Муаллиф ўз асарида тўлақонли яхши таржима қилишнинг бешта қоидадини тақлиф қилади :

- 1) таржимон энг аввало муаллифнинг предмет ҳақидаги фикрини ва бу объект ҳақидаги унинг ҳукмини яхши тушунмоғи лозим;
- 2) таржимондан тил аслиятини яхши билиш ва уни юксак даражада таржима қилиш талаб қилинади;
- 3) таржимон матннинг асл нусхасини сўзма сўз таржима қилмаслигини инобатга олмоғи лозим;
- 4) таржимондан таржима нормаларини яхши билган ҳолда умумий қўлланиладиган лисоний шакллар билан чекланиши талаб этилади, аммо янги лесик ибораларни ҳеч қандай ўйламасдан ўзича ихтиро қилиб, таржимага киритиши мумкин эмас;
- 5) таржимондан нотиклик нутқ нормаларига риоя қилиш талаб қилинади, айниқса, “гапларни бир-бирига боғлаш ва бирлаштириш қоидаларига нозиклик билан шундай ёндашиш керакки, унда инсон қалби фақатгина қаноатланиб қолмасдан, балки унинг кулоқлари эшитиб роҳатланиши керак, чунки одатдаги нутқда бундай уйғунлик мавжуд эмас” [La maniere de bien traduire d’une langue en autre 1540].

Таржимоннинг **мақсади** – ахборотни узатиш дегани, бу бир тилни иккинчи тилга алмаштириш эмас, балки асосий матн мазмунидан келиб чиқиб, сараланган махсус тил воситалари орқали таржима моҳиятига мос келадиган муқобил таржимани беришдир.

Ҳозирги замон лингвистикасида “**таржима**” терминига **жараён** ва **натижа** деб таъриф берилган.

Т.В.Жеребилонинг лингвистик терминлар луғатида “таржима” терминига қуйидагича таъриф берилган:

1. матн мазмундаги ахборотни лисоний воситалар билан бошқа тилга узатиш;
2. икки ёки ундан ортиқ тиллар қиёслашининг мақсади улар орасидаги семантик хусусиятларнинг мос келишини қидириб топиш;
3. матн мазмундаги ахборотнинг ғоясини тўла очиб бериш учун бошқа тилдаги воситаларни излаб топиш, шунингдек мазмун ва шакл нуқтаи назардан матннинг асл нусхасидаги мазмун моҳиятининг тўла очиб берилишининг таржимага мос келиши.
4. Социолингвистик нуқтаи назардан, таржимон таржима жараёнида чиройли талаффузга ва экстралингвистик характердаги маълумотга ҳам эга бўлиши лозим [Словарь лингвистических терминов. 2010].

А.Д.Швейцернинг фикрича, “**таржима**” бир йўналишдаги икки жараёни қамраб олувчи мулоқатнинг тиллараро ва маданий фазавий жараёндир .

Таржима жараёни – ўта қийин, кўп аспекти, таржимондан нафақат лингвистик, аммо экстралингвистик, лингвوماданий билимларни ҳам талаб қилади. Таржима объекти ўта мураккаб жараёндир.

II. Таржима масалаларида 6 хил муаммо мавжуд: лексик-семантик, грамматик, синтактик, риторик, прагматик ва маданий (локализация-худудий).

1. Таржимада лексико-семантик муаммолар

Француз тилидан бошқа тилларга таржима қилишда ўзига хос муаммолари мавжуд. Лексик-семантик муаммолар луғатлар, изоҳли луғатлар, турли соҳалар бўйича, жумладан, банк соҳасига доир терминлар махсус экспертлар билан маслаҳатлашиш орқали ҳал қилиниши мумкин бўлган муаммолардир. Ушбу ҳолатда матнларда терминларнинг ўзаро алмашиши хусусиятидан келиб чиқиб, неологизмлар, семантик лакуналар, синоним ва антонимлар лексик сатҳида икки ёки ундан ортиқ семантик маъноларни ифодалашига эътиборни қаратиш лозим.

Таржимоннинг вазифаси ўқувчига муаллиф мақсадини аниқ етказиш билан бирга фақатгина эксплицит ахборотни эмас, балки имплицит маълумотни ҳам тўғри узатиш лозим. Албатта, бу таржимон учун ўта мураккаб вазифа, таржимон доим ҳам яхши таржима қила олмаслиги мумкин, чунки турли хил тилларнинг дунёвий манзараси ва менталитети мос келмайди.

Инглиз ва ўзбек тилларидаги лексик мувофиқлик турлари : 1.Тўлиқ лексик мувофиқлик. 2. Қисман лексик мувофиқлик. 3. Умуман мос келмаслик. 4. Тўлиқ лексик мувофиқлик.

Мас., сўзларнинг полисемантик хусусияти: **house**(уй, бошпана, парламент ва ҳ.к., **head**(бош, калла, раҳбар, бошлиқ ва ҳ.к.), **serviette** (салфетка, сочиқ, портфель; папка)

Биз француз тилидан рус тилига таржима қилишда икки тил йўналишида тез-тез қийинчиликларга дуч келамиз.

Масалан, рус тилидаги **лиса, лошадь, собака, ворона, кошка** (тулки, от, ит, қарға, мушук) сўзлари аёл жинсига қарашли бўлса, француз тилида эса улар: **renard(m), cheval (m), chien (m),**

corbeau (m), chat (m) эркак жинсига мос келади. Демак, француз ва рус тилларидаги жинс категорияси доим ҳам бир-бирига мос келавермайди. Таржимон бадий асарни таржима қилишда ўша халққа хос қизиқ, ғайриодатий урф-одат ва реалияларини яхши билмоғи керак.

2. Таржимада грамматик муаммолар

Грамматик муаммолар, масалан, темпораллик, тус(аспект) категорияси (тус категориясини ифодалашда замонга нисбатан иш ҳаракатнинг давомийлик жараёни ёки ҳолатни ифодалашда феъл ва кишилиқ олмошининг қўлланиши, олмош билан феъл биргаликда ифодаланганда турли семантик ҳаракатни, жумладан, ҳаракатнинг ривожланиши жараёни ёки ҳолатни кўрсатишга ҳизмат қилишини инобатга олиш лозим.

Масалан, инглиз, француз ва ўзбек тилларида сўз тартиби: **I go to school – Je vais à l'école – Мен мактабга борапман. -S-P, - ўзб. SOP**

Француз тилидаги **tout** олмошини таҳлил қиладиган бўлсак, ушбу олмош ўзига хос семантик хусусиятга эга: биринчидан, ушбу олмошнинг мазмунини очиб бериш от олдида ёки отдан сўнг артик билан ёки артиклсиз келишига боғлиқ, иккинчидан, **tout** олмошининг аниқ ёки ноаниқ артикл билан келишини назарда тутмоғ лозим.

Француз тилидан рус тилига таржима қилиш жараёнида таржимон **tout** олмошининг кўп маънони англатишини билмоғи керак, жумладан, **tout** олмоши рус тилида "*весь*", "*целый*" ёки "*каждый*" маъноларини англатиб келади. Агар олмош от олдида аниқ артикл билан қўлланса, **tout** олмоши француз тилидан рус тилига "*весь*" деб таржима қилинади. Масалан:

- *Il veut savoir toute la vérité . – Он хочет знать всю правду.*
- *J'y ai pensé toute la soirée. - Я думал об этом весь вечер.*

Агар олмош от олдида ноаниқ артикл билан қўлланса, бу ҳолда **tout** олмоши француз тилидан рус тилига "*целый*" сифати ёрдамида таржима қилинади:

C'est tout un problème. – Это целая проблема,

Ce n'est plus un village, c'est toute une cité. - Это больше не деревня, это целый город,

Борди-ю **tout** олмоши от олдида артиклсиз қўлланса, унда мазкур олмош француз тилидан рус тилига "*всякий, каждый, любой*" сўзлари орқали таржима қилинади.

- Қуйидаги мисолларни таҳлил қиладиган бўлсак, **tout** олмоши ўзига хос семантик маъноларни ифода этади:
- *Tout enfant a droit à l'instruction. – Каждый ребёнок имеет право на образование*
- *Contre toute espérance il a réussi ce role. – Вопреки всякому ожиданию эта роль ему удалась.*

Таъкидлаш лозимки, француз тилида ёрдамчи сўзлар катта роль ўйнайди. Юқорида мисоллардан кўриниб турибдики, артиклар отлар олдида келганда матннинг мазмунини сезиларли даражада ўзгартириб юборади. Жумладан, қуйидаги учта гапни қиёсий таҳлилга тортамыз ва бу ҳолатни гувоҳи бўламиз.

- *Je mange le chocolat. – Я ем шоколад.*
- *Je veux du chocolat. – Я хочу шоколада.*
- *J'ai mangé le chocolat. – Я съел целую шоколадку.*

Айтиш лозимки, француз тилида артикл мавҳум тушунчани аниқ предметга айлантириб юбориш хусусиятига эга. Масалан: *l'attention* – внимание - диққат,

- *une attention* – знак внимания, подарок-этибор белгиси; совға;
- *la beauté* – красота-гўзаллик, *une beauté* красотка - гўзал-соҳибжамол қиз..

3. Таржимада синтактик муаммолари

Синтактик муаммолар синтактик параллелизмлар, синтактик муносабатлар (бошқарув, битишув), феълларнинг активлик ва мажхуллик нисбати, гап ёки иш ҳаракатни ифодаловчи ҳикояларда воқеликнинг амалга ошиш жараёнини шакллантириш, риторик фигуралар шаклланишининг таркибий қисми, гап ва нутқларда сўз тартибининг ўзгариш ҳолати, шунингдек сўзларнинг анафорик хусусиятини гапнинг бошида, шеърларда ва фразаларда келишини инобатга олиш кузатилади.

White flag- оқ байроқ, **He laughed** – У кулди. **house-plan** -уй плани-план дома.

4. Таржимада риторик муаммолар

Риторик муаммолар бевосита ўхшатиш билан боғлиқ. Иш ҳаракатни мантикий фикрлаш стилистик фигуралар(воситалар) (қиёслаш, метафора, метонимия, синекдоха, оксиморон, парадокс ва бошқалар) ва дикция(чиройли талаффуз ёрдамида сўз ва гапларни аниқ-равшан айтиш) билан боғлиқ.

Il est têtue comme un âne– У эшакдек ўжар- У упрямый как осёл

Рус кишиси фарзанд кўрмаган одамга: **он был бездетен**- у бефарзанд эди – энг муқобил вариант-у **тирноққа зор эди** - жаранглироқ чиқади.

Бадиий матн таржимасини юқори савияда амалга ошишида таржимон куйидаги тил омилларига эътиборни қаратиш керак деб ўйлаймиз.

Таржима тарихий ўтмиш дунёси билан боғлиқ бўлса, таржимон дарҳол архив ҳужжатлар билан танишиб чиқиш даркор, шунингдек ўша давр ҳамма реалияларни билиши ва уларнинг бадиий асарлардаги таржимасини китобхонлар онгига қандай етказиб бериш масаласини ўйлаши зарур.

Биринчидан, стилистик услубларни ишлаб чиқиш ва таҳлил қилиш лозим. Бу ерда асосий эътибор фразеологизмларга қаратилади, баъзан уларнинг бошқа тилда муқобил варианты бўлмайдими: жумладан, француз тилидаги фразеологизм **“avoir un rat dans la tete”** ни сўзма-сўз **“унинг бошида каламуш бор”** деб таржима қилинса, жуда кулгили бўлади, аслида у **“хомкалла, эси паст”** деган маънони англатади, ушбу фразеологик бирикма эса рус тили вариантида **«без царя в голове»** деб таржима қилинади.

Иккинчидан, таржиманинг сифатли чиқишида лисоний олам(дунё манзараси) нинг таъсири бўлади. Масалан, агар ўзбеклар ёки руслар акс урса **«Соғ бўлинг!- Будьте здоровы!»** дейилади. Французлар эса бу ҳолатни бошқача ифодалайди: **«A vos souhaits!»** – **«Пусть сбудутся ваши желания!»** – **Сизнинг истакларингиз амалга ойсин», «A vos amours!»** – **«Пусть у вас будет удача в любви!- Муҳаббатда омадингиз келсин!»**.

Учинчидан, таржимон бадиий асарни таржима қилишда ўша халққа хос қизиқ, ғайриодатий урф-одат ва реалияларини яхши билмоғи керак.

Муайян бир халқ ва миллатга хос турмуш тушунчаларини англатадиган сўзлар – реалиялар дейилади. Масалан, испан тили адабиётини таржима қилишда **панчо (ёпингич), мачете (чолғи-ўроқ), сомбреро (шляпа), фламенко (байрам)**, жазоир адабиётини таржима қилишда араб халқ ҳаётининг реалияларини: **кускус (таом), тамтам, сук (бозор) таржимон яхши билиши керак.** Француз таржимони учун эса рус ва ўзбек реалияларини: **самовар, староста, чойхона, маҳалла, маҳалла раиси, суннат, бешик тўйи** таржима қилиш анча қийинчилик туғдиради.

Юқоридаги айтилган лисоний омиллар таржима сифатига таъсир қилади, матн таржимасини сифатли амалга оширишда таржимон лексик ва синтактик трансформацияларга мурожаат қилишга мажбур бўлади.

5. **Таржимада прагматик муаммолар:** Кишилик олмошларнинг фаол қўлланиш таржимаси мисолида.

Прагматика – бу одамларнинг тил бирликларига бўлган субъектив муносабатидир. Л.С. Бархударов Таржиманинг прагматик маъноларини ўрганишда ҳар бир сўзнинг лексик-семантик маъносини 3 типга бўлиб ўрганишни тавсия қилади: 1) сўзнинг стилистик характеристикаси; 2) сўзнинг регистри; сўзнинг эмоционал бўёғи.

Масалан, битта жумлада икки-уч хил прагматик эмоционал бўёқ учраши мумкин: **Please come in** (расмий), **Come in** (нейтрал), **Come in will you** (маиший, салбий бўёқли), **Get the hell in here** (фамиляр, салбий эмоционал).

Прагматик масалалар “сен” ва “сиз” олмошлари билан узвий боғлиқдир. Жумладан, ушбу олмошлар ёрдамида идиоматик фразалар, иборалар, диктон(мақол-матал ва ҳикматли сўзлар)лар, ирония(киноя, пичинг), ҳазил ва жаргонлар қўлланишида учрайди. Аммо бу қийинчиликлар бошқа қийинчиликларни ҳам ўз ичига олиши мумкин, масалан, инглизча-французча матн таржимасида кишилик олмоши “сиз”. Бу ҳолатда таржимон “сен” ва “сиз” олмошларидан қайси бири матн мазмунига мос келишини ва уларни тўғри қўллашни ўйлаб кўришга тўғри келади. Агар “сиз” олмошини қўлласа, унда маъно ўзгариб, хушмуомалик категориясига айланиб кетиши мумкин. Бу ҳолат эса доим ҳам таржимага мос келавермайди.

6. Таржимада лингво-маданий муаммолар

Маданий муаммолар турли тилларда маданият ҳар хил бўлиб, улар ўша халқ маданиятини акс эттиради. Жумладан, ҳар хил миллатда таомларнинг номланиши ҳар хил, байрамлар ва ҳар хил маданиятни англатувчи урф-одатларни ҳам кўрсатиш мумкин. Таржимон эса ҳар икки тил соҳиблари маданиятини чуқур билиши ва англаши лозим. Фразеологик бирикма мисолида миллий колорит ёки бир миллатга хос бўлган тасвир таржимаси:

Немис тилида – Wenn die Hunde mit dem Schwanz bel-len(қачонки, итлар думлари билан аккилласалар) ибораси қўлланса, **инглизларда** – -when the moon turns green cheese(қачонки, ой яшил пишлоққ айланса) иборас анолог сифатида танланса, **француз тилида** - Quand les poules auront des dents(қачонки товуқларнинг тишлари бўлса). **Рус тилида** – Когда рак свистнет на горе и рыба запоеет(қачон тоғда қисқичбақа хуштак чалса ва балиқ куйласа) таржима қилинса, **ўзбек тилида** – “**туянинг думи ерга текканда**” иборасини танлаш мумкин. **Таъкидлаш лозимки**, диний эътиқодларни ўрганиш, халқнинг ҳаёти, турмуш тарзи, моддий ва маънавий маданияти билан танишиш.

Жумладан, бунга мисол қилиб француз тилига таржима қилинган оддий гапни келтириш мумкин: “Бир жазоир кишлоғида Лаид эль Кебир байрамига қўй сўйишган”. Баъзи талабалар ушбу гапни қуйидагича таржима қилишган: “«*On a tué un mouton pour feter Laid el Kebir dans un village algérien*”.

Бир кўринишидан ушбу гапнинг таржимаси тўғрига ўхшайди. Аммо талабалар ўша жойдаги мусулман урф-одати бўйича қўйнинг томоғидан сўйишини ҳисобга олмаганлар. Бу ерда таржима учун «забить-уриб ўлдирмоқ» (abattre), «убить-ўлдирмоқ» (tuer), «заколоть-санчиб ўлдирмоқ» (poignarder) феъллари мос келмайди. Бирдан- бир тўғри деб қуйидаги таржима вариантларини ҳисоблаш мумкин:

- «*On a égorgé un mouton pour feter Laid el Kebir dans un village algérien*»; ёки «*Dans un village algérien on a égorgé un mouton pour feter Laid el Kebir*».

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Шундай қилиб, мисоллар таҳлили шуни кўрсатмоқдаки, таржима жараёнидаги асосий камчилик ва хатоларнинг сабаблари шундаки, икки халқ тили, уларнинг ҳаётидаги менталитетнинг бир-биридан фарқ қилиши, турли халқ лисоний манзарасининг бир-бирига мос келмаслиги, таржима жараёнида турли хил касблар, нутқдаги шевалар, диний эътиқодлар, жаргон ва арголарнинг ҳар хил номланишини ҳисобга олмаслик, таржима сифатини пасайишига олиб келади.

Таржимон биринчи навбатда, асл нусхани тўла-тўқис идрок этиши, сўнгра уни ўз тилида беками-кўст қайта ифодалаши даркор. Филология фанлари доктори, кекса ёзувчи ва моҳир таржимон Корней Чуковский ўзининг «Искусство перевода» номли машҳур асарида қуйидаги рус мақолини эпиграф қилиб олган эди: «Таржима худди хотинга ўхшайди: тўғри бўлса – чиройли эмас, чиройли бўлса – тўғри эмас». Бу мақол таржима санъатининг асосий хусусиятини, унинг заминидagi мавжуд зиддиятни жуда тўғри акс эттирган. Зеро, тўғри таржима этишни мақсад қилиб қўйган киши, кўпроқ, хижжалаб таржима қилишга, муддаоси чиройли таржима қилишдан иборат бўлган киши эса кўпроқ ўзини авторлаштиришга мойил бўлади.

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**“ВАЪДА БЕРИШ” ЛЕКСЕМАСИНИНГ АЁЛЛАР НУТҚИДА ҚЎЛЛАНИШИНИНГ
ФУНКЦИОНАЛ СЕМАНТИК ХУСУСИЯТЛАРИ**

Проф. Жамолиддин Ёкубов ЎзДЖТУ

Аннотация: Мазкур тадқиқот француз тилида ономасиологик йўналишидаги нуткий актларда “ваъда бериш” лексемасининг қўлланишига бағишланган. Мақоланинг мақсади ваъда бериш лексемасининг прагматик, семантик, морфологик ва синтактик хусусиятларини очиқ бериш ҳисобланади.

Аннотация: Настоящее исследование посвящено изучению речевых актов обещания во французском языке в ономасиологическом аспекте. Целью настоящей статьи, следовательно, является выявление прагматических, семантических, синтаксических и морфологических особенностей французских промисивов.

Annotation: The present study is devoted to the study of speech acts of promise in French from an onomasiological aspect. The purpose of this article, therefore, is to identify the pragmatic, semantic, syntactic and morphological features of French promises.

Калит сўзлар: ваъда бериш, нуткий акт, сўзловчи, тингловчи, эмотив ҳолат, модал феъллар, имплицитлик, паратаксиз, гипотаксиз.

Ключевые слова: обещание, речевой акт, адресант, адресат, эмотивное состояние, модальные глаголы, имплицитность, паратаксиз, гипотаксиз.

Key words: promise, speech act, addressee, addressee, emotive state, modal verbs, implicitness, parataxis, hypotaxis.

Ўзбекистон Республикаси мустақилликка эришгандан сўнг таржима санъати алоҳида фан сифатида шаклланиб, ривожланиб бормоқда. Тўғри, олдин ҳам бу фан бор эди, аммо кўп таржималар она тилимизга бошқа тиллар орқали таржима қилиниб, ушбу фанга эътибор камроқ қаратилар эди. Бугунги кунда эса бошқа хорижий тиллардан тўғридан-тўғри она тилимизга таржима қилиш кундан-кунга кўпайиб бормоқда. Бу эса, албатта, бизни қувонтиради.

Таржима қилиш деганда биз бир тилдаги воқеликнинг аниқ мазмунини турли хил лисоний бирликлар ёрдамида иккинчи тилга ўгиришни тушунамиз. Демак, таржиманинг асосий вазифаси фақатгина гап мазмунининг асосий ғоясини бериб қолмасдан, балки таржиманинг асосий услубий хусусиятини ва воқеликнинг ифодаланиш шакллари тилдаги воситалар орқали берилишини тушунамиз. Айнан шу вазифа шакл ва мазмуннинг ўзаро бирлиги таржимани бир тилдан бошқа тилга турли хил йўللار билан ўгиришда катта роль ўйнайди. Бир тилдан иккинчи тилга таржима қилиш жараёнида матндаги гапларни ўзаро алмаштиришнинг қуйидаги асосий мантикий турлари мавжуд: 1) грамматик категориялар(сон, замон, майл ва ҳ.к.) транспозицияси; 2) сўз туркумлари транспозицияси; 3) лексик-синтактик транспозиция; 4) гапларни лексик-семантик алмаштириш (улар турли хил вазиятни қамараб олади). Айтиш жоизки, таржима жараёнида матндаги воқеликни ифодалашда гаплар асосий синтактик бирлик бўлиб хизмат қилади. Ҳар қандай гап бир нечта сўзлар микдоридан иборат

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бўлиб, улар грамматик шаклга эга ва бу сўзлар бирорта сўз туркумига тегишли бўлиб, улар ўзаро синтактик муносабатда бўлади.

Маълумки, тил ва тафаккурнинг бирлиги нутқда ўз ифодасини топади. Нутқ оғзаки ва ёзма ҳолда мавжуд бўлиб, унда фикримиз моддий шаклга, яъни хиссий идрок этиладиган шаклга киради ва шу тариқа у энди бир шахсга эмас, балки жамиятга тегишли бўлиб қолади. Нутқнинг яратилиши ўз ичига бир қанча мураккаб руҳий ва жисмоний жараёнларни олади.

Демак, нутқ фаолиятдир. Биз мазкур мақоламизда аёллар нутқида “ваъда бериш” лексемасининг таржимадаги функционал семантик хусусиятлари ҳақида фикр юритамиз.

Promettre/обещать. Ваъда бериш, сўз бериш, ваъдани бажариш, ўз ваъдасида туриш, куруқ ваъдалар бериш каби қатор маъноларни англатади. Ваъда бериш нутқий акти – иллокутив нутқ акт ҳисобланиб, унда бирор ишни ёки мақсадни амалга ошириш кўзда тутилган. Бу ерда сўзловчи(адресант) ва тингловчи (адресат) орасидаги мулоқот назарда тутилади.

Ваъда бериш иллокутив нутқ актига эмотив ҳолати киради: Агар унда шодлик, ғам-алам, муаббат, ҳурмат ташаккур билдириш каби. Шунингдек улар таркибида модал феъллар, ҳолатни баҳолавчи лексика сўзловчи томондан қўлланса.

1. S'engacher envers qqn à faire/qqch/ (Бирор нарсани бажаришни ўз бўйнига олмоқ.) il lui a promis son aide. Il a promis de faire l'impossible pour venir. 2. S'engacher envers qqn à donner/qqch/ Promettre une récompense(мукофот), un poste(лавозим) à qqn. 3. Annoncer, prédire(эълон қилмоқ, олдиндан айтмоқ). Je vous promets du beau temps pour demain. [Le Petit Robert 2015, 204p].

Ваъда бериш лексемаси икки гуруҳда қўлланади: Нутқнинг икки асосий тури мавжуд: 1) шахсий нутқ. Кунда ишлатиладиган иборалар, турмуш тарзи. Бу нутқ бадий асарларда, фалсафа ва психологик матнларда шахснинг ички дунёси тўла очиб берилади.

2) институционал (-касбий-расмий)нутқ. Инсон ижтимоий ҳаётдаги, яъни сиёсий, дипломатик, административ, юридик, ҳарбий, педагогик, реклама, спорт, илмий, ахборот воситалар ва ҳ.к.ни ўз нутқи орқали баён қилади.

Сўзловчи (муаллиф)нинг нутқида қўлланувчи ваъда бериш лексемасининг синтактик структураси тасдиқ ва инкор , дарак ва ундов гапларда қўлланилади. Ушбу гапларда мурожаат, хис-хаёжон, модал ва кириш сўзлар, юкламалал ва бошқа коннотативни англатувчи воситалар қўлланмайди.

Ваъда бериш лексемасининг морфологик хусусияти шундаки, унда турли хил феъл замон шакллари, жумладан, келаси замон, яқин келаси замон, ҳозирги замон, истак майли ва биринчи шахсда **je/я и nous/мы** қўлланилади.

Таҳлил шуни кўрсатмоқдаки, ваъда бериш лексемаси кунли ҳаётда француз аёллари нутқида дарак гапларда қўлланса, рус аёлларида эса ундов гаплар ишлатилиши намоён бўлди.

– *Мамочка, поздравляю тебя и обещаю, что своего ребенка никогда не брошу!*

[<http://www.rambler.ru/news/russia/0/11672993.html>]

Кунлик турмуш тарзида рус аёллари нутқида ваъда бериш лексемаси 45% случаев, а француз аёлларида эса 65,8%.

Сўзловчи фикрларининг нутқ йўналтирилган шахсга тез ва осон етиб боришида мулоқат жараёни муҳим ўрин тутди. Сўзловчи ўз коммуникатив мақсадига эришиш учун нутқий вазиятга мос келувчи лисоний бирликлардан фойдаланади. Табиийки, мулоқат жараёнида иштирокчилар нутқий ижтимоий нуктаи назаридан хосланган бўлади. Бунда мулоқот вазияти, мавзуси, нутқ иштирокчиларининг касби, ёши, миллати, жинси, дунёқараши, ижтимоий

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нуфузи муҳим аҳамият касб этади. Жумладан, аёллар нутқида “ваъда бериш” лексемасининг қўлланишини кўриб чиқайлик.

Ҳар бир аёл нутқ акти замирида маълум бир мақсад ётади. Шунга боғлиқ ҳолда бир нутқий мулоқотда турли нутқий актлар намоён бўлиши ҳамда бир тизимни ташкил этиши мумкин. Бу нутқий актларда сўзловчининг ифодаланаётган фикрларга мунособати, воқелик фактларини у ёки бу нуқтаи назаридан баҳолаши ҳам ўз ифодасини топади. Масалан, аёл ва эркеклар нутқида кўплаб содда ва мураккаб гапларни учратамиз. Айниқса, аёллар нутқида гапларнинг кетма кет келиши, уларнинг узвий мантиқан боғланиши, улар нутқида эмоционал ҳаракатлар, интонация ва лисоний бирликларнинг керакли жойларига турли хил урғуларнинг тушиши гапларнинг моҳиятини янада ошириб жозибали қилиб кўрсатади. Мисоллар таҳлили шуни кўрсатмоқдаки, аёллар нутқида “ваъда бериш” лексемаси эркеклар нутқида нисбатан кўпроқ паратаксист (боғловчисиз гапларда) гапларда учраши кузатилса, эркекларда эса гипотаксист (эргаш гапларда) гапларда қўлланиши маълум бўлди.

Таъкидлаш лозимки, аёллар нутқида ваъда бериш икки ҳолатда намоён бўлади: 1) имплицит, яъни *Promettre* феъли қўлланмайди, 2) эксплицит, яъни гап таркибида *Promettre* феъли қўлланади. Қуйидаги мисолларни таҳлилга тортамыз:

- 1) – *Mais, moi, je t'aurais tout donné, j'aurais tout vendu, j'aurais travaillé de mes mains, j'aurais mendiee sur les routes, pour un sourire, pour un regard, pour t'entendre dire: «Merci!»*
[G. Flaubert. Madame Bovar].
- 2) – *Je le dis à toutes les femmes: venez faire de la politique, je vous aiderai*
[Paris Match. 2005. № 2913. P. 68].

Биринчи гапда Эмма хоним ҳамма нарсаларни сотиш учун Рудолфга ваъда бераётган бўлса, иккинчи гапда эса Н. Косьюшко-Моризет, сиёсий билимлар билан шуғулланиш учун ҳамма аёлларга ваъда беришини айтмоқда. Биринчи гапда синтактик нуқтаи назарида кўпроқ паратаксист (боғловчисиз) гаплар қўлланган бўлса, иккинчи мисолда эса гипотаксист, яъни Эргаш(шарт) гаплар ифодаланмоқда.

Юқоридаги гаплар таркибида “*promettre-ваъда бермоқ*” лексемаси бўлмаса ҳам, улар мазмунидан англаб олиш мумкин. Бу вазиятда ваъда бериш лексемаси имплицит ҳолатда ифодаланмоқда.

Таъкидлаш лозимки, аёллар нутқ актида ваъда бериш лексемаси “*шарт маъноси*”ни ҳам қамраб олиши алоҳида ўрин тутаяди. Аёллар бирор топшириқни бажаришга ваъда беришни ўз бўйнига олиши жараёнида шарт эргаш гапларни қўллаши кузатилди. Бу ҳолатда шарт эргаш гап қўшимча ахборот функциясини бажаради. Масалан, қуйидаги телефондаги суҳбатни

таҳлил қилиб кўрайлик:

–*Je veux que tu me suives.*

–*Je le ferai, dit-elle tranquillement. Mais si tu m'en supplies, pas si tu me l'ordonnes* (F. Sagan. Un peu de soleil dans l'eau froide).

Мазкур гапда Натали илтимосни шу шарт билан бажаради, агар Жиль буйруқ бермасдан илтимос қилса. Таҳлилга тортилган мисолда севишган ёшларнинг нутқ актида шарт эргаш гап ўз таркибига ваъда бериш лексемаси билан яъна қўшимча эмотив ҳолатларни ҳам қамраб олганлиги ҳақидаги мунособатлар ёрқин намоён бўлмоқда. Мазкур ҳолат қуйидаги мисолда ўз аксини топган:

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- Si tu désires aller ailleurs, tu es libre, tu seras libre, je te le **promets**

– Агар кетмоқчи бўлсанг, сен бўшсан, бундан кейин ҳам бўшсан, мен буни сенга ваъда бераман.

Ушбу мисолда **le** олмоши ваъда бериш лексемасини англатувчи шарт эргаш гап ўрнига қўлланиб, гап эгаси кишилиқ олмоши **tu** билан ифодаланган. Аёллар нутқ актида қабул қилинган ваъда бериш шарт тингловчи шахсга боғлиқ. Жумладан:

– Si je suis élue, les agents publics seront protégés, ils seront accompagnés en sortant des commissariats [<http://segogo.over>].

С. Руаяль сайловчиларга ваъда берар экан, у давлат хизматчиларини химоя қилади, агар Франция Президенти бўлиб сайланса. Мазкур гапда берилган шартнинг амалга ошиши фақат сўзловчига боғлиқ. Мисолда ваъда бериш лексемаси гап таркибида бўлмаса ҳам, у гапнинг моҳиятида имплицит(яширин) ифодаланган. Аслида юқоридаги гап қуйидагича берилган бўлиши керак эди: → Je **promets** de protéger les agents publics, si je suis élue.

Мисоллар таҳлили шуни кўрсатмоқдаки, аёллар нутқида ваъда бериш лексемаси қўлланганда кўпроқ модал феъллардан фойдаланиши кузатилди. Натижада бирор предмет ёки шахсга бўлган мунособатда, аёллар нутқ актларида ўз мақсадларини амалга ошириш жараёнида эмоционал воситаларидан, жумладан, модал феъллардан яхши фойдаланадилар. Улар ўз нутқларида модал феъллар (*қила олмоқ, хоҳламоқ, керак, vouloir, pouvoir, il faut, on peut*) билан бирга қўшимча эмоционал компонентларни ҳам қўллайдилар. Натижада ушбу лисоний воситалар объектив борлиқдаги бирор предмет ёки шахсга бўлган истак, ҳолат ва хиссиётни ифодалаб, гапдаги маънони кучайтиришга хизмат қилади:

–Monsieur, je me vendrai, je deviendrai, s’il le **faut**, une Valérie [Н. de Balzac. La Cousine Bette].

– Mais bon... je ferai ce que je **pourrai...** [<http://www.evene.fr/static/gavalda.htm>].

Берилган мисолларда *il faut, pouvoir* модал воситалар шуни кўрсатмоқдаки, аёллар нутқ актларида берган ваъдаларни бажаришга тайёр эканлиги керак бўлса, ўзини сотишга ёки муаммоларни еча олишга қодир эканлиги ифдаланмоқда.

Шундай қилиб, биз юқорида аёллар нутқ актларида ваъда бериш лексемасини турли лисоний воситалар билан гоҳо имплицит, гоҳо эксплицит ҳолатда келиб, ҳар хил прагматик маъноларни ифодаланишини гувоҳи бўлдик. Мисоллар таҳлилидан шундай хулосага келдикки, аёллар нутқида ваъда бериш лексемаси ўзи билан қатор лисоний воситалар билан, жумладан, боғланган ва эргашган гапларда, шарт маъносини ифодаловчи эргаш гапларда, шунингдек ваъда бериш лексемаси аёллар нутқ актларида модал феълларнинг кўпроқ қўлланиши гапларда турли хил эмотив маъноларнинг кучайишига, сўзловчининг ички ҳолатини янада очиқ беришга хизмат қилди.

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ТАРЖИМАНИНГ ЎЗИГА ХОС ҚОИДАЛАРИ ВА МУАММОЛАРИ

Проф. Жамолиддин Ёқубов ЎзДЖТУ

Аннотация: В данной статье мы сосредоточились на двух аспектах искусства перевода: 1) История теории перевода и конкретные правила перевода, 2) Лингвистические проблемы перевода на разных языках и лингвокультурные особенности их перевода.

Abstract: In this article we focus on two aspects of the art of translation: 1) The history of translation theory and specific rules of translation, 2) Linguistic problems of translation into different languages and linguocultural features of their translation.

Ключевые слова: искусство перевода, перевод, переводчик, реалья, лингвокультурологический аспект, риторика, прагматика.

Key words: art of translation, translation, translator, reality, linguocultural aspect, rhetoric, pragmatics.

Таржима – бу санъат демакдир, таржимоннинг санъати эса – бу ўз тушунчасини бошқа тилга таржима қилиб узатиш. Таржимон бегона воқеликни тўғри англаши, тушуниши, мулоҳаза қилиши, ёзувчининг ҳолатини кўриши, англаши, ҳис қилиши каби ҳолатларни тўғри таржима ёрдамида ўз китобхонига етказиб бериши лозим.

Таржимашуносликнинг ўзига хос назария сифатида санъат даражасида ривожланишига таниқли тилшунос ва таржимашунос олимлар В. Комиссаров, А. Фёдоров, Л. Бархударов, Я. Рецкер, Ғ. Саломов, Қ. Мусаев, О. Мўминов, Ю. Найда, Ж. Кетфорд ва бошқалар катта ҳисса қўшди. Таржима назарияси борасида XX асрда амалга оширилган илмий ишларнинг, яратилган таржима мактабларининг мантиқий давоми XXI асрда ҳам ўз самарасини кўрсатмоқда.

Ўзбекистонда таржима санъатини ривожантиришда Ғайбуллоҳ АС-САЛОМнинг фидокорона меҳнати ўта буюк ҳисобланади. Ғ. Саломов таржима санъати ҳақидаги фикрларини қуйидагича ифодалайди: “ Таржима орқали **халқлар** бир-бирлари билан муомала қилганлар, **олимлар** бир-бирлари билан фикрлашганлар, **адиблар** бир-бирлари билан мулоқотда бўлганлар. Ҳамма замонларда – хоҳ адабий, хоҳ илмий, хоҳ сиёсий китоблар таржимаси бўлсин – халқ, у яратган ёки яратаётган **маданият, фан, адабиёт** ва **санъат** бундан факат наф кўрган[Саломов 1983, 18-б.]

Таржима - **илм** ва **санъат**. У илм бўлганда ҳам, асрлар давомида не-не мутафаккирлар, турли соҳа вакиллари, ёзувчи ва шоирлар ҳаёлини банд этиб келаётган **мураккаб илм**, санъат бўлганда ҳам, **санъатлар шоҳи**. Ўзига хос **аҳамияти** ва **сиру-синоатларга** бойлиги жиҳатидан унга тенг келадиган санъат йўқ[Одилжон Сафаров 2024, 3-б.].

Ҳозирги даврда XXI асрнинг замонавий таржимашунослигига жуда кўплаб ўзбек таржимонлари ва лингвистлари ўз ҳиссаларини қўшмоқда. Булардан Хуршид Даврон, Муҳаммад Али, Иброҳим Ғафуров, Қудратхон Мусаев, Нажмиддин Комилов, Иброҳим Ғафуров, Шаҳриёр Сафаров, Ибайдулло Мирзаев, Муҳаммаджон Холбеков, Омон Мўминов, Бегойим Холбекова, Шухрат Сирожиiddинов, Ғанишер Рахимовларни айтиб ўтиш лозим.

Маълумки, таржима инсон фаолиятининг энг қадимий турларидан бири бўлиб, у туфайли биз жамият тараққиёти тарихининг барча тафсилотларини очиқ-ойдин тасаввур этамиз. Таржима туфайли миллий адабиётларга янги ғоявий йўналиш, янгича сюжет, жанр,

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янги образ ва бадий тасвир воситалари кириб келади. Шу маънода, таржимани аслиятни қайта яратиш, талқин этиш санъати деб таърифлаш мумкин.

Бизнинг назаримизда, таржима – бу бир тилдаги ахборотни бошқа тилда баён этиш демакдир. Таржима ва аслият матнларда аниқланган миллий маданиятларнинг ўхшашлиги ва фарқларини тадқиқ қилиш асос ҳисобланади.

Ўзбекистоннинг собиқ биринчи Президенти Ислон Каримовнинг “Тарихсиз кележак йўқ” деган доно фикрларини давом эттирган ҳолда айтиш лозимки, ҳар бир тадқиқот объектининг ўз тарихи мавжуд. Жумладан, француз тилида таржима назариясининг ҳам ўзи хос тарихий ривожланиш босқичлари бор. Француз тили тарихи ва адабиёти таржима ҳақида кўплаб тарихий анъанавий бойликка эга. Жумладан, Е.Г. Эткинд ўзининг “Буюк француз таржимонлари” мақоласида “Францияда таржима тарихи” фожиа билан бошланди деб ёзган эди. Ушбу мақоланинг биринчи қатори француз Уйғониш даврининг инсонпарвари, таржимони, ёзувчи ва босмахона матбаачи Этьен Долега бағишланган.

Таъкидлаш лозимки, шахсан Этьен Доленинг француз тилига кўшган хизмати шундаки, у туфайли илк бор француз тилига **traducteur** (таржимон) ва **traduction** (таржима) сўзлари кириб келган. Энг муҳими Э. Доле асарининг тарихий хизмати шундаки, мазкур асар «Бир тилдан иккинчи тилга яхши таржима қилишнинг ўзига хос хусусияти» (*“La maniere de bien traduire d’une langue en autre”*) 1540 йили биринчи марта чоп этилди.

Э. Доленинг мазкур илмий иши таржима назариясининг прескриптив йўналишидаги бош манба бўлиб хизмат қилган. Муаллиф ўз асирида тўлақонли яхши таржима қилишнинг бешта қондасини таклиф қилади :

- 1) таржимон энг аввало муаллифнинг предмет ҳақидаги фикрини ва бу объект ҳақидаги унинг ҳукмини яхши тушунмоғи лозим;
- 2) таржимондан тил аслиятини яхши билиш ва уни юксак даражада таржима қилиш талаб қилинади;
- 3) таржимон матннинг асл нусхасини сўзма сўз таржима қилмаслигини инобатга олмоғи лозим;
- 4) таржимондан таржима нормаларини яхши билган ҳолда умумий қўлланиладиган лисоний шакллар билан чекланиши талаб этилади, аммо янги лесик ибораларни ҳеч қандай ўйламасдан ўзича ихтиро қилиб, таржимага киритиши мумкин эмас;
- 5) таржимондан нотиклик нутқ нормаларига риоя қилиш талаб қилинади, айниқса, “тапларни бир-бирига боғлаш ва бирлаштириш қоидаларига нозиклик билан шундай ёндашиш керакки, унда инсон қалби фақатгина қаноатланиб қолмасдан, балки унинг кулоқлари эшитиб рохатланиши керак, чунки одатдаги нутқда бундай уйғунлик мавжуд эмас” [*La maniere de bien traduire d’une langue en autre 1540*].

Таржимоннинг **мақсади** – ахборотни узатиш дегани, бу бир тилни иккинчи тилга алмаштириш эмас, балки асосий матн мазмунидан келиб чиқиб, сараланган махсус тил воситалари орқали таржима моҳиятига мос келадиган муқобил таржимани беришдир.

Ҳозирги замон лингвистикасида “**таржима**” терминига **жараён** ва **натижа** деб таъриф берилган.

Т.В.Жеребилонинг лингвистик терминлар луғатида “таржима” терминига қуйидагича таъриф берилган:

1. матн мазмундаги ахборотни лисоний воситалар билан бошқа тилга узатиш;

2. икки ёки ундан ортиқ тиллар қиёслашининг мақсади улар орасидаги семантик хусусиятларнинг мос келишини қидириб топиш;
3. матн мазмунидаги ахборотнинг ғоясини тўла очиб бериш учун бошқа тилдаги воситаларни излаб топиш, шунингдек мазмун ва шакл нуқтаи назардан матннинг асл нусхасидаги мазмун моҳиятининг тўла очиб берилишининг таржимага мос келиши.
4. Социолингвистик нуқтаи назаридан, таржимон таржима жараёнида чиройли талаффузга ва экстралингвистик характердаги маълумотга ҳам эга бўлиши лозим [Словарь лингвистических терминов. 2010].

А.Д.Швейцернинг фикрича, “**таржима**” бир йўналишдаги икки жараённи қамраб олувчи мулоқатнинг тиллараро ва маданий фазавий жараёндир .

Таржима жараёни – ўта қийин, кўп аспекти, таржимондан нафақат лингвистик, аммо экстралингвистик, лингвомаданий билимларни ҳам талаб қилади. Таржима объекти ўта мураккаб жараёндир.

II. Таржима масалаларида 6 хил муаммо мавжуд: лексик-семантик, грамматик, синтактик, риторик, прагматик ва маданий (локализация-худудий).

1. Таржимада лексико-семантик муаммолар

Француз тилидан бошқа тилларга таржима қилишда ўзига хос муаммолари мавжуд. Лексик-семантик муаммолар луғатлар, изоҳли луғатлар, турли соҳалар бўйича, жумладан, банк соҳасига доир терминлар махсус экспертлар билан маслаҳатлашиш орқали ҳал қилиниши мумкин бўлган муаммолардир. Ушбу ҳолатда матнларда терминларнинг ўзаро алмашиши хусусиятидан келиб чиқиб, неологизмлар, семантик лакуналар, синоним ва антонимлар лексик сатҳида икки ёки ундан ортиқ семантик маъноларни ифодалашига эътиборни қаратиш лозим.

Таржимоннинг вазифаси ўқувчига муаллиф мақсадини аниқ етказиш билан бирга фақатгина эксплицит ахборотни эмас, балки имплицит маълумотни ҳам тўғри узатиш лозим. Албатта, бу таржимон учун ўта мураккаб вазифа, таржимон доим ҳам яхши таржима қила олмаслиги мумкин, чунки турли хил тилларнинг дунёвий манзараси ва менталитети мос келмайди.

Инглиз ва ўзбек тилларидаги лексик мувофиқлик турлари : 1.Тўлиқ лексик мувофиқлик. 2. Қисман лексик мувофиқлик. 3. Умуман мос келмаслик. 4. Тўлиқ лексик мувофиқлик.

Мас., сўзларнинг полисемантик хусусияти: **house**(уй, бошпана, парламент ва ҳ.к., **head**(бош, калла, раҳбар, бошлиқ ва ҳ.к.), **serviette** (салфетка, сочиқ, портфель; папка)

Биз француз тилидан рус тилига таржима қилишда икки тил йўналишида тез-тез қийинчиликларга дуч келамиз.

Масалан, рус тилидаги *лиса, лошадь, собака, ворона, кошка* (тулки, от, ит, қарға, мушук) сўзлари аёл жинсига қарашли бўлса, француз тилида эса улар: **renard(m), cheval (m), chien (m), corbeau (m), chat (m)** эркак жинсига мос келади. Демак, француз ва рус тилларидаги жинс категорияси доим ҳам бир-бирига мос келавермайди. Таржимон бадиий асарни таржима қилишда ўша халққа хос қизиқ, ғайриодатий урф-одат ва реалияларини яхши билмоғи керак.

2. Таржимада грамматик муаммолар

Грамматик муаммолар, масалан, темпораллик, тус(аспект) категорияси (тус категориясини ифодалашда замонга нисбатан иш ҳаракатнинг давомийлик жараёни ёки ҳолатни ифодалашда феъл ва кишилиқ олмошининг қўлланиши, олмош билан феъл биргаликда ифодаланганда

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турли семантик ҳаракатни, жумладан, ҳаракатнинг ривожланиши жараёни ёки ҳолатни кўрсатишга хизмат қилишини инобатга олиш лозим.

Масалан, инглиз, француз ва ўзбек тилларида сўз тартиби: **I go to school – Je vais à l'école – Мен мактабга борапман. -S-P, - ўзб. SOP**

Француз тилидаги **tout** олмошини таҳлил қиладиган бўлсак, ушбу олмош ўзига хос семантик хусусиятга эга: биринчидан, ушбу олмошнинг мазмунини очиб бериш от олдидан ёки отдан сўнг артик билан ёки артиклсиз келишига боғлиқ, иккинчидан, **tout** олмошининг аниқ ёки ноаниқ артикл билан келишини назарда тутмоғ лозим.

Француз тилидан рус тилига таржима қилиш жараёнида таржимон **tout** олмошининг кўп маънони англатишини билмоғи керак, жумладан, **tout** олмоши рус тилида "весь", "целый" ёки "каждый" маъноларини англатиб келади. Агар олмош от олдида аниқ артикл билан қўлланса, **tout** олмоши француз тилидан рус тилига "весь" деб таржима қилинади. Масалан:

➤ *Il veut savoir toute la vérité . – Он хочет знать всю правду.*

➤ *J'y ai pensé toute la soirée. - Я думал об этом весь вечер.*

Агар олмош от олдида ноаниқ артикл билан қўлланса, бу ҳолда **tout** олмоши француз тилидан рус тилига "целый" сифати ёрдамида таржима қилинади:

C'est tout un problème. – Это целая проблема,

Ce n'est plus un village, c'est toute une cité. - Это больше не деревня, это целый город,

Борди-ю **tout** олмоши от олдида артиклсиз қўлланса, унда мазкур олмош француз тилидан рус тилига "всякий, каждый, любой" сўзлари орқали таржима қилинади.

➤ Қуйидаги мисолларни таҳлил қиладиган бўлсак, **tout** олмоши ўзига хос семантик маъноларни ифода этади:

➤ *Tout enfant a droit à l'instruction. – Каждый ребёнок имеет право на образование*

➤ *Contre toute espérance il a réussi ce role. – Вопреки всякому ожиданию эта роль ему удалась.*

Таъкидлаш лозимки, француз тилида ёрдамчи сўзлар катта роль ўйнайди. Юқорида мисоллардан кўриниб турибдики, артиклар отлар олдида келганда матннинг мазмунини сезиларли даражада ўзгартириб юборади. Жумладан, қуйидаги учта гапни қиёсий таҳлилга тортамыз ва бу ҳолатни гувоҳи бўламиз.

➤ *Je mange le chocolat. – Я ем шоколад.*

➤ *Je veux du chocolat. – Я хочу шоколада.*

➤ *J'ai mangé le chocolat. – Я съел целую шоколадку.*

Айтиш лозимки, француз тилида артикл мавҳум тушунчани аниқ предметга айлантириб юбориш хусусиятига эга. Масалан: l'attention – внимание - диққат,

➤ une attention – знак внимания, подарок-этибор белгиси; совға;

➤ la beauté – красота-гўзаллик, une beauté красотка - гўзал-соҳибжамол қиз..

3.Таржимада синтактик муаммолари

Синтактик муаммолар синтактик параллелизмлар, синтактик муносабатлар (бошқарув,битишув), феълларнинг активлик ва мажҳуллик нисбати, гап ёки иш ҳаракатни ифодаловчи ҳикояларда воқеликнинг амалга ошиш жараёнини шакллантириш, риторик фигуралар шаклланишининг таркибий қисми, гап ва нутқларда сўз тартибининг ўзгариш ҳолати, шунингдек сўзларнинг анафорик хусусиятини гапнинг бошида, шеърларда ва фразаларда келишини инобатга олиш кузатилади.

White flag- оқ байроқ, **He laughed** – У кулди. **house-plan** -уй плани-план дома.

4. Таржимада риторик муаммолар

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Риторик муаммолар бевосита ўхшатиш билан боғлиқ. Иш ҳаракатни мантикий фикрлаш стилистик фигуралар(воситалар) (қиёслаш, метафора, метонимия, синекдоха, оксиморон, парадокс ва бошқалар) ва дикция(чиройли талаффуз ёрдамида сўз ва гапларни аниқ-равшан айтиш) билан боғлиқ.

Il est têtue comme un âne– У эшакдек ўжар- У упрямый как осёл

Рус кишиси фарзанд кўрмаган одамга: **он был бездетен**- у бефарзанд эди – энг муқобил вариант-у **тирноққа зор эди** - жаранглироқ чиқади.

Бадий матн таржимасини юқори савияда амалга оширишда таржимон қуйидаги тил омилларига эътиборни қаратиш керак деб ўйлаймиз.

Таржима тарихий ўтмиш дунёси билан боғлиқ бўлса, таржимон дарҳол архив ҳужжатлар билан танишиб чиқиш даркор, шунингдек ўша давр ҳамма реалияларни билиши ва уларнинг бадий асарлардаги таржимасини китобхонлар онгига қандай етказиб бериш масаласини ўйлаши зарур.

Биринчидан, стилистик услубларни ишлаб чиқиш ва таҳлил қилиш лозим. Бу ерда асосий эътибор фразеологизмларга қаратилади, баъзан уларнинг бошқа тилда муқобил варианты бўлмайди: жумладан, француз тилидаги фразеологизм **“avoir un rat dans la tete”** ни сўзма-сўз **“унинг бошида каламуш бор”** деб таржима қилинса, жуда кулгили бўлади, аслида у **“хомкалла, эси паст”** деган маънони англатади, ушбу фразеологик бирикма эса рус тили вариантыда **«без царя в голове»** деб таржима қилинади.

Иккинчидан, таржиманинг сифатли чиқишида лисоний олам(дунё манзараси) нинг таъсири бўлади. Масалан, агар ўзбеклар ёки руслар акс урса **«Соғ бўлинг!- Будьте здоровы!»** дейилади. Французлар эса бу ҳолатни бошқача ифодалайди: **«A vos souhaits!»** – **«Пусть сбудутся ваши желания!»** – **«Сизнинг истакларингиз амалга ошсин»**, **«A vos amours!»** – **«Пусть у вас будет удача в любви!»** – **Муҳаббатда омадингиз келсин!»**.

Учинчидан, таржимон бадий асарни таржима қилишда ўша халққа хос қизиқ, ғайриодатий урф-одат ва реалияларини яхши билмоғи керак.

Муайян бир халқ ва миллатга хос турмуш тушунчаларини англатадиган сўзлар – реалиялар дейилади. Масалан, испан тили адабиётини таржима қилишда **панчо (ёпингич), мачете (чолғи-ўроқ), сомбреро (шляпа), фламенко (байрам)**, жазоир адабиётини таржима қилишда араб халқ ҳаётининг реалияларини: **кускус (таом), тамтам, сук (бозор)** таржимон яхши билиши керак. Француз таржимони учун эса рус ва ўзбек реалияларини: **самовар, староста, чойхона, маҳалла, маҳалла раиси, суннат, бешик тўйи** таржима қилиш анча қийинчилик туғдиради.

Юқоридаги айтилган лисоний омиллар таржима сифатига таъсир қилади, матн таржимасини сифатли амалга оширишда таржимон лексик ва синтактик трансформацияларга мурожаат қилишга мажбур бўлади.

5. Таржимада прагматик муаммолар: Кишилиқ олмошларнинг фаол қўлланиш таржимаси мисолида.

Прагматика – бу одамларнинг тил бирликларига бўлган субъектив муносабатидир. Л.С. Бархударов Таржиманинг прагматик маъноларини ўрганишда ҳар бир сўзнинг лексик-семантик маъносини 3 типга бўлиб ўрганишни тавсия қилади: 1) сўзнинг стилистик характеристикаси; 2) сўзнинг регистри; сўзнинг эмоционал бўёғи.

Масалан, битта жумлада икки-уч хил прагматик эмоционал бўёқ учраши мумкин: **Please come in** (расмий), **Come in** (нейтрал), **Come in will you** (маиший, салбий бўёқли), **Get the hell in here** (фамиляр, салбий эмоционал).

Прагматик масалалар “сен” ва “сиз” олмошлари билан узвий боғлиқдир. Жумладан, ушбу олмошлар ёрдамида идиоматик фразалар, иборалар, диктон(мақол-матал ва ҳикматли сўзлар)лар, ирония(киноя, пичинг), ҳазил ва жаргонлар қўлланишида учрайди. Аммо бу қийинчиликлар бошқа қийинчиликларни ҳам ўз ичига олиши мумкин, масалан, инглизча-французча матн таржимасида кишилиқ олмоши “сиз”. Бу ҳолатда таржимон “сен” ва “сиз” олмошларидан қайси бири матн мазмунига мос келишини ва уларни тўғри қўллашни ўйлаб қўришга тўғри келади. Агар “сиз” олмошини қўлласа, унда маъно ўзгариб, хушмуомалиқ категориясига айланиб кетиши мумкин. Бу ҳолат эса доим ҳам таржимага мос келавермайди.

6. Таржимада лингво-маданий муаммолар

Маданий муаммолар турли тилларда маданият ҳар хил бўлиб, улар ўша халқ маданиятини акс эттиради. Жумладан, ҳар хил миллатда таомларнинг номланиши ҳар хил, байрамлар ва ҳар хил маданиятни англатувчи урф-одатларни ҳам кўрсатиш мумкин. Таржимон эса ҳар икки тил соҳиблари маданиятини чуқур билиши ва англаши лозим. Фразеологик бирикма мисолида миллий колорит ёки бир миллатга хос бўлган тасвир таржимаси:

Немис тилида – Wenn die Hunde mit dem Schwanz bel-len(қачонки, итлар думлари билан аккилласалар) ибораси қўлланса, **инглизларда** – -when the moon turns green cheese(қачонки, ой яшил пишлоққ айланса) иборас анолог сифатида танланса, **француз тилида** - Quand les poules auront des dents(қачонки товукларнинг тишлари бўлса). **Рус тилида** – Когда рак свистнет на горе и рыба запоеет(қачон тоғда қисқичбақа хуштак чалса ва балиқ куйласа) таржима қилинса, **ўзбек тилида** – “**туянинг думи ерга текканда**” иборасини танлаш мумкин. **Таъкидлаш лозимки**, диний эътиқодларни ўрганиш, халқнинг ҳаёти, турмуш тарзи, моддий ва маънавий маданияти билан танишиш.

Жумладан, бунга мисол қилиб француз тилига таржима қилинган оддий гапни келтириш мумкин: “Бир жазоир қишлоғида Лаид эль Кебир байрамига қўй сўйишган”. Баъзи талабалар ушбу гапни қуйидагича таржима қилишган: “«*On a tué un mouton pour feter Laid el Kebir dans un village algérien*”.

Бир кўринишидан ушбу гапнинг таржимаси тўғрига ўхшайди. Аммо талабалар ўша жойдаги мусулман урф-одати бўйича қўйнинг томоғидан сўйишини ҳисобга олмаганлар. Бу ерда таржима учун «забить-уриб ўлдирмоқ» (abattre), «убить-ўлдирмоқ» (tuer), «заколоть-санчиб ўлдирмоқ» (poignarder) феъллари мос келмайди. Бирдан- бир тўғри деб қуйидаги таржима вариантларини ҳисоблаш мумкин:

- «*On a égorgé un mouton pour feter Laid el Kebir dans un village algérien*»; ёки «*Dans un village algérien on a égorgé un mouton pour feter Laid el Kebir*».

Юқоридаги айтилган лисоний омиллар таржима сифатига таъсир қилади, матн таржимасини сифатли амалга оширишда таржимон лексик ва синтактик трансформацияларга мурожаат қилишга мажбур бўлади.

Шундай қилиб, мисоллар таҳлили шуни кўрсатмоқдаки, таржима жараёнидаги асосий камчилик ва хатоларнинг сабаблари шундаки, икки халқ тили, уларнинг ҳаётидаги менталитетнинг бир-биридан фарқ қилиши, турли халқ лисоний манзарасининг бир-бирига мос келмаслиги, таржима жараёнида турли хил касблар, нутқдаги шевалар, диний эътиқодлар, жаргон ва арголарнинг ҳар хил номланишини ҳисобга олмаслик, таржима сифатини пасайишига олиб келади.

Таржимон биринчи навбатда, асл нусҳани тўла-тўқис идрок этиши, сўнгра уни ўз тилида беками-кўст қайта ифодалаши даркор. Филология фанлари доктори, кекса ёзувчи ва моҳир

таржимон Корней Чуковский ўзининг «Искусство перевода» номли машҳур асарида қуйидаги рус мақолини эпиграф қилиб олган эди: «Таржима худди хотинга ўхшайди: тўғри бўлса – чиройли эмас, чиройли бўлса – тўғри эмас». Бу мақол таржима санъатининг асосий хусусиятини, унинг заминидagi мавжуд зиддиятни жуда тўғри акс эттирган. Зеро, тўғри таржима этишни мақсад қилиб қўйган киши, кўпроқ, хижжалаб таржима қилишга, муддаоси чиройли таржима қилишдан иборат бўлган киши эса кўпроқ ўзини авторлаштиришга мойил бўлади.

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МОДАЛЛИК КАТЕГОРИЯСИНИНГ МАНТИҚ ВА ТИЛДАГИ ЎЗАРО МУНОСАБАТИ**ЎзДЖТУ профессор Жамолиддин Якубов**

Аннотация: Данная статья посвящается отношению модальных категорий в логике и языкознании сопоставимы: категориям, выработанным в логике, соответствует определенный состав языковых средств. Лингвистическая модальность выражается прилагательными и наречиями, вводными словами и оборотами, глаголами и предикатами, передающими эмоции и чувства, основанные на положительной или отрицательной оценке объекта. Предлагаемый подход позволяет систематизировать разноречивые классификации модальных значений с более широких позиций, способствует выработке определенной системы модальности.

Abstract: This article is devoted to the relationship of modal categories in logic and linguistics are comparable: categories developed in logic correspond to a certain composition of linguistic means. Linguistic modality is expressed by adjectives and adverbs, introductory words and phrases, verbs and predicates that convey emotions and feelings based on a positive or negative assessment of an object. The proposed approach allows us to systematize conflicting classifications of modal meanings from a broader perspective and contributes to the development of a certain system of modality.

Ключевые слова: модальность; модальные категории в логике и лингвистике; познавательная модальность; аксиологическая модальность, модальные значения.

Key words: modality; modal categories in logic and linguistics; cognitive modality; axiological modality; modal meanings

Модаллик (лотинча: *modus* – ўлчов, меъёр, чегара, ҳад, даража, усул, йўсин, йўл, равиш, тариқа, тарз) – тилнинг, тафаккурнинг сўзловчининг нуктаи назаридан мулоҳаза мазмунининг муносабати воқеликка қандай бўлиши кераклигини ифодаловчи базавий категорияларидан бири. Турли тилларда модаллик категорияси турли шаклларда иштирок этади. Бу қоида кўп йиллар давомида унга кизиқишни белгилаб берди ва унинг кўп жиҳатли ўрганилишига кўмаклашди. Модаллик категориясининг кўлами ҳамда ҳар хил планлилиги у бизнинг ҳаётимизда қанчалик кўп қиёфали тарзда намоён бўлиши билан боғлиқ. Одамлар ҳаракатларни режалаштирган, фаразларни ифодалаётган, гумонларини айтаётган, буйруқларни ва фармойишларни бераётган, илтимос қилаётган ёки маслаҳат бераётган, истакларини изҳор қилаётган, таъна қилаётган пайтларида айнан шу нарсани, яъни модаллик категориясига алоқаси бор нарсани қилаётган бўладилар.

Модаллик категорияси иш-ҳаракатларнинг, воқеа-ҳодисаларнинг ва фактларнинг реалликка турли хил ўзаро алоқаларини акс эттиради: “Иш-ҳаракатлар ёки воқеа-ҳодисалар ҳақиқатда (воқеликда) содир бўлишлари мумкин; юз беришлари мумкин, эҳтимол бўлишлари мумкин; қандайдир бир киши иш-ҳаракатни амалга оширишга мажбур (иложсиз, шарт) ёки истаётган (хоҳлаётган, интилаётган) ёки иш-ҳаракат амалга ошиши учун (илтимос қилаётган, буйруқ бераётган, мажбур қилаётган, ишонтираётган, ёрдам бераётган, тўсқинлик қилмаётган) бўлиши мумкин” (Мечковская 1994, 194-219).

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Модал мантиқнинг проблематикаси жуда қадим замонларда пайдо бўлган. Модаллик ҳақида, яъни сўзловчининг нуқтаи назаридан уларнинг нутқлари воқеликка қандай муносабатларда бўлишлари кераклиги ҳақида Аристотелга қадар абдералик Протагор, “энг кўзга кўринган, балки эҳтимол биринчи софист ҳам бўлиши мумкин”, ёзган эди (Ирмшер 1993, 467). Унинг “Баҳс санъати” асари сақланиб қолмаган, аммо етти аср ўтгач, Диоген Лаэртский “Машҳур файласуфларнинг ҳаёти, таълимотлари ва ҳикматли гаплари” номли энциклопедик тўпламда (эраимизнинг II ва III асрлар оралиғи) кўрсатиб ўтган эдики, “Протагор биринчи бўлиб нутқни (гапни) тўртга (кўринишга) ажратган: *илтимос (ўтинч)*, *сўроқ (савол)*, *жавоб*, *буйруқ* – ва уларни нутқнинг (гапнинг) тармоқлари (бўлаклари, қисмлари) деб атаган. (Фрейденберг 33).

Протагорнинг “тармоқлари” ҳозирги лингвопрагматика нуқтаи назаридан нутқ актларининг кенг модал синфларига тўғри келадилар, улар сўзловчи у ёки бошқа мулоҳазани хабар қилаётиб амалга ошираётган мақсади бўйича фаркланадилар. Бу Чарльз Пирсининг семиотикасида “прагматика” термини пайдо бўлишидан ҳамда ҳозирги тарихда тил муносабати тадқиқотларининг гуркираб ривожланишидан анча олдин лингвистик прагматикага асос солди.

Шундай қилиб, ҳозирги мантиқнинг кўп тушунчалари антик ва ўрта аср мантиқчиларининг таълимотларидан келиб чиқади: “Модал мантиқ – ҳозирги ноклассик мантиқнинг йўналишларидан бири, унда “керак, лозим, даркор, зарур” ва “мумкин бўлганча, мумкин қадар, имкони борида, мумкин, имкони бор, эҳтимол, балки ва б.” каби функторли мулоҳазалар тадқиқ қилинадилар (Кондаков 1975, 358).

Модаллик категориясига анча кенг ёндашув А. А. Ивиннинг ишларида ифодаланган: “Модаллик – у ёки бошқа нуқтаи назардан берилган мулоҳазада аниқланган алоқанинг баҳосидир” (Ивин 2004, 516). Модал конкретлаштириш кўпинча “керак, лозим, даркор, зарур” ва “мумкин бўлганча, мумкин қадар, имкони борида, мумкин, имкони бор, эҳтимол, балки”, “исботланиши мумкин бўлган, исбот қилиб бўладиган, исботлана оладиган, исботли”, “рад қилинадиган, нотўғрилиги исбот қилинадиган, ёлғонлиги кўрсатиладиган”, “албатта, муқаррар, сўзсиз”, “ижозат берилган, руҳсат этилган, ҳал қилинган”, “яхши, дуруст, ҳўп, майли, шундай бўлақолсин”, “ёмон, чатоқ, пачава” тушунчаларини ишлатиш йўли билан амалга оширилади (Ивин 2004, 516).

Тил хусусиятларини ўрганиш мантиқ илмининг ҳам вазифаси эканлиги гапнинг семантик хусусиятларида ёки коммуникатив функциясида сўзловчи ва тингловчи орасидаги мулоқот жараёнида турли хил маъноларни ўзида жамловчи модаллик категориялари (реаллик, мумкинлик, зарурият) орқали ифодаланишида яққол кўзга ташланади. Бунинг асосий сабаби тил ва тафаккур шакллариининг ўзаро узвий боғлиқ муносабатлари бўлиб, улар асосида мантикий ва семантик категорияларнинг ҳосил бўлишидир. Жумладан, модаллик категорияси бунга мисол бўла олади.

Мантиқ ва тилда модаллик категориясининг ўзига хос мураккаб хусусиятлари мавжуд. Тилдаги модаллик билан мантикий модалликнинг бир-бирига мос келмаслиги бу муаммони янада мураккаблаштиради ва бу фақат лингвистика учунгина эмас, балки мантиқ учун ҳам катта аҳамиятга эга. Модаллик категорияси фикрнинг мантикий қурилиши билан чамбарчас боғланган тил ҳодисалари қаторига киради, шунинг учун у ҳам тилшунослик, ҳам мантиқ илмининг текшириш объектидир. Биринчисида модаллик гапнинг энг муҳим белгиси сифатида, иккинчисида тафаккур шакли тарзидаги ҳукмнинг муҳим белгиси сифатида

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қаралади. Шунга кўра модаллик категориясини мантиқ билан тилда боғлаб ўрганиш муҳим аҳамият касб этади.

Ҳозирги пайтда бу боради бир-биридан фарқ қилувчи икки хил ёндашув кузатилади: 1) *тил ва тафаккурнинг ўзаро муносабатини чуқурроқ ўрганиш масаласи*, 2) *тил ва мантиқнинг ўзаро муносабати* янгидан фан сифатида шаклланишига доир муаммолар.

Тилшуносликда, албатта, мантиқ ва тилнинг ўзаро муносабати ҳақида маълум илмий қарашлар мавжуд.

И.И. Мешанинов концепциясида асосий эътибор тушунча категорияси билан тил орасидаги муносабатга қаратилиб, унинг тилдаги ифодаланиш хусусиятига катта эътибор берилган ва тушунча категорияси мантиқ ва тилдаги ўзаро муносабатининг қиёсий тавсифи асосида таҳлил қилинган. У мантикий грамматик категорияларни «тушунча категориялари» деб номлаб, уларнинг кўринишлари турлича эканлигини аниқлайди»(Мешанинов 1967, 8-12).

А.В. Бондарко ўзининг монографиясида И.И. Мешанинов концепциясидаги тушунча категориялар назариясини ривожлантириб, тушунча категориясини семантик категория деб номлайди ва ушбу категориялар билан тилнинг семантик функциялари орасидаги муносабатни назарий таҳлил қилади. Ушбу асарда гапнинг грамматик маъноси билан мантикий маъноси орасидаги фарқ очиқ берилган (Бондарко 1984, 30).

Шунингдек, А.В. Бондарко тушунча категориялари билан тилнинг семантик функциялари муносабатлари орасидаги фарқни ҳам чегаралаб тушунтириб берган. Унинг фикрича, «*биринчи томондан*, тушунча категориялари (мумкинлик, зарурият, императивлик ва б.) реал объектив борлиқни акс эттириб, унга бўлган муносабатни билдирса, *иккинчи томондан*, асосий эътибор ушбу категорияларнинг тил билан узвий боғлиқлик муносабатларига қаратилади. Тушунча категорияларини ифодалашда тилнинг семантик функциялари асосий ўринни эгаллайди, чунки улар тилнинг турли сатҳларида (морфологик, лексик ва синтактик) келиши мумкин. Тушунча категориялари билан тилнинг семантик функциялари бир-бирига узвий боғлиқ бўлиб, улар гапнинг семантик хусусиятини очиқ беришда катта роль ўйнайди» (Бондарко 1984, 72-73).

Келтирилган фикрлардан англашиладики, семантик категория тушунча категориясини англатиб, таққосланаётган семантик функциялар асосида шаклланган бўлади. Тушунча категориялари доим тилнинг семантик функциялари асосида юзага чиқиб, улар бир томондан тил билан, иккинчи томондан нутқ билан боғлиқ бўлади.

В.З. Панфилов мантиқ билан тил орасидаги муносабатни таҳлил қилар экан, у асосий эътиборни мантикий категориялар, яъни субъект ва предикат атамаларига қаратиб, уларнинг гап сатҳида қандай қўлланишига қаратган. Унинг фикрича, «Гапнинг синтактик ва мантикий грамматик бўлиниши доим ҳам мос келавермайди. Жумладан, мантикий-грамматик субъект эга билан ифодаланмасдан, балки гапнинг бошқа бир бўлаги билан ифодаланиши мумкин. Мантикий-грамматик предикат эса кесим билан эмас, балки гапнинг бошқа бир бўлаги билан келиши мумкин» (Панфилов 1982, 171).

Кўринадики, гапнинг синтактик ва мантикий-грамматик сатҳларга ажралиши натижасида объектив ва субъектив модалликлар орасидаги муносабатлар янада мураккаблашади. Гапдаги объектив модаллик синтактик сатҳга ажралганда, мантикий-грамматик бўлинишда ҳар хил субъектив модалликка эга бўлиши мумкин. Буни исботлаш учун, В.З. Панфилов қуйидаги мисолларни келтиради: «Если бы он пришел, я бы ему сказал;

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2) Если бы он пришел, я бы, вероятно, ему сказал; 3) Если бы он пришел, я бы, конечно, ему сказал» (Панфилов 1982, 175).

Берилган ҳамма гапларда объектив модаллик синтактик сатҳда амалга ошмайдиган ҳаракатни ифодаламақда. Ҳар бир гапдаги субъектив модаллик алоҳида хусусиятга эга: биринчи гапда – оддий ишончлилик (шубҳасизлик), иккинчи гапда мумкинлик (эҳтимоллик), учинчи гапда - категорик тасдиқ. Айтиш жоизки, гапнинг синтактик ва мантикий-грамматик муносабатларга ажралиш ҳолати тилнинг типологик хусусиятига боғлиқ. Айнан шу семантик хусусият билан гапдаги объектив ва субъектив модаллик очиб берилади.

В.А. Звегинцевнинг фикрича, «Тил билан мантиқ орасидаги муносабатлар ўзига хос хусусиятга эга. Тажрибага асосланган тилшуносларнинг мақсади лингвистикада у ёки бу предмет, ҳодисани тасвирлаш, таъриф бериш ва тушунтиришдир. Ҳосил бўлган тажриба натижаларини тилшунослар тил объектида қўлайдилар. Мантиқшунос эса далиллар, ҳулоса чиқариш ва ҳукмлардан фойдаланади ҳамда уларни фақат тил шакллари сифатида қабул қилиши мумкин. Натижада, мантиқшунос тилшуносларга нисбатан объектив борлиқдан бир босқич узоқда бўлади. Унинг таҳлили объектив борлиққа йўналтирилмасдан, балки тилга қаратилган бўлади. Бошқача айтганда, мантиқшунос тил бўйича тадқиқот олиб боради ва ҳосил бўлган тажрибани метатил деб атаيمиз. Мантикий нуқтаи назардан қараганда, тилнинг асосий бўлаклари дейилганда белги ёки бирор бир объектни белгилаш эмас, балки фақат гапдагина мантикий жараённинг ёйилиб, кенгайиб кетиши назарда тутилади. Айнан шу хусусият билан гап чин ёки хато маъноларни ифодалаб, ушбу тушунчалар семантик доирани ҳосил қилади»(Зикриллаев 1978, 231).

О.К. Васильева-Шведе, Г.В. Степановларнинг таъкидлашича, «Грамматикада модаллик мантиқдаги модаллик билан узвий боғланган. Аммо гапдаги ҳукм ва модаллик, масалан, грамматик ва мантикий категориялар (эга ва субъект, кесим ва предикат) доим ҳам бир-бири билан мос тушавермайди. Грамматикадаги модалликнинг мантикий модалликдан фарқи шундаки, грамматикада модаллик турли хил ифодаланиш шаклига эга бўлса, мантиқда эса бундай хусусият йўқ.

Мантикий модаллик ва ҳукм модаллиги масалалари шу кунга қадар анча тушунарсиз бўлиб, баҳсли мунозараларга олиб келмоқда. Ушбу ҳолатни шундай тушуниш мумкинки, тилшуносликда гапнинг модаллиги ва бу категориянинг моҳияти, турлари ҳақида ягона фикр йўқ» (Виноградов 1975, 177).

Фалсафада муносабат тушунчасини ифодалашда ҳодисалар ривожланиши, бир муносабатнинг йўқолиб, бошқа муносабатнинг пайдо бўлиши муҳим бўлса, мантиқда тушунчалар муносабати мантиқнинг асосий мазмунини ташкил қилиб, улар орасидаги зиддиятларни аниқлаб келиши маълум бўлди. Тилшуносликда эса **муносабат** тушунчаси тил элементларининг ўзаро мос келиши ва ўзаро боғланганлиги, шунингдек, гапнинг структуравий элементлари ҳамда уларнинг функционал хусусиятлари тил материалининг ўхшаш ва фарқ қилувчи муносабатлари асосида қурилган бўлиб, бу соҳадги мавжуд.назарий фикрларини қуйидаги гуруҳларга бўлиш мумкин: 1) Муносабат тушунчаси модаллик категориясини ифодалашда кўзга яққолроқ ташланади, чунки «модаллик сўзловчининг реалликка бўлган муносабатининг акс этишидир. Модалликнинг мазмун плани учун сўзловчи муносабатини бирлаштирувчи белги сифатида асос қилиб олиш категория бутунлигини сақлайди»(Сибагатов 1984, 116); 2) *Тил ва мантиқнинг* ўзаро муносабатида мантикий - грамматик категориялар катта роль ўйнайди (Мещанинов, 166,137,72,); 3) Семантик

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категориялар билан тилнинг семантик функциялари орасидаги муносабат ва улар орасидаги дифференциал белгилар мавжуд (30), 4) Грамматик модаллик билан мантикий модаллик орасидаги муносабатлар узвий боғлиқ ҳамда гап таркибидаги элементларнинг ўзаро семантик муносабати универсал категория сифатида қаралади (Виноградов 1975,155).

Назарий таҳлил шуни кўрсатдики, асосий муносабатлар кўпроқ гапларнинг синтактик ва мантикий-грамматик сатҳларига бағишланади.

Агар ҳар бир гапнинг синтактик ва мантикий-грамматик сатҳлари орасидаги хусусиятларни текшириб кўрсак, улар орасидаги муносабатлар турлича бўлиши кузатилади: 1) икки сатҳда гапнинг структуравий шакли мос келмаслиги: агар гап синтактик сатҳда синтактик қисмларга бўлинса, унда гап мантикий-грамматик сатҳда фақат фикрни ифодаловчи субъект ва предикатга бўлиниши мумкин, 2) гапда эга ва кесим мантиқдаги субъект ва предикат билан мос келмайди, 3) мантикий грамматик сатҳда агар предикат кесим орқали ифодаланмасдан, балки бирор гап бўлаги билан берилса, предикативлик ва модаллик синтактик сатҳда кесимнинг майл орқали ифодаланишига мос келмаслиги мумкин.

Демак, *бир томондан*, модаллик категориясининг мантикий-грамматик ва синтактик сатҳларда мос келмаслигининг сабаби уларнинг асосий маркери гапнинг кесим билан ифодаланмаслиги бўлса, *иккинчи томондан*, гапдаги модаллик хусусиятларининг бир-бирига мос тушмаслигидир. Бунинг боиси гап таркибидан тил бўлақларининг миқдори ошган сари модаллик категориясининг моҳияти ҳам ошиб, турли маъноларни қамраб олиши мумкин.

Шундай қилиб, модаллик маъноси мантикий грамматика ва синтактик сатҳларда бир хил эмас. Модаллик категориясининг бу икки томони гапнинг умумий модаллик хусусиятини очиб беради ва ушбу категория тилда сўзловчи томонидан турли хил лисоний birlikлар билан (синтактик сатҳда) ифодаланади.

Гуруҳлар таснифидан кўринадики, модаллик категориясининг тил ва мантиқ орасидаги муносабат ҳақида назарий фикрлар кам, аммо мантиқ ва тилда модаллик категориясининг ўзаро муносабати ҳақида, конкрет тил материали асосида махсус илмий-тадқиқот мутлақо ўтказилмаган.

Мантиқ ва тилдаги модаллик категорияси муносабатининг асосий хусусияти шундаки, мантиқда ушбу семантик категория доим инвариант ҳолда ўзгармай турса, тилда, аксинча, модаллик категорияси турли лексик-грамматик воситалар билан ифодаланиб, турли хилдаги семантик майдонни ҳосил қилади.

Битта реаллик макромайдон ичига янги семаларнинг пайдо бўлишини қуйидаги мисолларда кўриш мумкин:

1). Мухлисларимиздан кўплаб хатлар келмоқда (*келаяпти, келаятир*) (Реаллик + *ҳозирги замон*). 2). Куз. Пахта терими бошланди (Реаллик + *ўтган замон*). 3). Бугун клубга бор! (Реаллик + *буюриш, маслаҳат, илтимос*: интонацияга қараб). 4) Тезроқ келсанг, кинога борар эдик (Реаллик + *келаси замон, буюриш; истак, шарт*: Агар тезроқ келсанг: - Тезроқ кел, кинога борамиз. Ушбу гапда шарт майли формаси, асосан, буйруқ майли маъносида ишлатилган.

Таъкидлаш лозимки, юқоридаги мисоллар (1,4) яна услубий хусусиятларга эга бўлиб, улар тилда турли хил синонимик вариантлар ёрдамида ифодаланиши мумкин. Бундай ҳолда интонация ҳал қилувчи роль ўйнайди.

Берилган мисолларда аниқлик (хабар майли) ва шарт майллари феъл англатган ҳаракат ва ҳолатнинг ҳозирги (1), ўтган (2) ва келаси (4) замонларда бажарилганлиги ёки келажакда

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бажарилиши ҳақида хабар бермоқда. Бу майлларнинг шакллари ҳаракат уч замоннинг бирида ижро этилганлигини ёки амалга ошишини англатиб келмоқда. Албатта, ҳаракатнинг бажарилган ёки амалга ошиши мумкин бўлган хабар майлининг маъносини ўзгартирмайди. Чунки феъл шаклларида ҳам реал ҳодиса – ҳозирги, ўтган ва келаси замонларда ҳаракатнинг бажарилиши ифодаланган. *Биринчи* ва *иккинчи гапларда* реаллик категориясига янги семалар (ҳозирги, ўтган замон тушунчалари) қўшилиб, ҳаракатнинг ҳолатини реаллаштириб келмоқда. Учинчи гапда эса ҳаракат буйруқ майлида ифодаланиб, бу ерда реаллик категорияси доирасига кичик микромайдонлар (*буюриш, маслаҳат, илтимос*) кириб, гапнинг модаллик муносабатларини янада очиб берган. Тўртинчи мисолда реаллик категорияси шарт майлининг буйруқ шаклида берилган. Реаллик макромайдони атрофида *буюриш, истак, шарт* микромайдонлари ҳосил бўлиши ушбу гапнинг семантик моҳиятини янада ривожлантирган.

Мисоллар таҳлили шуни кўрсатдики, битта семантик категория устига (масалан, «реаллик» категорияси қатор семалар билан келиши: истак, таъкид, шарт, буйруқ кабилар) бошқа семантик маъноларнинг (семалар) тушиши гапнинг модаллик хусусиятини янада очиб ташлаши натижасида тилда ифодаланган.

Шундай қилиб, модал мантиқ лингвистикада ўзининг модал маъноларининг систематизациясини намоён қиладиган жиддий фан сифатида чиқади. Ўзига хос ишлар тақсимооти юзага келган. Лингвистлар мантиқчиларга қараганда ҳам семантикани, ҳам тил ифодасининг шаклини эътиборга олиб модалликнинг ҳар хил турларини (кўринишларини) чегаралайдилар (ажратадилар), мантиқчилар эса йирик модал категорияларнинг инвариантлари семантикасини ва уларнинг мантиқий синтагматикасини чуқур ва тўғрилигини текшириб кўриб тақдим қиладилар. Модаллик категориясини тадқиқ қилишда (ўрганишда) мантиқий-лингвистик ёндашув модаллик категориясини ўрганишда асосий ва энг кийин вазифани – модал маъноларнинг хилма-хил таснифларини тизимлаштиришга (умумлаштиришга) ёрдам беради. Шундай экан, модалликни лингвистик ва мантиқий тушунишни бирлаштириш мумкиндек тўйилади, аммо битта фарқ билан: лингвистлар учун модал маъноларни ифодаловчи тил воситаларининг таркиби муҳимдир. Мана шундай ёндашувда мантиқий ва тил модаллиги бир-бирини бойитадилар ва бир-бирини тўлдирадилар.

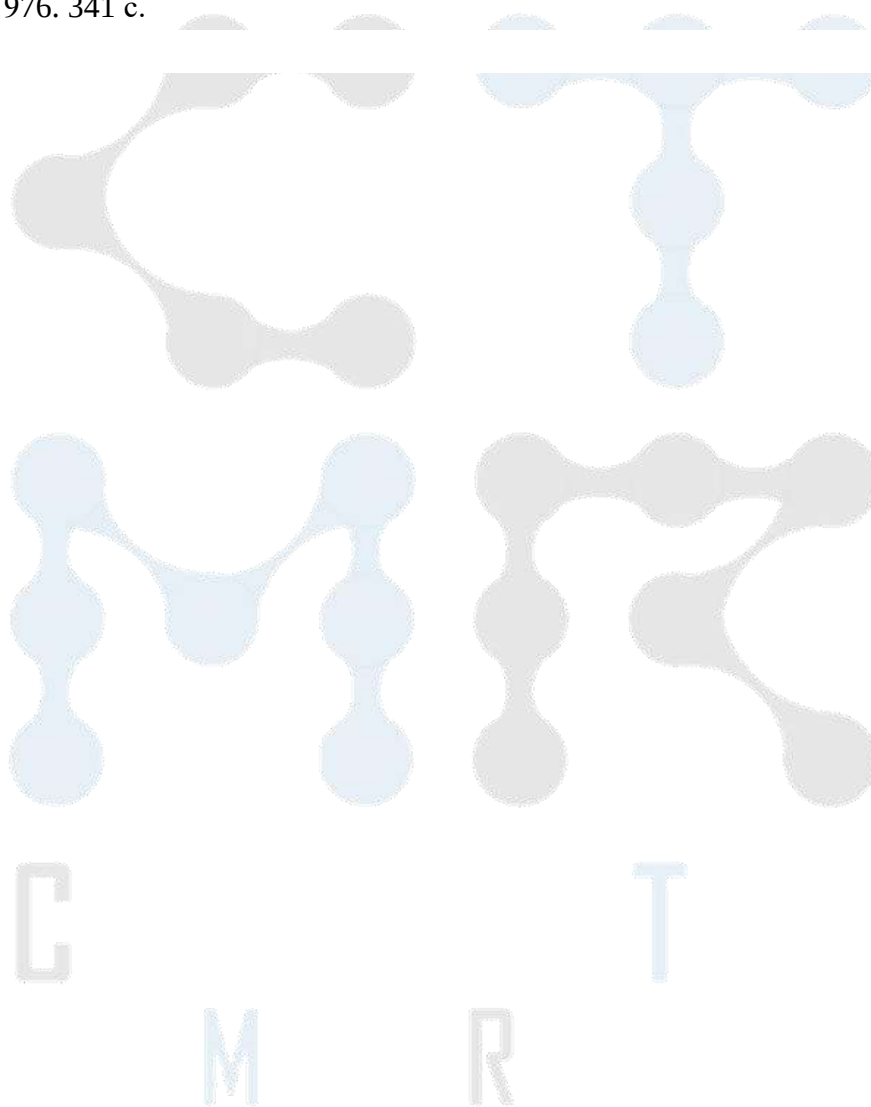
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СПЕЦИФИЧЕСКИЕ ОСОБЕННОСТИ ФОРМИРУЮЩЕГОСЯ ФОНДОВОГО
РЫНКА УЗБЕКИСТАНА

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Аннотация: В работе рассматриваются особенности развития корпоративного сектора Узбекистана и их влияние на становление фондового рынка. Подчеркивается, что институциональная структура корпоративного сектора, уровень концентрации собственности, степень прозрачности и качество корпоративного управления являются ключевыми факторами, определяющими конфигурацию и динамику фондового рынка. Показана взаимозависимость между масштабами и структурой корпоративных предприятий, процессами приватизации и инвестиционной активностью. Отмечается, что особенности корпоративного сектора не только формируют спрос и предложение на рынке ценных бумаг, но и задают траектории его дальнейшего развития. Сделаны выводы о необходимости комплексного подхода к развитию корпоративных институтов как важного условия повышения эффективности фондового рынка и привлечения долгосрочного капитала.

Ключевые слова: фондовый рынок, инвестиции, ценные бумаги, биржа, экономический рост, инфраструктура, диверсификация, рынок капитала, институциональные инвесторы, клиринговые системы, финансовая грамотность, анализ рисков, корпоративное управление, привлечение инвестиций, финансовые инструменты, государственное регулирование, инновации.

Abstract: The paper examines the development features of the corporate sector of Uzbekistan and their impact on the formation of the stock market. It is emphasized that the institutional structure of the corporate sector, the level of ownership concentration, the degree of transparency and the quality of corporate governance are key factors determining the configuration and dynamics of the stock market. The interdependence between the scale and structure of corporate enterprises, privatization processes and investment activity is shown. It is noted that the features of the corporate sector not only shape supply and demand in the securities market, but also set the trajectory of its further development. Conclusions are made on the need for an integrated approach to the development of corporate institutions as an important condition for increasing the efficiency of the stock market and attracting long-term capital.

Формирование фондового рынка в Узбекистане представляет собой сложный и многогранный процесс, находящийся на стадии активного развития. С одной стороны, государство предпринимает усилия по созданию инфраструктуры рынка капитала, повышению прозрачности корпоративного сектора и привлечению инвесторов [1]. С другой стороны, сохраняются объективные трудности, связанные с ограниченной ликвидностью рынка, низким уровнем вовлечённости населения в инвестиционную деятельность, а также структурными особенностями национальной экономики.

Инвестиции в акции корпоративного сектора страны в условиях формирующегося рынка обладают двойственной природой: они открывают значительные возможности для долгосрочного роста капитала, но одновременно сопряжены с высокими рисками [2]. Отсутствие устойчивых механизмов оценки компаний и доходности эмитируемых ими акций,

недостаточный уровень раскрытия информации, слабая дивидендная политика многих эмитентов и ограниченный опыт инвесторов создают ситуацию, при которой классические методы анализа нуждаются в адаптации к местным реалиям.

Особое значение приобретает вопрос о специфике инвестиций в корпоративный сектор Узбекистана. Здесь наблюдается ряд уникальных факторов: высокая доля государственных предприятий среди эмитентов, постепенное внедрение принципов корпоративного управления, формирование достаточно мощной институциональной базы (биржи, брокерские компании, регуляторы), а также растущий интерес со стороны иностранных инвесторов. Вместе с тем сохраняется существенная асимметрия информации и риск высокой волатильности доходности акций [3], что требует более осторожного и комплексного подхода со стороны частных и институциональных инвесторов.

Таким образом, изучение особенностей инвестирования в акции корпоративного сектора формирующегося фондового рынка Узбекистана позволяет не только выявить риски и возможности для инвесторов, но и дать практические рекомендации для дальнейшего развития национального рынка капитала.

Корпоративный сектор Узбекистана в последние годы претерпевает заметные трансформации, связанные как с внутренними институциональными изменениями, так и с внешними вызовами. Исторически экономика страны в значительной мере опиралась на государственный сектор и сырьевые отрасли, тогда как корпоративный сегмент частного бизнеса развивался неравномерно и зачастую зависел от административных решений и доступа к государственным ресурсам.

За последние пять–семь лет усилилась тенденция к созданию более прозрачной институциональной среды для бизнеса: была проведена реформа корпоративного законодательства, расширены возможности выпуска и обращения ценных бумаг, внедряются стандарты корпоративного управления [4]. При этом по-прежнему сохраняется высокая доля компаний с государственным участием в капитале, что определяет специфику корпоративного сектора в целом.

С точки зрения структуры экономики корпоративный сектор Узбекистана представлен преимущественно предприятиями в энергетике, промышленности, банковской и финансовой сферах, в сфере телекоммуникаций, а также в области переработки хлопка, мукомольной и масложировой промышленности. Однако по сравнению с развитыми рынками наблюдается ограниченность числа крупных эмитентов, чьи акции доступны для инвестирования на фондовом рынке. Для большинства средних и малых компаний характерна слабая капитализация и недостаточная раскрытость информации, что снижает их инвестиционную привлекательность, что в целом ограничивает возможности расширения рынка акций относительно небольшим числом эмитентов.

Отдельного внимания заслуживает вопрос корпоративной отчетности. Несмотря на постепенное внедрение международных стандартов финансовой отчетности (МСФО), многие компании продолжают использовать национальные стандарты, что усложняет сопоставимость данных и анализ их финансового состояния потенциальными инвесторами.

Тем не менее, на фоне усиливающейся конкуренции и выхода новых компаний на рынок наблюдается рост интереса со стороны инвесторов. Расширение базы акционерных обществ, введение обязательного листинга для ряда предприятий и поддержка со стороны регуляторов формируют основу для постепенного усложнения корпоративных практик и увеличения роли

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фондового рынка в экономике. Таким образом, текущее состояние корпоративного сектора Узбекистана можно охарактеризовать как переходное: с одной стороны, происходят позитивные институциональные и структурные сдвиги, с другой — сохраняются ограничения, препятствующие полноценной интеграции компаний в современный инвестиционный процесс.

При этом следует обратить внимание, что сочетание институциональной незрелости рынка и его растущего инвестиционного потенциала делает его одновременно рискованным и перспективным объектом для вложений.

Формирование фондового рынка Узбекистана носит поэтапный и во многом институционально обусловленный характер. Его развитие тесно связано с процессами приватизации государственных предприятий, либерализацией валютного режима, а также мерами по улучшению инвестиционного климата. В отличие от зрелых рынков капитала, где ключевым источником фондирования выступает частный сектор, узбекский рынок акций долгое время формировался преимущественно под воздействием государственных программ [3]. Это привело к значительной роли государства как эмитента и инвестора, а также к высокой доле низко ликвидных инструментов.

Еще одной особенностью является ограниченная глубина рынка: количество ликвидных эмитентов, чьи акции активно обращаются, остается небольшим. Низкая капитализация и слабая диверсификация инструментов ограничивают возможности институциональных инвесторов и затрудняют формирование устойчивого спроса со стороны частных лиц. При этом существует заметный разрыв между номинальной стоимостью акций и их рыночной оценкой, что отражает ограниченность торгов и недостаточную прозрачность ценообразования.

В то же время в последние годы наметились положительные тенденции. Создание единой платформы для торговли акциями, привлечение иностранных консультантов, постепенное внедрение международных стандартов корпоративного управления и раскрытия информации формируют предпосылки для роста доверия к рынку. Реформы, направленные на приватизацию крупных предприятий через фондовый рынок, открывают возможности для расширения круга инвесторов и повышения ликвидности. Таким образом, рынок находится на стадии становления, сочетая в себе элементы незрелой инфраструктуры и зачатки механизмов, характерных для более развитых систем.

Ключевым источником дальнейшего развития фондового рынка Узбекистана является масштабная программа приватизации, предусматривающая продажу пакетов акций крупнейших государственных компаний, создание Национального инвестиционного фонда и проведение народных IPO [4]. Реализация этих мер не только расширит перечень ликвидных инструментов, но и позволит сформировать новые точки притяжения для инвесторов [5]. Допуск стратегических иностранных инвесторов в капитал системообразующих предприятий будет способствовать модернизации корпоративного управления, росту прозрачности и внедрению международных стандартов отчетности.

Значимым драйвером станет повышение роли фондовой биржи как центра рыночной инфраструктуры. Сегодня часть сделок осуществляется вне организованного рынка, что снижает прозрачность и ограничивает возможности для инвесторов. Развитие технологий торгов, переход на современные цифровые платформы и усиление требований к раскрытию информации создадут условия для увеличения объемов и глубины торгов. Одновременно

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совершенствование регулирования, включая внедрение риск-ориентированного надзора и гармонизацию правил с международными практиками, повысит доверие к национальному рынку.

Рост интереса со стороны иностранных инвесторов во многом связан с геополитическим положением Узбекистана и его устойчивыми макроэкономическими показателями. Восточные рынки, включая Китай, Южную Корею и страны Персидского залива, рассматривают Республику Узбекистан как перспективного партнера для размещения капитала. Дополнительным фактором выступает внимание со стороны соседей по Центральной Азии, которые заинтересованы в интеграции финансовых рынков региона и развитии трансграничных инвестиций.

Внутренний спрос также способен стать источником устойчивого роста. Повышение финансовой грамотности населения и развитие инструментов розничного инвестирования постепенно формируют новую культуру сбережений. Расширение доступа населения к акциям и облигациям позволит диверсифицировать накопления, снижая зависимость от традиционных банковских депозитов. Особенно важным представляется формирование долгосрочных институциональных инвесторов — пенсионных фондов, страховых компаний, инвестиционных фондов.

Таким образом, сочетание структурных реформ, активной приватизации, улучшения регулирования и вовлечения как иностранных, так и внутренних инвесторов закладывает основу для качественного расширения фондового рынка. Важно, что эти процессы взаимно усиливают друг друга: приватизация стимулирует развитие биржевой инфраструктуры, приток иностранных инвесторов повышает требования к регулированию, а рост участия населения обеспечивает устойчивый внутренний спрос.

В перспективе это может привести к формированию в Узбекистане полноценного инвестиционного центра региона, способного аккумулировать значительный объем капитала и перераспределять его в реальный сектор экономики, поддерживая долгосрочный устойчивый рост.

В заключении следует отметить, что узбекский фондовый рынок находится на стадии активного становления и трансформации, сочетая в себе как значительные вызовы, так и мощные драйверы роста. За последние годы были заложены основы для его дальнейшего развития: модернизирована инфраструктура, запущены программы приватизации, а также намечены шаги по расширению круга участников и повышению уровня доверия к рынку. Важным достижением стало формирование нормативной базы, которая постепенно приближается к международным стандартам, что открывает новые возможности для интеграции в мировую финансовую систему.

Перспективы развития во многом зависят от способности государства и бизнеса реализовать программы по повышению ликвидности, привлечению стратегических инвесторов и стимулированию активности населения. В этом контексте ключевую роль играют такие направления, как цифровизация биржевых процессов, формирование прозрачной и предсказуемой регуляторной среды, а также развитие финансовой грамотности населения.

Таким образом, фондовый рынок Узбекистана имеет все предпосылки для превращения в один из центральных инструментов долгосрочного экономического роста и привлечения капитала в национальную экономику. Его эволюция позволит не только укрепить позиции страны в

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регионе, но и создать устойчивую платформу для инвестиций, способствующую развитию предпринимательства и повышению благосостояния населения.

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**“CLIL” METODI ORQALI O‘QUVCHILARDA AKADEMIK INGLIZ TILI
KO‘NIKMALARINI RIVOJLANTIRISH USULLARI**

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Annotatsiya. Mazkur maqolada “CLIL” (Language Integrated Learning – til bilan integratsiyalashgan o‘qitish) metodining mohiyati, uning afzalliklari hamda yuqori sinf, ya’ni 10-11-sinf o‘quvchilarida akademik ingliz tili ko‘nikmalarini shakllantirishdagi o‘rni yoritilgan. Shuningdek, bu metod asosida ta’lim jarayonini samarali tashkil qilish bo‘yicha aniq tavsiyalar va strategiyalar ishlab chiqilgan. Ushbu metod kontent (fan mazmuni) va tilni birgalikda o‘rgatishga asoslangan bo‘lib, ingliz tilining tabiiy, muloqotga asoslangan shaklda o‘zlashtirilishini ta’minlaydi. Shuningdek, bugungi kunda “CLIL” metodi Yevropa mamlakatlarida keng qo‘llanilmoqda va so‘nggi yillarda O‘zbekiston ta’lim tizimiga ham tatbiq qilinmoqda.

Kalit so‘zlar: “CLIL” metodi, akademik ingliz tili, integratsiyalashgan ta’lim, maktab ta’limi, ko‘nikmalarni rivojlantirish.

Аннотация. В данной статье рассматривается суть метода «CLIL» (Language Integrated Learning), его преимущества и роль в формировании навыков академического английского языка у учащихся 10–11-х классов. Разработаны конкретные рекомендации и стратегии для эффективной организации образовательного процесса на основе данного метода. Также сегодня метод «CLIL» широко применяется в европейских странах и в последние годы внедрен в систему образования Узбекистана.

Ключевые слова: метод «CLIL», академический английский, интегрированное обучение, школьное образование, развитие навыков.

Abstract. This article discusses the essence of the “CLIL” (Language Integrated Learning) method, its advantages and role in the formation of academic English language skills in 10-11th grade students. Also, specific recommendations and strategies for the effective organization of the educational process based on this method have been developed. Also, today the “CLIL” method is widely used in European countries and in recent years has been introduced into the education system of Uzbekistan.

Keywords: “CLIL” method, academic English, integrated education, school education, skills development.

Kirish. Bugungi kunda xorijiy tillarni bilish ko‘nikmasi professional ta’limning ajralmas qismlaridan biri bo‘lib bormoqda. Turli sohalaridagi mutaxassislarda chet elliklar bilan hamkorlik qilish ko‘rsatkichi yuqori bo‘lganligi sababli, ularda til o‘rganishga bo‘lgan talab yuqoridir. Zamonaviy jamiyatda chet tillari kasbiy ta’limning muhim tarkibiy qismiga aylanmoqda. Bugungi kunda turli darajadagi til bilimiga ega kishilar uchun o‘quv materiallarining yirik to‘plamlari mavjud. Ushbu maqsadga amalga oshirishda muvaffaqiyatga erishish, o‘qituvchilarning amaliy uslublari va malakasiga bog‘liq. Axborot texnologiyalari va zamonaviy o‘qitish usullaridan foydalanish qobiliyati yangi materiallarni tezkor tushunishga yordam beradi. Turli usullarni birlashtirib o‘qituvchi muayyan

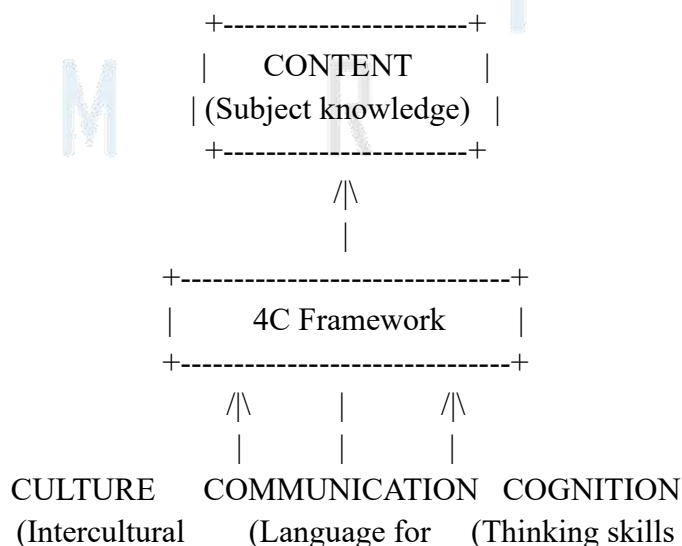
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ta'lim dasturlarini yechishga qodir bo'ladi. Bunda o'qitish va o'rganishning bir necha metodlaridan foydalanish samarali natija beradi. O'qitish kichik bosqichlarda amalga oshiriladi va o'quvchining mavjud bilim tizimiga asoslanadi. Ingliz tilini o'rgatishda o'rganuvchining salohiyat va darajasi, yoshidan kelib chiqqan holda bosqichma-bosqich o'rgatish yaxshi natija beradi. Bunda o'quvchilar *boshlang'ich, o'rta, yuqori* bosqichda o'qitish asosida guruhlariga bo'linadi. Har bir bosqich uchun o'qituvchi tomondan maxsus dastur ishlab chiqiladi. Bolalar umumiy o'rta ta'lim maktabining birinchi sinfidan boshlab chet tillarini o'rganishga harakat qilishadi. O'lchanadigan va samarali natijalarga olib keladigan to'g'ri o'qitish metodikasini topish anchayin mushkul. Dunyoning ayrim davlatlarida ta'limning barcha darajalari uchun eng keng tarqalgan yondashuv an'anaviy usul hisoblanadi. An'anaviy usulda sinflarda o'qituvchi o'quvchilar bilan faol ishlaydi, turli xil faoliyat turlarini tanlaydi: yozish, o'qish, takrorlash. Ammo kamchilik sifatida shuni aytish lozimki, o'quvchilar soni ko'p bo'lganligi sababli o'rganilgan materialning muvaffaqiyat darajasini tekshirish har doim ham to'g'ri emas. Davlatimiz mustaqillikka erishgandan keyin yoshlarning chet tillarini o'rganishga bo'lgan intilishi kengaydi va til o'rganish uchun ko'plab sharoitlar yaratilmoqda, ingliz tilini o'rganish esa global tendensiyaga aylangan. Xususan, akademik ingliz tili bo'yicha bilimga ega bo'lish yuqori ta'lim olish, ilmiy izlanish olib borish va xalqaro maydonda muvaffaqiyat qozonishda muhim rol o'ynaydi. O'zbekiston Respublikasi Prezidenti Sh.M.Mirziyoyev tomonidan ilgari surilgan 2030-yilgacha ingliz tilini o'rganish strategiyasi doirasida maktab o'quvchilarining akademik ingliz tili bo'yicha ko'nikmalarini rivojlantirish dolzarb masalaga aylandi. Shu nuqtayi nazardan, "CLIL" (Content and Language Integrated Learning – CCLIL) metodi ingliz tilini boshqa fanlar bilan integratsiyalashgan holda o'rgatishga xizmat qiladi va o'quvchilarning nafaqat umumiy, balki akademik til ko'nikmalarini rivojlantirishga katta hissa qo'shadi.

Mohiyati va nazariy asoslari. CLIL – bu kontent (fan mazmuni) va tilni birgalikda o'rgatishga asoslangan metod bo'lib, ingliz tilining tabiiy, muloqotga asoslangan shaklda o'zlashtirilishini ta'minlaydi [1]. Ushbu metod Yevropa mamlakatlarida keng qo'llanilmoqda va so'nggi yillarda O'zbekiston ta'lim tizimiga ham tatbiq etilmoqda. CLIL quyidagi to'rt asosiy C tamoyiliga asoslanadi:

- *Content (mazmun)* – o'quv fanining o'ziga xos bilimlari;
- *Communication (muloqot)* – o'rganilayotgan fan orqali ingliz tilida muloqot qilish;
- *Cognition (fikrlash)* – yuqori darajadagi kognitiv faoliyatni rivojlantirish;
- *Culture (madaniyat)* – til va madaniyatlararo kompetensiyani rivojlantirish [2] (*1-rasm*).



1-rasm. CCLIL Metodining 4C modeli

Akademik ingliz tili ko'nikmalari va ularning ahamiyati. Akademik ingliz tili – bu ilmiy, akademik muhitda ishlatiladigan til shaklidir. U quyidagi asosiy ko'nikmalarni o'z ichiga oladi:

- Akademik lug'at boyligi (AWL – Academic Word List asosida);
- Insho va maqola yozish ko'nikmalari;
- Murakkab matnlarni tahCLIL qilish;
- Fikr bildirish, asoslash va bahs yuritish;
- Ilmiy prezentatsiyalar qilish. 10-11-sinflarda ushbu ko'nikmalarni rivojlantirish, ularning keyingi bosqichlarda (kollej, oliy ta'lim) muvaffaqiyatli o'qishlari uchun zamin yaratadi (1-jadval).

1-jadval

CCLIL asosida 10-11-sinf uchun dars modeli

T/r	Dars bosqichi	Faoliyatlar	Maqsad
1.	Kirish	So'z boyligini faollashtirish	Mavzuga tayyorlash
2.	Asosiy faoliyat	Fan matnini o'qish + savollarga javob	Akademik tilni tushunish
3.	TahCLIL	Matn asosida munozara	Nutq ko'nikmasini rivojlantirish
4.	Yozma faoliyat	Mavzuga oid qisqa yozma topshiriq	Akademik yozuvni rivojlantirish
5.	Yakun	Refleksiya va fikr almashish	O'zlashtirishni mustahkamlash

Afzalliklari. A) Tabiiy muhitda til o'rganish – o'quvchilar ingliz tilini hayotiy kontekstda qo'llaydi;

B) Motivatsiyaning ortishi – fanlarni ingliz tilida o'rganish qiziqarliroq bo'ladi;

D) Kognitiv rivojlanish – murakkab fikrlash, tahCLIL qilish va muhokama qilish ko'nikmalari shakllanadi;

E) Ayni vaqtda ikki maqsadga erishish – ingliz tilini va boshqa fan bilimlarini egallash.

Rivojlantirish usullari. Fanlararo loyiha ishlari: o'quvchilar biologiya, geografiya, tarix yoki informatika fanlarida kichik ilmiy loyihalar tayyorlab, ingliz tilida taqdim etadilar. Bu esa ularning akademik yozuv, prezentatsiya va tahCLIL ko'nikmalarini rivojlantiradi; ingliz tilida laboratoriya ishlarini tashkil qilish: masalan, fizika darsida tajriba bayonnomasini ingliz tilida yozish, jarayonni inglizcha tushuntirish o'rgatiladi; akademik yozuv mashqlari: o'quvchilar ingliz tilida qisqa esselar, sharhlar, hisobotlar yozadi. AWL lug'atidagi so'zlarni faol qo'llash o'rgatiladi; bahs-munozaralar (Debates): Ingliz tilida akademik asosli munozaralar tashkil etish orqali fikr bildirish va daCLIL keltirish ko'nikmalari shakllanadi; korpuslardan foydalanish: ingliz tilidagi akademik korpuslardan (masalan, BAWE – British Academic Written English) [4] namunalar tahCLIL qilinadi (2-jadval).

2-jadval

Akademik ingliz tili ko'nikmalarining CCLIL orqali rivojlanishi

Ko'nikma turi	An'anaviy yondashuvda	CCLIL metodida yondashuv
Lug'at boyligi	So'zlar yodlanadi	Fan matnlari orqali tabiiy o'zlashtirish
Grammatik ko'nikma	Qoida asosida	Kontekst asosida integratsiyalashgan
O'qish	Faqat til matnlari	Biologiya, tarix matnlari orqali
Yozish	Insho, xat	Fan asosidagi yozma ishlanmalar

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Ko'nikma turi	An'anaviy yondashuvda	CCLIL metodida yondashuv
Tinglab tushunish	Dialoglar, suhbatlar	Ma'ruzalar, fan video darslari
Nutq	Oddiy dialoglar	Fan haqida izohli nutq, taqdimotlar

O'quvchilar yutuqlarini baholash usullari. CLIL metodida baholash ham integratsiyalashgan bo'lib, quyidagilarni o'z ichiga oladi:

- Formatif baholash: jarayon davomida doimiy tahCLIL va fikr bildirish;
- Sumativ baholash: loyiha ishi, esse yoki prezentatsiya orqali yakuniy baholash;
- O'z-o'zini baholash: o'quvchi o'z yutuq va kamchiliklarini mustaqil tahCLIL qiladi;
- E-portfoliolar: o'quvchining barcha ishlarini yig'ib boradigan raqamli portfel.

Amaliy tajribadan misollar (case study). Toshkent shahridagi 211-maktabda o'tkazilgan tajriba loyihasi natijalariga ko'ra, 10-sinf o'quvchilari "CLIL" metodida 3 oy davomida ingliz tilida geografiya loyihalari ustida ishladi. Yakunda:

- O'quvchilarning 78% akademik so'z boyligini kengaytirdi;
- 63% o'quvchi ingliz tilida mustaqil fikr bildirishga tayyor bo'ldi;
- 71% o'quvchi ingliz tilida esse yozishdagi xatolar sonini kamaytirdi [5].

Xulosa va tavsiyalar. Xulosa o'rinda shuni aytish joizki, maktablarda xorijiy til o'qitish metodikasi fani o'qitish jarayonida ta'limning an'anaviy va interfaol o'qitish usullardan ishlatiladi. Amaliy mashg'ulotlar og'zaki va yozma tarzda tashkil etilishi ko'zda tutiladi. Amaliy mashg'ulotlarni o'qitish mobaynida ilg'or pedagogik texnologiyalardan, shuningdek, ko'rgazmali slaydlarni kompyuter yordamida namoyish etish, elektron materiallarni proyektor yordamida tasvirga chiqarish vositalaridan foydalaniladi. Fanning amaliy mashg'ulotlarida ta'limning innovatsion, interfaol metodlari qo'llash nazarda tutiladi. Xususan, "CLIL" metodini 10-11-sinflarda qo'llash akademik ingliz tilini samarali o'rgatish imkonini beradi. Metod o'quvchilarning bilim darajasi va til ko'nikmalarini bir vaqtda rivojlantiradi, shuningdek, ularni zamonaviy ta'lim va ilmiy faoliyatga tayyorlaydi. Tavsiyalar sifatida quyidagilarni aytish mumkin:

1. O'qituvchilar CLIL bo'yicha malaka oshirish kurslarida qatnashishi lozim;
2. Maktablarda fanlararo darslar soni oshirilishi kerak;
3. Akademik ingliz tiliga oid maxsus darslik va materiallar ishlab chiqilishi zarur;
4. Baholashda akademik ko'nikmalar inobatga olinishi lozim.

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PEDAGOGICAL CONDITIONS FOR DEVELOPING STUDENTS' COMPETENCES IN
FREELANCING IN THE FIELD OF INFORMATION TECHNOLOGIES

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Abstract . This in the article students information technologies in the field to freelance related competence to develop pedagogical conditions cited hamad from them to use related offer and recommendations giving passed .

Keywords: information technology , freelancing , pedagogy condition , Methodological support , online circle , practical program , web platform.

Pedagogical systems activity improvement and education process efficiency increase problems with related was modern in research interest awakening from aspects one this previously pushed the idea and activity done increase success providing pedagogical the conditions determine , justify and is verification [1].

Previously being pushed research is also to issues aimed at be , i.e students information technologies in the field to freelance related competence to develop pedagogical conditions working from the exit Therefore , the research within following pedagogical conditions clarified :

- 1) Computer modern practical and in instrumental programs different projects working to go out related practical skills development ;
- 2) High education in institutions information technologies related sciences in teaching freelancing ideas absorbed to go ;
- 3) To students information technologies in the field to freelance teacher methodical supply improvement ;
- 4) To students information technologies related from sciences independent education assignments in giving freelancing from platforms use ;
- 5) To students information technologies in the field to freelance teacher online circles organization to grow system working exit

Offer being done pedagogical of the conditions content as follows :

First pedagogical condition . This pedagogical condition students the computer modern practical and in instrumental programs different projects working to go out related practical skills to develop in mind holds . That is students only computer modern practical and instrumental programs use not , maybe different practical projects , including information management systems create , various authorship graphic projects working exit , various account their work performer practical programs working to go out related to the qualification has to be requirement Our autumns based on this witness we were supreme education in institutions take to go information technologies related to sciences relevant normative in documents main attention students to the course to enter service will do . However creative as if based on different practical projects working to go out related competence to develop enough attention This is not the case . own in turn students to freelance related competence to develop obstacle does . That's why for students to freelance related competence in development initially , their computer modern practical and in instrumental programs different projects working to go out related practical skills develop Students should to freelance related competence in development computer modern practical and in instrumental programs different projects working to go out related

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practical skills develop with together , supreme education in institutions information technologies related sciences in teaching freelancing ideas absorbed to go important It was so . for research within second pedagogical condition offer is being done .

Second pedagogical condition . This pedagogical condition supreme education in institutions information technologies related sciences in teaching freelancing ideas absorbed to go in mind holds . That is axboot technologies related from sciences lecture , practical and laboratory exercises take on the way only practical from the dasaturs use and different projects to do not , maybe to freelance guide practical assignments to perform methods and to that related assignments giving to go to the goal appropriate This is considered as a result students science related motivation to improve , creative and cognitive thinking to develop and authorship software products to finance circle imagination to form is achieved .

Like this tasks done increase for to students information technologies in the field to freelance teacher methodical supply to improve requirement Therefore , the research within third pedagogical condition offer is being done .

Third pedagogical condition . This pedagogical condition to students information technologies in the field to freelance teacher methodical supply to improve in mind That is , it requires the use of information and educational environments, web-platforms, and educational websites located in the global network, which teach students to freelance . Such methodological support increases the motivation of students and directs them to independently solve creative and professional problems [2].

The use of methodological support (presentation programs, training programs, electronic educational resources, virtual educational technologies, active learning materials, animated demonstration tools, assessment and control programs) allows students to self-educate and receive independent education [3].

In this regard, UMMirsanov [4], AONorbekov [119], DVLuchaninova [117], D.Otaqulova [120] conducted research, and they stated that search engines, educational environments, and web technologies of the global network serve as effective tools for increasing the effectiveness of teaching information technology-related subjects and developing students' competence in information technology.

In particular, according to AONorbekov, the use of modern information and educational environments in the educational system has necessitated a revision of concepts both in content and essence. When we talk about the educational process, we see a holistic process in the relationship between the professor-teacher and the student. Now this process is being combined with virtual information and educational platforms, information and educational environments, information resources, educational portals and websites. In this process, learning is more directly related to the student's internal capabilities, intellectual potential, and characteristics of receiving and assimilating information [5]. DVLuchaninova notes that one of the effective ways to develop students' competence is to use interactive forms of learning, that is, distance learning platforms. In his opinion, taking into account the widespread use of information and educational environments in higher education institutions, the use of distance learning is effective in developing students' creative information competence [6]. Taking into account the widespread use of information, distance learning in higher education stands out as the most favorable. In this case, students' freelance work related competence in development remotely use opportunity UMMirsanov states that the information technologies in the field experts global network in preparation at their

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addresses placed information and education from environments , education from portals and educational websites modern methodical supply become service does . His according to information technologies in the field news and computer practical programs modern versions and from it to use circle sources , starting with the global network is placed . In this following provides opportunities [4] :

- increases students' motivation for science. Students understand that learning information technology subjects is not difficult by reading educational materials in the software and watching video tutorials;
- It serves to a certain extent to develop logical, algorithmic thinking about science. In this case, science-related problems and tasks are presented from simplicity to complexity. In addition, it teaches how to write program codes for the given problems step by step;
- Provides the opportunity for independent study of computer applications. Provides students with all the educational resources for independent study of computer applications.

This scientist thoughts attention worthy is considered . Because freelancing in the field computer contemporary from versions use important is considered . Wide comprehensive study concept desired in place necessary technician tools using study opportunity in mind holds .

Conclusion that the material important part remote to form held , various interactive forms for audience in training time saves , this their efficiency increase additional professors and teachers students with online consultations , discussions group become organization to grow opportunity is created [6].

According to D. Otakulova, if the professor-teacher is a mediator between students and the established content of education in the traditional sense, information and educational environments serve as a means of providing a special form of pedagogical support [7]. The main component of learning to prepare computer graphics and web applications using information and educational environments is directed at self-education and knowledge acquisition of students in the educational space [8]. The main concept of information and educational environments is pedagogical support. Pedagogical support is understood as the process of creating conditions for methodological support for students if they encounter problems in preparing various advertisements, animation effects, visual projects, web applications using graphic programs [9].

Thus, based on the analysis of the research of scientists on the possibilities of methodologically supported educational tools, it can be said that in developing students' competence in freelancing, it is necessary to develop mechanisms for using methodological support, that is, information and educational environments, web platforms, and educational websites. Therefore, the three proposed pedagogical conditions are of great importance.

In addition to improving the methodological support for developing students' competence in freelancing, it was considered important to use freelancing platforms to assign tasks for their independent education in information technology subjects. Therefore, the study within fourth pedagogical condition offer is being done .

Fourth pedagogical condition This pedagogical condition to students information technologies related from sciences independent education assignments in giving freelancing from platforms use in mind Because Systematic involvement of students in active independent learning helps them understand the importance of self-education. In this regard, independent work is of great importance [10]. According to PIPidkasist, in the independent work of students, he understands various types of

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educational work or research tasks performed by students under the guidance of their teacher to master various knowledge, skills, and experience of creative activity [11].

Properly organized independent work, first of all, solves the tasks of motivation, testing achievements, developing students' voluntary attention, and forms independence as a character trait [7]. This, in turn, helps to develop students' competence in freelancing in the field of information technologies. important is considered .

Therefore, the main requirement for training personnel in higher education institutions, including in the field of information technology, is to develop and update in a systematic and continuous manner, scientifically, work-oriented, creatively solve social problems in an independent manner, think critically, develop and defend their own point of view, creative abilities. It is about shaping a person. The main goal of information technology subjects is to provide students with the skills and knowledge to perform tasks such as assembling computer devices, installing operating systems in computer memory, working with application and instrumental programs, creating various software products, database management systems, and solving practical problems using modern programming languages. It consists of having competence. The formation of such qualities requires the development of students' competence in freelancing in the field of information technology.

Therefore, it is considered appropriate to use tasks posted on freelance platforms when assigning independent education of students in information technology subjects, including independent work . This will not only develop students' professional competence in information technology, but also help them to become freelancers and earn money online. Therefore, this pedagogical condition is proposed within the framework of the study.

In order to develop students' competence in freelancing, it is necessary to use freelancing platforms for independent learning assignments, as well as provide them with online advice, including the organization of online circles. Therefore, the study within fifth pedagogical condition offer is being done .

Fifth pedagogical condition . This pedagogical condition to students information technologies in the field to freelance teacher online circles organization to grow system working exit means . Because online clubs on the basis one of time in itself wide extensive users attraction to do and time saving possible gives .

Offer being done pedagogical on condition to students freelancing secrets and to freelance from related web platforms use methods is taught . Also , the implementation offer being done projects done increase ideas giving This is as a result students to freelance related motivation increase through information technologies in the field modern freelancers to prepare is achieved . Therefore for research within offer being done pedagogical condition important importance has .

Conclusion as in other words , students information technologies in the field to freelance related competence in development there is pedagogical conditions with together research within offer being done pedagogical to the conditions action to do to the goal appropriate is considered .

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OPPORTUNITIES FOR DEVELOPING ENTREPRENEURIAL SKILLS IN FEMALE STUDENTS

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Annotation. *The article examines the development of entrepreneurial skills among female students in Uzbekistan, with particular emphasis on the design field. It highlights international and national initiatives promoting women's entrepreneurship, referencing the 2011 UNESCO congress in Geneva and Uzbekistan's state policies such as the Action Strategy 2017–2021 and the "Every Family is an Entrepreneur" program. The study identifies key qualities required for female student entrepreneurs, including creativity, innovation, independence, organizational skills, and motivation, with motivation recognized as the primary driving factor. Evaluation criteria encompass psychological, intellectual, and procedural aspects, as well as independence diagnostics based on S. Grinshpun's methodology, which considers moral maturity, competence, communication, creativity, and self-control. Practical reforms, new curricula, and modern educational standards further support the integration of entrepreneurship into higher education. The conclusion emphasizes that Uzbekistan's higher education institutions, especially in design-related disciplines, provide favorable conditions and effective pedagogical systems for fostering female entrepreneurship.*

Keywords: *entrepreneurship, female students, crafts, creativity, gender equality*

In today's context of global development, particular attention is being paid to ensuring gender equality and creating opportunities for women to become self-employed. Many countries have started to focus on the development of entrepreneurship among women, especially among female students. In September 2011, a policy congress was held in Geneva by UNESCO on the development of women's entrepreneurship in Central Asia. The event discussed ongoing research in various countries, challenges faced by women entrepreneurs in the region, their consequences, and offered region-specific recommendations to enhance female entrepreneurship.

In Uzbekistan, entrepreneurial activities among female students, particularly in the field of design, have flourished in areas such as visual arts, traditional applied arts, sewing, and handicrafts. Training women in crafts and directing them towards entrepreneurship increases the efficiency of labor resources, helps women find their place in society, and contributes to the development of their entrepreneurial competencies. Priority tasks have been set for preserving and promoting the rich cultural heritage and historical traditions of the Uzbek people, developing national handicrafts and folk applied arts, and comprehensively supporting citizens engaged in handicraft activities.

At the new stage of development in the education system, various regulatory and legal documents have been adopted to encourage students' work activity and initiative and to develop entrepreneurial skills among them. For example, Section 3.4 of the "Action Strategy for the Five Priority Areas of Development of the Republic of Uzbekistan in 2017–2021" outlines the need to promote the share of small businesses and private entrepreneurship, continue institutional and structural reforms, and involve youth in family entrepreneurship and private business. Moreover, the Presidential Decree No. 3770 on the implementation of the "Every Family is an Entrepreneur" program emphasized comprehensive support for entrepreneurial initiatives of the population,

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provision of preferential loans, and practical assistance by responsible agencies at all stages of entrepreneurial activity. This requires the development and refinement of a methodology for shaping and evaluating students' entrepreneurial skills based on the cooperation between families and higher education institutions.

The Process of Developing Entrepreneurial Skills in Female Students

Developing entrepreneurial skills in female students is a systematic process aimed at fostering the following qualities:

- The ability to search for and implement innovative ideas
- Adaptation to non-standard situations
- Self-monitoring and personal responsibility
- The ability to express and defend personal opinions
- Organizational and managerial competencies
- A creative approach to work
- Resourcefulness and persistence in achieving goals

The concept of "developing entrepreneurial skills in students" encompasses psychological, intellectual, and procedural aspects, and it is necessary to define evaluation criteria for students' personal readiness for entrepreneurial activity. Based on research results, the following psychological criteria are used to assess the formation of entrepreneurial skills in female students:

- Personal orientation toward entrepreneurship
- Capability for entrepreneurial activity
- Level of motivation and interest in entrepreneurship
- Independence

Among these criteria, motivation plays a leading role, as it drives the development of entrepreneurial competencies just like in any other activity. Motivation is influenced by both internal and external factors and is unique to each student. Hence, understanding and consciously enhancing a student's personal motivation is critical for the development of entrepreneurial skills. The achievement of expected outcomes depends on setting clear goals. Experience shows that learning materials that assist in practical activities are better retained in memory. A student's motivation towards activity is often linked to internal direction (introverted motivation), while external motivation (extrinsic) is associated with externally set goals. A balance of both is essential for effective skill development.

In evaluating entrepreneurial skill development in students, motivational orientation, level of interest, abilities, independence, family background, and regional/national conditions must be considered. The need to engage in a certain type of activity is also important, as it reflects internal motivation, which manifests as a desire to participate in practical tasks.

Components of Entrepreneurial Capacity

A female student's entrepreneurial capacity is expressed through the ability to generate and implement innovative ideas. The criteria include:

- Developing and implementing ideas
- Adaptation to non-standard situations

Independence is the ability to take responsibility and act autonomously. This concept encompasses:

- Self-monitoring
- The ability to stand by personal opinions despite external influence
- A sense of accountability

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In diagnosing student independence, it is important to consider age characteristics and apply various methods such as individual testing, game-based activities, and group work.

The methodology for diagnosing independence in female students was developed by S. Grinshpun and includes the following components:

1. **Moral and ethical maturity** – belief in the social and moral validity of actions; presence of personal-value orientation.
2. **Competency** – knowledge of socio-economic processes and readiness for labor activity.
3. **Communication skills** – the ability to understand others, collaborate, and interact effectively.
4. **Creativity** – a proactive and innovative approach to tasks.
5. **Self-control** – the ability to regulate personal behavior in accordance with objective social conditions and expectations.

This makes it possible to analyze independence through three interrelated aspects:

- Axiological attitude
- Readiness for activity
- Self-control

Practical initiatives and educational reforms

In recent years, new state educational standards have been developed, along with curricula and methodological resources aimed at enhancing entrepreneurial skills in female students through applied arts. Modern educational institutions have been built and equipped with up-to-date tools and technology.

CONCLUSION

It can be concluded that higher education institutions in Uzbekistan, particularly those focusing on design disciplines, possess the necessary conditions and have established an effective pedagogical system to develop entrepreneurship among female students.

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IMOM TERMIZIY “SUNAN” ASARINING MA’NAViy-TA’LIMIY AHMIYATI:
“ABASA” SURASI MISOLIDA.

ДУХОВНО-ВОСПИТАТЕЛЬНОЕ ЗНАЧЕНИЕ ПРОИЗВЕДЕНИЯ ИМАМА ТЕРИМЗИ
«СУНАН»: НА ПРИМЕРЕ СУРЫ «АБАСА»

THE SPIRITUAL AND EDUCATIONAL SIGNIFICANCE OF IMAM TIRMIDHI’S
“SUNAN”: THE EXAMPLE OF SURAH ABASA

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Annotatsiya. Ushbu maqola Imom Abu Isa Muhammad ibn Isa Termiziyning “Sunan” asaridagi Abasa surasi va Qiyomat voqealariga oid hadislarini tahlil qiladi. Maqolada hadislarining arabcha matni, tarjimasi, sharh va izohlar orqali ularning ma’naviy, axloqiy, ilmiy va tarbiyaviy ahamiyati yoritilgan. Tadqiqot insonlarning ijtimoiy tengligi, shaxsiy mas’uliyati, oxirat hayotiga tayyorgarligi hamda adolat va hurmat tamoyillarining hayotiy ifodasi kabi jihatlarni ochib beradi. Maqolada, shuningdek, Imom Termiziyning hadislarini to‘plash, isnod va matn tahlili metodikasi, Qur’on va Sunnat o‘rtasidagi uzviy bog‘liqlik, musulmonlarning ruhiy va ma’naviy rivojlanishidagi roli batafsil ko‘rsatilgan. Tadqiqot ilmiy va ta’limiy ahamiyatga ega bo‘lib, Abasa surasi voqealari va Qiyomat haqidagi hadislar asosida musulmonlarni iymon, sabr, adolat va hurmat ruhiyatiga undaydi.

Kalit so‘zlar: Abasa surasi, Qiyomat voqealari, Imom Termiziy, hadis tahlili, ma’naviy tarbiya, Qur’on va Sunnat, isnod, sahih va hasan hadislar, ijtimoiy adolat, shaxsiy mas’uliyat.

Аннотация. В данной статье анализируются хадисы Имама Абу Исы Мухаммада ибн Исы Теримзи из его произведения «Сунан», относящиеся к суре «Абаса» и событиям Судного дня. В статье представлены арабский текст хадисов, их перевод, комментарии и пояснения, раскрывающие их духовное, нравственное, научное и воспитательное значение. Исследование показывает важность социальной справедливости, личной ответственности, подготовки к жизни после смерти, а также проявления принципов справедливости и уважения в жизни. Также рассматривается методика сбора хадисов Имама Теримзи, анализ иснадов и текста, связь Корана и Сунны, роль в духовном и нравственном развитии мусульман. Исследование имеет научное и образовательное значение и призывает верующих к вере, терпению, справедливости и уважению, опираясь на события суры «Абаса» и хадисы о Судном дне.

Ключевые слова. Сура Абаса, события Судного дня, Имам Теримзи, анализ хадисов, духовное воспитание, Коран и Сунна, иснад, sahih и hasan хадисы, социальная справедливость, личная ответственность.

Abstract. This article analyzes the hadiths of Imam Abu Isa Muhammad ibn Isa Tirmidhi from his work “Sunan,” related to Surah Abasa and the events of the Day of Judgment. The article provides the Arabic text of the hadiths, their translation, commentary, and explanation, highlighting their spiritual, moral, educational, and scholarly significance. The study emphasizes social equality, personal responsibility, preparation for the afterlife, and the practical implementation of justice and respect. It also examines Imam Tirmidhi’s methodology in collecting hadiths, analyzing isnads and texts, the interconnection between the Qur’an and Sunnah, and the role of these teachings in the spiritual and moral development of Muslims. The research has both scholarly and educational value,

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urging believers to cultivate faith, patience, justice, and respect based on the events of Surah Abasa and the hadiths concerning the Day of Judgment.

Keywords. Surah Abasa, Day of Judgment events, Imam Tirmidhi, hadith analysis, spiritual education, Qur'an and Sunnah, isnad, sahih and hasan hadiths, social justice, personal responsibility.

KIRISH

Imom Abu Isa Muhammad ibn Isa Termiziy (830–892 yillar) islom tarixida hadis ilmining eng mashhur olimlaridan biri sifatida tanilgan. U Termiziy shahrida tugʻilib, yoshligidan hadis ilmiga katta qiziqish bilan qaragan. Iso Termiziy butun hayoti davomida hadislarni toʻplash, tartibga solish va ularni tasniflashga bagʻishlagan. Uning ilmiy faoliyati nafaqat islomiy ilm-fan rivojiga, balki musulmon jamiyatining maʼnaviy tarbiyasiga ham katta hissa qoʻshgan.

Termiziyning eng mashhur asari – “Sunan” boʻlib, bu asar hadislarni mavzular boʻyicha tizimli tarzda jamlagan va ularning ishonchliligi, ishonchsizligi haqida muhim baholar bergan. Shu bilan birga Termiziy “Sunan” asarida Qur’oni Karim oyatlarini tushuntirish bilan bogʻliq hadislarni ham keltiradi, bu esa uning tafsir ilmidagi oʻrni va ahamiyatini oshiradi. U hadislarni toʻplashda nafaqat rivoyatlarning isnodini, balki matnning maʼnosini ham chuqur oʻrganishga eʼtibor qaratgan. Imom Termiziy hayotini oʻrganish orqali, uning ilmiy metodikasi va asarlarining diniy, tarbiyaviy ahamiyati yaxshiroq tushuniladi. Ayniqsa, Abasa surasi va Qiyomat voqealariga oid hadislar uning maʼnaviy va tarbiyaviy qarashlarini ochib beradi.

Asosiy qism.

Imom Termiziy “Sunan” asarining tafsir bobida keltirgan rivoyatlaridan birida “Abasa” surasining nozil boʻlish sababi yoritilgan. Rivoyatda kelishicha, Rasululloh (s.a.v) Qurayshning ulugʻ mushriklaridan biri bilan suhbatda boʻlgan paytda koʻzi ojiz sahoba – Ibn Umm Maktum (r.a) huzurlariga kelib, “Ey Rasululloh, menga yoʻl koʻrsating” deb iltimos qiladilar. Paygʻambarimiz (s.a.v) daʼvat uchun muhim deb hisoblangan suhbatni davom ettirishga intilib koʻzi ojiz kishiga eʼtibor qaratmay, yuzlarini boshqa tomonga buradilar. Shu holatda “U yuzini burib oldi” oyatlari nozil boʻlib, ushbu voqea Qur’on oyatlarida abadiy saboq sifatida mustahkamlanib qoldi¹.

Bu hadisdan koʻrinadiki, Islom taʼlimotida insonning ijtimoiy mavqeidan, boyligi yoki kuchidan qatʼi nazar, har bir shaxsning haqi va qadr-qimmatini muqaddasdir. Qur’oni Karim zaif, kambagʻal va koʻzi ojiz insonlarni jamiyatdan chetlatishni qattiq qoralaydi. Rasululloh ﷺ oʻzlari ham bu voqeadan keyin Ibn Umm Maktumga alohida mehribonlik bilan munosabat qilganlari, hatto uni koʻp marta muazzinlikka tayinlaganlari rivoyat qilinadi.

Imom Termiziy hadisni keltirar ekan, uni “ghareeb” yaʼni nodir hadis sifatida baholaydi. Boshqa rivoyatlar ham mavjud boʻlib, ayrimlarida hadis toʻgʻridan-toʻgʻri Hishom ibn Urva orqali kelgan, ammo unda Oisha onamiz roziyallohu anho zikr qilinmagan. Bu tafovut hadis ilmidagi isnod tafsilotlarining ahamiyatini koʻrsatadi. Mazkur hadisning asosiy mazmuni shundaki, Islom dinida imon egalarining qadriyatlari har qanday ijtimoiy maqomdan ustundir. Qur’on oyati va hadislar musulmonlarni doimo jamiyatning zaif qatlamiga – yetimlarga, kambagʻallarga, nogironlarga va ojizlarga mehr-muhabbat koʻrsatishga undaydi. Bu esa Islomda tenglik va adolat tamoyillarining hayotiy amaliy ifodasidir.

حدثنا عبد بن حميد حدثنا محمد بن الفضل حدثنا ثابت بن يزيد عن هلال بن خباب عن عكرمة عن ابن عباس عن النبي ﷺ قال
تحشرون حفاة عراة غرلا فقالت امرأة أبيصر أو يرى بعضنا عورة بعض قال يا فلانة { لكل امرئ منهم يومئذ شأن يغنيه } قال

¹ Anvarshoh Kashmiriy. Arfu shazi sharhi Sunani Termiziy. – Lubnon: Darul turosul arabiy, 2004. – J. II. – B.344.

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أبو عيسى هذا حديث حسن صحيح قد روي من غير وجه عن ابن عباس رواه سعيد بن جبير أيضا وفيه عن عائشة رضي الله تعالى عنها

Abd ibn Hamid rivoyat qiladi: Muhammad ibn al-Fadl, Thabit ibn Yazid orqali, Hilal ibn Khabbabdan, Ikrima orqali, Ibn Abbasdan rivoyat qiladilar: Payg'ambarimiz (s.a.v) aytdilar: "Sizlar Qiyomat kuni yalang'och, ochiq holda tirilasizlar." Shunda bir ayol so'radi: "Xo'sh, birimiz boshqa birimizning auratlarini ko'ra oladimi? Payg'ambarimiz (s.a.v) javob berishdi: "Ey xonim, har bir kishi o'sha kuni o'zining holati bilan kifoyalanadi."²

Abu Iso Termiziy bu hadisni hasan sahih deb baholaydi. Hadis Ibn Abbas orqali boshqa isnodlarda ham rivoyat qilingan va ba'zan Oisha onamiz roziyallohu anho tomonidan ham zikr qilingan. Ushbu hadis Qiyomat kuni insonlarning tirilishi va ularning o'z holatlari bilan bandlikda ekanligini yoritadi. Arabcha matn va tarjimadan ko'rinib turibdiki, insonlar o'z hayotlari davomida qilgan amallari bilan o'lchanadi va boshqa insonlarning holati ular uchun foyda yoki zarar keltirmaydi.

Har bir inson o'z amallari uchun javob beradi. Hech kim boshqasining gunohi yoki savobi bilan mukofotlanmaydi. Qiyomat kuni hamma shaffof va adolatli holda tiriladi. Hech kimning ijtimoiy mavqei, boyligi yoki kuchi hisobga olinmaydi. Dunyo hayotida ham, insonlar bir-birining haqqini hurmat qilishi, boshqalarning aurati va shaxsiy chegaralariga hurmat ko'rsatishi zarurligi ko'rsatilgan. Imom Termiziy bu hadisni keltirib, musulmonlarni qiyomat va ahloqiy mas'uliyatga tayyorlash, shuningdek, dunyoda insoniy hurmat va ehtiyotkorlikni yuksaltirishga chaqiradi.

حدثنا عباس بن عبد العظيم العنبري حدثنا عبد الرزاق أخبرنا عبد الله بن جبير عن عبد الرحمن وهو بن يزيد الصنعاني قال سمعت بن عمر يقول قال رسول الله ﷺ من سره أن ينظر إلى يوم القيامة كأنه رأي عين فليقرأ إذا الشمس كورت وإذا السماء انفطرت وإذا السماء انشقت هذا حديث حسن غريب وروى هشام بن يوسف وغيره هذا الحديث بهذا الإسناد وقال من سره أن ينظر إلى يوم القيامة كأنه رأي عين فليقرأ إذا الشمس كورت ولم يذكر وإذا السماء انفطرت وإذا السماء انشقت

"Abbas ibn Abdul-'Azim al-Anbari rivoyat qiladi: Abdul-Razzaq, Abdulloh ibn Bajir orqali, Abdul-Rahman orqali rivoyat qiladilar: Umar ibn Xattob aytdilar: Payg'ambarimiz (s.a.v) dedilar: "Kim Qiyomat kunini o'z ko'zi bilan ko'rgandek bo'lishni istasa u "Shams" surasi oyatlarini o'qisin."³

Abu Iso Termiziy bu hadisni hasan g'arib deb baholaydi. Hishom ibn Yusuf va boshqa rivoyatchilar ham ushbu hadisni shu isnod orqali keltirganlar. Ba'zi rivoyatlarda esa oxirgi oyatlar tafsiloti biroz boshqacha zikr qilingan. Ushbu hadis Qiyomat kunining voqealarini insonlarga yaqinlashtiradi va ularni ruhiy tayyorgarlikka chaqiradi. Hadis Qiyomat kuni sodir bo'ladigan voqealarni tasvirlaydi. Quyosh qoplanadi, osmon yoriladi va bo'linadi. Bu insoniyat uchun eng dahshatli va hayratli kun bo'lishini bildiradi.

Payg'ambarimiz (s.a.v) oyatlarni o'qish orqali Qiyomatni ko'rish tajribasini berishlarini aytadi. Bu ruhiy tayyorgarlik va tafakkur uchun mo'ljallangan. Hadis o'quvchini Qiyomat va oxirat haqiqatiga eslatadi. Qur'on oyatlarini o'qish, tafakkur qilish orqali insonlar dunyoviy hayotdan chalg'imag, oxiratga tayyor bo'lishadi. Bu hadis Imom Termiziy tomonidan g'arib, lekin hasan deb baholangan. Bu hadis kam rivoyat qilingan, ammo ishonchli manba orqali keltirilgan. Hadis Qur'on tafsirini, oyatlarning voqealarni tasvirlashini va insonni ma'naviy tayyorgarlikka chaqirishini tushunishga yordam beradi. Ushbu hadis musulmonlarni Qiyomat voqealari va oxirat hayotini o'ylashga chaqiradi. Oyatlarni o'qish orqali inson o'z qalbini tayyorlaydi, ruhiy va ma'naviy tayyorgarlikni oshiradi. Imom Termiziy hadisni rivoyat qilish orqali bu voqealarning ahamiyatini, ularning inson ruhiyati va e'tiqodiga ta'sirini ko'rsatadi.

² Akram Ziyoy Umariy. Turot at-Termiziy al-'ailmiy. Maktaba ad-daar bil Madiynati al-munavvara, 2012. – B. 233.

³ Anvarshoh Kashmiriy. Arfu shaziy sharhi Sunani Termiziy. – Lubnon: Darul turosul arabiy, 2004. – J. II. – B. 346.

Muhokama

Imom Termiziyning “Sunan” asarida Abasa surasi va Qiyomat voqealariga oid hadislar, insoniy qadriyat va ma’naviy mas’uliyatni yoritishda muhim manba hisoblanadi. [3331]-hadisga ko‘ra, Qurayshning ulug‘ mushriklaridan biri bilan suhbat davomida Payg‘ambarimiz ﷺ ko‘zi ojiz sahoba Ibn Umm Maktumga e’tibor qaratmaganlar. Shu voqeadan so‘ng, “Abasa wa tawalla” oyatlari nozil bo‘lib, insonning ijtimoiy mavqei, boyligi yoki kuchidan qat’iy nazar, har bir shaxsning haqi va qadr-qimmatini muqaddas ekani Qur’oni Karimda mustahkamlangan. Hadis “g‘arib” sifatida baholangan bo‘lsa-da, uning asosiy saboqlari juda muhimdir. Islom dini jamiyatning zaif qatlamiga mehr-muhabbat ko‘rsatishni, insonlarni tenglik va adolat prinsiplariga hurmat bilan yondashishni talab qiladi.

3332-hadis esa Qiyomat kunidagi insonlarning tirilishi va ularning o‘z holatlari bilan bandlikda ekanligini ko‘rsatadi. Bu hadisdan ko‘rinib turibdiki, har bir inson o‘z amallari uchun javob beradi va boshqa insonlarning holati unga foyda yoki zarar keltirmaydi. Imom Termiziy hadisni hasan sahih deb baholaydi va bu hadis orqali u musulmonlarni Qiyomat va ahloqiy mas’uliyatga tayyorlashni, shuningdek, dunyoda insoniy hurmat va ehtiyotkorlikni yuksaltirishni maqsad qilganini ko‘rsatadi⁴.

3333-hadis esa Qiyomat kunining voqealarini tasvirlaydi: Quyosh qoplanadi, osmon yoriladi va bo‘linadi. Ushbu hadis orqali inson ruhiy tayyorgarlik va tafakkurga chaqiriladi. Payg‘ambarimiz ﷺ oylarni o‘qish orqali Qiyomatni ko‘rish tajribasini berishlarini aytadi, bu esa dunyoviy hayotdan chalg‘imaslik va oxiratga tayyor bo‘lishni ta’minlaydi. Imom Termiziy bu hadisni hasan gharib deb baholaydi, lekin ishonchli manba orqali rivoyat qilinganligi hadisning ilmiy va ma’naviy ahamiyatini oshiradi.

Ushbu hadislarining umumiy tahlili shuni ko‘rsatadiki Imom Termiziy nafaqat hadislarini rivoyat qilgan, balki ularni tafsiriy jihatdan sharhlash orqali musulmonlarni ma’naviy o‘sish va axloqiy mas’uliyatga chorlagan. Abasa surasi va Qiyomat voqealariga oid rivoyatlar insoniyatning oxirat hayotidagi javobgarligini, dunyoda insoniy qadriyatlar va adolatni himoya qilish zarurligini yoritadi.

Xulosa

Imom Termiziyning Abasa surasi va Qiyomat voqealariga oid hadislarini nafaqat rivoyat sifatida ahamiyatlidir, balki ular musulmonlarning ma’naviy va axloqiy tarbiyasini shakllantirishda chuqur ta’sirga ega. [3331]-hadis, Ibn Umm Maktum voqeasi orqali, insoniy qadriyat va tenglik prinsiplarini ochib beradi. Ushbu voqea orqali Qur’oni Karim musulmonlarni ijtimoiy mavqei, boyligi yoki kuchidan qat’iy nazar har bir shaxsning hurmat va e’tiborga loyiq ekanligini eslatadi. Rasululloh ﷺ ning ko‘zi ojiz sahobaga e’tibor qaratmaslik holati va unga keyinchalik alohida mehribonlik ko‘rsatishi, musulmonlarga insoniy hurmat va sabr-toqat tamoyillarini o‘rgatadi. Bu hadis, shuningdek, dinimizda zaif va himoyasiz insonlarga yordam berish, ularning huquqlarini himoya qilish muhimligini ta’kidlaydi.

Qiyomat kunida insonlarning shaxsiy javobgarligi va ularning amallari bilan o‘lchanishini ko‘rsatadi. Bu hadisdan olingan asosiy saboq shundaki, har bir inson o‘z amallari uchun javob beradi, boshqa insonlarning holati unga foyda yoki zarar keltirmaydi. Bu esa musulmonlarni dunyoviy hayotda adolatli va mas’uliyatli bo‘lishga, o‘z amallari va qarorlarini doimiy ravishda nazorat qilishga undaydi. Imom Termiziy hadisni hasan sahih deb baholashi, uning ilmiy ishonchliligi va ahamiyatini tasdiqlaydi.

⁴ Akram Ziyoyumariy. Turosat-Termiziy al-ailmiy. Maktaba ad-daar bil Madiynati al-munavvara, 2012.

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Qiyomat voqealarining dahshatli va hayratli tafsilotlarini yoritadi: Quyosh qoplanadi, osmon yoriladi va bo‘linadi. Ushbu hadis o‘quvchini oxirat haqiqatini tasavvur qilishga va ruhiy tayyorgarlikni oshirishga chorlaydi. Payg‘ambarimiz ﷺ oyatlarni o‘qish orqali Qiyomatni “ko‘rish” imkoniyatini berishlarini aytadi. Bu esa nafaqat ma‘naviy o‘sish, balki insonning oxirat hayotiga tayyor bo‘lishi uchun ruhiy mashq hisoblanadi. Imom Termiziyning ushbu hadislar bo‘yicha sharhlari musulmonlarni bir nechta jihatdan tarbiyalaydi:

- Hadislar insonlarni boshqalarni hurmat qilish, zaiflarni himoya qilish va tenglik tamoyillariga amal qilishga chaqiradi. Abasa surasi misolida bu aniq ko‘rinadi.
- Har bir inson o‘z amallari uchun javob beradi, Qiyomat kuni har bir kishi o‘z holati bilan hisob beradi. Bu insonlarni o‘z amallariga ehtiyotkor bo‘lishga undaydi.
- Qiyomat voqealarining dahshatli tafsilotlarini tasvirlash orqali hadislar musulmonlarni oxirat hayotini doimiy nazarda tutishga, dunyoviy orzulardan chalg‘imaslikka chaqiradi.
- Imom Termiziy hadislarini to‘plash, isnod va matnini tekshirish, ularni tafsiriy jihatdan sharhlash orqali islomiy ilm-fanning rivojiga katta hissa qo‘shgan. Bu metodik yondashuv musulmonlarni nafaqat hadis ilmi, balki Qur‘oni Karimni chuqur tushunishga ham yo‘naltiradi. Natijada Imom Termiziyning Abasa surasi va Qiyomat voqealariga oid rivoyatlari musulmonlarni ijtimoiy adolat, shaxsiy mas‘uliyat va ruhiy tayyorgarlik tamoyillariga amal qilishga undaydi. U hadislarini keltirish va sharhlash orqali Qur‘on va Sunnat o‘rtasidagi uzviy bog‘liqlikni ko‘rsatadi va musulmonlarning ma‘naviy rivojlanishida muhim rol o‘ynaydi. Bu hadislar dunyoda adolat va insoniy hurmatni targ‘ib qilishi, oxirat hayotiga tayyor bo‘lish zarurligini eslatishi bilan ajralib turadi. Imom Termiziyning ilmiy merosi nafaqat hadis ilmida, balki musulmonlarning ma‘naviy va axloqiy hayotida ham abadiy ahamiyatga ega ekanligi aniq ko‘rinadi.

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MAKTAB O'QUVCHILARINING IJODIY FIKRLASH FAOLLIGINI OSHIRISH
METODIKASI

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Annotatsiya: Ushbu maqolada maktab o'quvchilarining fikrlash faolligini oshirish metodikalari, mustaqil fikrlash, ijodiy fikrlash, tanqidiy fikrlashni rivojlantiruvchi usullar haqida so'z boradi. Kollaborativ o'qitish, muammoli vazifalar, savol-javoblar, muhokamalar, ijodiy faoliyat, loyiha asosida ishlashning o'quvchilar fikrlash faolligini oshirishdagi o'rni yoritib beriladi. Maktab o'quvchilarining fikrlash jarayoni haqidagi olimlarning fikrlari keltirib o'tilgan.

Kalit so'zlar: Mustaqil fikrlash, ijodiy fikrlash, tanqidiy fikrlash, interfaol usullar, kollaborativ o'qitish, muammoli vazifalar

O'quvchilarning fikrlash faolligini oshirish - ta'lim jarayonida muhim ahamiyatga ega bo'lgan omildir. Fikrlash faolligi o'quvchilarning darsga qiziqishlarini oshirib, o'rgangan bilimlari haqida mulohaza yuritishga imkon yaratadi. O'quvchilarning mustaqil fikr yuritishi, muammolarni hal qilishda ijodiy yondashuvni rivojlantirishga yordam beradi.

Kichik maktab yoshidagi o'quvchilarning tafakkuri mantiqiy fikrlash, mulohaza yuritish, hukm va xulosa chiqarish, taqqoslash tahlil qilishning turli usullarini qo'llashda o'ziga xos xususiyatlari bilan maktabgacha yoshdagi bolalar va o'smirlardan farq qiladi. 7-9 yoshli bolalar nutqining o'ziga xos xususiyatlaridan biri shundaki, ular o'z fikrlarini bayon etish uchun emas, balki o'z suhbatdoshining diqqatini o'ziga jalb qilish uchun ham gapiradilar. Ta'lim jarayonida tafakkur operatsiyalariga, mustaqil fikrlashga o'rgatish kichik maktab yoshdagi o'quvchilarni barkamollikka erishtirishning garovidir. 6-11 yoshli bola mantiqiy fikrlay oladi, lekin bu yosh asosan ko'rganlariga tayanib, ta'lim olishga sezitiv bo'lgan davr hisoblanadi. 5-6-sinflardagi o'quvchilar og'zaki va yozma matn uchun reja tuzib, unga amal qila oladilar. O'zi yozgan fikrni qayta-qayta o'qib, o'z nutqini analiz qilib ko'rishga majbur qiladi. O'quvchi yozib bayon qilayotganida, ko'pincha, bu ishni bir necha marta qayta ko'rib chiqishga, o'zgartirishga, to'ldirishga, qaytadan ishlab chiqishga majbur bo'ladi. O'quvchi o'qituvchining topshirig'iga binoan yozma ishlar bajarayotganida o'zining shu ishiga baho berilishini, ammo bu baho ishning faqat mazmuniga qarabgina berilib qolmasdan, balki shu bilan birga, o'z fikrining «qanday til» bilan bayon qilinganiga qarab ham baholanishini oldindan bilib turadi. Fikrlash texnikasi qobiliyatlarni rivojlantirish, izlanuvchanlik texnikasini egallashdan kelib chiqadi. Har qanday pedagogik texnologiya ham o'qituvchi, ham talabadagi fikrlash texnikasini amalga oshirish jaryonida sodir bo'ladi va rivojlanadi. Tabiiy fikrlash qobiliyatini rivojlantirishning funktsiyasi ta'lim jarayonining asosini tashkil etadi. Atrofimizga qaraylik: bizni norozi qiladigan hamma holatlar bir-birimizni tushunmaslik, bir-birimiz bilan kelisha olmasligimiz, o'z fikrimizni o'zgalar diqqatiga yetarli darajada asoslab, nuqtai-nazarimizni, himoya qila olmasligimizdan kelib chiqadi. Donishmandlardan biri «oxirgi dalil-o'q» deb bekorga aytmagan. Demak, o'q otishning raqobatdoshi - ko'proq, salmoqliroq dalillarni keltirish ekan, ya'ni fikrlash ekan, u albatta - natijali bo'ladi.

Interfaol darslar o'quvchilarning faol ishtirokini ta'minlaydi. Bunday darslarda o'quvchilar guruhlariga bo'linib, muammolarni muhokama qilishadi, fikr almashadilar va o'zlarining nuqtai

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nazarlarini ifodalaydilar. Shu bilan birga, o'quvchilar turli vazifalarni hal qilishda ko'proq mustaqil fikrlashni talab qiladigan faoliyatlarga jalb etiladi.

Interfaol usullarni kiritish o'quvchilarning fikrlash qobiliyatini rivojlantirishda samarali natijalar beradi. Tanqidiy fikrlashni rivojlantirish metodikasi o'quvchilarni o'z fikrlarini tahlil qilish, dalillarni baholash, turli nuqtai nazarlardan qarash va qarorlar qabul qilishga undaydi. O'quvchilarga masalalarni turli tomondan ko'rib chiqishni o'rgatish, ularning yondashuvlarini kengaytiradi.

Muammoli vazifalar o'quvchilarni real hayotdagi muammolarni yechish uchun o'ylashga undaydi. Bu usul o'quvchilarni o'z fikrlarini mustaqil ravishda bildirishga, variantlarni tahlil qilishga va eng maqbul yechimni topishga rag'batlantiradi. O'quvchilarga real hayotda duch keladigan muammolarni kiritish orqali ularning fikrlash faolligini oshirish mumkin. Psixologlarning fikricha, har qanday masalani yoki muammoni yechish mobaynida o'quvchi uning shartlarini bir necha variantda tasavvur qilsagina yechimga kelar ekan. Chunki kimdir juda tez fikrlaydi, kimdir sekin fikrlaydi. Shuning uchun ham test yechish jarayonida yonmayon o'tirgan ikki o'quvchi bir xil yechimni belgilasada, o'sha yechimga kelish yo'llari har bir o'quvchida o'ziga xos bo'ladi. Mustaqil fikrlash – shaxsning shunday qobiliyatiki, u tufayli odam narsa va hodisalar xususida o'z qarashi va nostandart yechimlarga ega bo'ladi. Demak, mustaqil fikr insonning narsa va hodisalar, jamiyatda ro'y berayotgan voqealarning mohiyati xususida o'z qarashlari bo'lishini taqozo etadi, uning bilish va anglash imkoniyatlari chegarasini kengaytiradi. O'qitishning hozirgi jarayoni tahlili psixolog va pedagoglarning fikrlash muammoli vaziyat, kutilmagan xayrat va mahliyo bo'lish (kognitiv dissonans)dan boshlanadi, degan xulosalari haqiqatga yaqin ekanligini ko'rsatadi. O'qitish sharoitida insonning o'sha psixik, emotsional va hissiy holati unga fikrlash va aqliy izlanish uchun o'ziga xos turtki vazifasini bajaradi. Agar inson muntazam tayyor bilim va ko'nikmalarni o'zlashtirishga o'rgatilgan bo'lsa, uning tabiiy ijodiy qobiliyatini so'ndirish ham mumkin; u mustaqil fikrlashni “esdan chiqaradi”. Fikrlash jarayoni muammoli masalalarni yechishda a'lo darajada namoyon bo'ladi va rivojlanadi. Psixologlarning ta'kidlashicha, fikrlash doimo muammo yoki savoldan, ajablanish yoki tushuna olmaslikdan va ziddiyatdan boshlanadi. (S.O.Rubinshteyn).

Kollaborativ o'qitish o'quvchilarni bir-biri bilan ishlashga undaydi, bu esa fikrlash faoliyatini kengaytiradi. O'quvchilar birgalikda masalalarni yechish, guruh muhokamalar o'tkazish orqali yangi fikrlarni kashf etishadi. Bu metodikada har bir o'quvchi o'z fikrini ifodalash, boshqalar bilan baham ko'rish va o'z nuqtai nazarini rivojlantirish imkoniga ega bo'ladi.

Darslarda savol-javoblar va muhokamalar o'quvchilarning fikrlarini shakllantirishda samarali usul bo'lishi mumkin. O'quvchilar savollarni tahlil qilib, ularga javob berishga harakat qilishadi. Bunda o'quvchilarga o'z fikrlarini ifodalashga imkon yaratish, shu bilan birga, ularni boshqalar bilan baham ko'rishga undaydi. Muammolarni aniqlash, mantiqiy fikrlashni rivojlantirishda bu metodikalar muhim ahamiyatga ega.

Ijodiy faoliyat va loyiha asosida ishlash o'quvchilarning mustaqil fikrlashini rivojlantirishga yordam beradi. O'quvchilarni o'z fikrlarini yaratishga, yangi g'oyalar ishlab chiqishga va ularga tayanib, jamoaviy ishlarni amalga oshirishga undash muhimdir. Bu metodika o'quvchilarning kreativ fikrlashini rivojlantirishga yordam beradi. Sh.R.Samarova boshlang'ich sinf o'quvchilarida fikrlash jarayonlari, diqqatning nazorat funksiyasi diagnostikasi va dinamikasida jinsiy (gender) farqlar mavjudligi, ular o'ziga xos davriy qonuniyatlarning hosilasi sifatida gavdalanishini e'tirof etadi. Tashqi ta'sirlarga beriluvchanlik o'smirda shaxsiy fikrni yuzaga kelishiga sabab bo'ladi, lekin bu shaxsiy fikr aksariyat hollarda asoslanmagan bo'ladi. Shuning uchun ham ular ota-onalarning, atrofdagi kattalarning, ustozlarning to'g'ri yo'lni ko'rsatishlariga qaramay, o'z fikrlarini o'tkazishga

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harakat qiladilar. Abu Nasr Forobiy matematika fani misollari asosida o'qitishning ilmiylik, ko'rsatmalilik, tushunarlik va izchilik prinsiplarini ishlab chiqqan. Bilish jarayoni va fandagi bilim shakllarining mohiyatini yoritgan. Uning fikricha, ana shu jarayonlar qonunlar sifatida shakllanadi va ularga rioya qilish fikrlashni takomillashtiradi hamda murakkab bilish jarayonida qo'pol xatolarning oldini oladi. Bilish jarayoni fikrlash mantiqi orqali amalga oshadi. Mantiq, ob'yekti anglashga qaratilgan va aql yetadigan mohiyatlar tahlil etiladigan fikrlash jarayonining to'g'riligini belgilashga xizmat qiladi. Mantiq quroldir va u narsalarni aniq bilishga yordam beradi.

Konfutsiy ta'limda o'qish va fikrlash, o'ylash muhimligini aytadi. Uningcha, o'qimaslik va fikr yuritmaslik bu- halokatdir. O'qilgan kitob haqida fikr qilinmasa, bunday o'qishning foydasi bo'lmaydi, bunday o'qish kishini toliqtiradi, o'qishni o'ylash, fikrlash bilan uzviy birlikda, o'z vaqtida amalga oshirish lozim. Maktab o'quvchilarining fikrlash faolligini oshirish metodikasi o'quvchilarni faollashtirish, ularning ijodiy va tanqidiy fikrlash qobiliyatlarini rivojlantirishga qaratilgan. Bunday metodikalar dars jarayonida o'quvchilarning mustaqil fikrlashlarini qo'llab-quvvatlab, bilimlarni hayotda qo'llash imkoniyatlarini oshiradi. Fikrlash faolligi oshgan o'quvchi esa nafaqat bilimli, balki innovatsion va ijodiy bo'lishi mumkin.

Maktab o'quvchilarida fikrlash faolligini oshirish yangi g'oyalar uchun zamin yaratadi. Dunyodagi eng mashhur kashfiyotlar, innovatsiyalar fikrlash asnosida yuzaga kelgan. Fikrlash bu biror bilimni shunchaki o'rganish emas, uni uqib olish va anglash demakdir.

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**ИҚЛИМ ЎЗГАРИШИ ШАРОИТИДА СУВ ТЕЖОВЧИ СУҒОРИШ
ТЕХНОЛОГИЯЛАРНИНГ САМАРАДОРЛИГИНИ ОШИРИШ ВА ҚИШЛОҚ
ХЎЖАЛИГИДА СУВ РЕСУРСЛАРИДАН ОҚИЛОНА ФОЙДАЛАНИШНИНГ
ИЛМИЙ АСОСЛАРИ**

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Аннотация: Иқлим ўзгариши глобал миқёсда қишлоқ хўжалигига жиддий таъсир кўрсатиб, сув ресурслари танқислиги, об-ҳаво ўзгарувчанлиги ва экстремал иқлим ҳодисаларининг кучайиши каби муаммоларни келтириб чиқармоқда. Ушбу мақола Ўзбекистон каби қуруқ ва ярим қуруқ иқлим зоналарида сув тежовчи суғориш технологияларининг самарадорлигини ошириш ва қишлоқ хўжалигида сув ресурсларидан оқилон фойдаланишнинг илмий асосларига бағишланади. Мақолада томчилатиб суғориш, ёмғирлатиб суғориш, лазерли текислаш каби замонавий технологияларнинг афзалликлари, амалий қўлланиши ва уларнинг иқлим ўзгаришига мослашувдаги роли таҳлил қилинади. Шунингдек, географик ахборот тизимлари (GIS), сенсор технологиялари, масофавий зондлаш ва математик моделлаш воситалари орқали сув бошқарувини оптимallasштириш масалалари кўриб чиқилади. Иқтисодий, экологик ва ижтимоий омилларни инобатга олган ҳолда, маҳаллий шароитларга мослашган интеграцияланган ёндашувларнинг муҳимлиги таъкидланади. Тадқиқот натижалари қишлоқ хўжалигининг барқарор ривожланишини таъминлаш ва иқлим ўзгаришига мослашиш учун амалий тавсиялар беради.

Калит сўзлар: иқлим ўзгариши, сув тежовчи суғориш, томчилатиб суғориш, ёмғирлатиб суғориш, лазерли текислаш, сув ресурсларини бошқариш, қишлоқ хўжалиги, барқарор ривожланиш, географик ахборот тизимлари, математик моделлаш, масофавий зондлаш.

**НАУЧНЫЕ ОСНОВЫ ПОВЫШЕНИЯ ЭФФЕКТИВНОСТИ ВОДОСБЕРЕГАЮЩИХ
ТЕХНОЛОГИЙ ОРОШЕНИЯ И РАЦИОНАЛЬНОГО ИСПОЛЬЗОВАНИЯ ВОДНЫХ
РЕСУРСОВ В СЕЛЬСКОМ ХОЗЯЙСТВЕ В УСЛОВИЯХ ИЗМЕНЕНИЯ КЛИМАТА**

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Аннотация: Изменение климата оказывает серьёзное влияние на сельское хозяйство в глобальном масштабе, вызывая такие проблемы, как дефицит водных ресурсов, изменчивость погоды и учащение экстремальных климатических явлений. Статья посвящена научным основам повышения эффективности водосберегающих технологий орошения и рационального использования водных ресурсов в сельском хозяйстве в засушливых и полузасушливых климатических зонах, таких как Узбекистан. В статье анализируются преимущества современных технологий, таких как капельное орошение, дождевание и лазерная планировка, их практическое применение и роль в адаптации к изменению климата. Также рассматривается оптимизация управления водными ресурсами с использованием геоинформационных систем (ГИС), сенсорных технологий, дистанционного зондирования и инструментов математического моделирования. Подчеркивается важность комплексных подходов, адаптированных к местным условиям, с учетом экономических, экологических и социальных

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факторов. Результаты исследования дают практические рекомендации по обеспечению устойчивого развития сельского хозяйства и адаптации к изменению климата.

Ключевые слова: изменение климата, водосберегающее орошение, капельное орошение, дождевание, лазерная планировка, управление водными ресурсами, сельское хозяйство, устойчивое развитие, геоинформационные системы, математическое моделирование, дистанционное зондирование.

ENHANCING THE EFFICIENCY OF WATER-SAVING IRRIGATION TECHNOLOGIES AND THE SCIENTIFIC FOUNDATIONS OF RATIONAL WATER RESOURCE USE IN AGRICULTURE UNDER CLIMATE CHANGE CONDITIONS

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Abstract: Climate change poses significant challenges to global agriculture, intensifying issues such as water scarcity, unpredictable weather patterns, and the increasing frequency of extreme climate events. This article focuses on enhancing the efficiency of water-saving irrigation technologies and the scientific foundations of rational water resource use in agriculture, with a particular emphasis on arid and semi-arid regions like Uzbekistan. It provides a comprehensive analysis of modern technologies, including drip irrigation, sprinkler irrigation, and laser leveling, evaluating their advantages, practical applications, and critical role in adapting to climate change. The study also explores the integration of advanced tools such as geographic information systems (GIS), sensor technologies, remote sensing, and mathematical modeling to optimize water management. By considering economic, ecological, and social factors, the article underscores the importance of tailored, integrated approaches to local conditions. The findings offer practical recommendations for promoting sustainable agricultural development, enhancing resilience to climate change, and ensuring long-term food security in water-scarce regions.

Keywords: climate change, water-saving irrigation, drip irrigation, sprinkler irrigation, laser leveling, water resource management, agriculture, sustainable development, geographic information systems, mathematical modeling, remote sensing, food security.

Climate change is a defining global challenge that profoundly impacts agriculture, threatening food security and sustainable development. Rising global temperatures, prolonged droughts, shifting precipitation patterns, and the growing frequency and intensity of extreme weather events—such as heatwaves, floods, and storms—are significantly increasing the demand for water resources. According to the Food and Agriculture Organization (FAO) of the United Nations, agriculture consumes over 70% of global freshwater resources, highlighting the urgent need for efficient water use practices. In regions like Uzbekistan, where water resources are limited, these challenges are particularly acute. The country's dependence on transboundary rivers, such as the Amu Darya and Syr Darya, combined with aging irrigation infrastructure and the adverse effects of climate-induced weather variability, creates complex water management issues. The drastic reduction of the Aral Sea, coupled with widespread soil salinization and degradation, further exacerbates the threats to agricultural sustainability. These conditions necessitate innovative approaches to water management, particularly through the adoption of water-saving irrigation technologies and scientifically grounded strategies for rational water use.

Water-saving irrigation technologies, such as drip irrigation, sprinkler irrigation, and laser leveling, are pivotal in promoting efficient water use and enhancing crop productivity. Drip irrigation, for

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instance, delivers water directly to the root zone of crops through a network of pipes and emitters, minimizing water loss due to evaporation and runoff. Research demonstrates that drip irrigation can reduce water consumption by 30-50% compared to traditional flood irrigation methods while improving crop yields by 20-40% for crops like cotton, vegetables, and fruit trees. In Uzbekistan, drip irrigation has gained traction, particularly in cotton farming, where it has significantly reduced water use while maintaining or increasing yields. This technology also mitigates soil erosion, enhances nutrient uptake through precise fertilizer application (fertigation), and reduces weed growth by limiting water distribution to non-crop areas. However, its high initial installation costs approximately 2-3 million UZS per hectare in Uzbekistan and the need for ongoing maintenance and monitoring present significant barriers, particularly for small-scale farmers. These challenges necessitate targeted financial and technical support to ensure widespread adoption. Sprinkler irrigation, another effective water-saving technology, distributes water evenly across large fields through pressurized systems, mimicking natural rainfall. This method is particularly suited for high-evapotranspiration environments and crops such as cereals, vegetables, and forage crops. Sprinkler systems promote uniform crop growth and can be adapted to various soil types and topographies. However, their efficiency is influenced by external factors such as wind direction, soil structure, and ambient weather conditions, which can lead to water loss if not properly managed. Advances in automation and sensor technologies have addressed these challenges by enabling real-time adjustments to irrigation schedules based on weather data and soil moisture levels. For example, automated sprinkler systems equipped with weather sensors can reduce water wastage by pausing irrigation during high winds or rainfall, optimizing water use and improving crop health. In Uzbekistan, sprinkler irrigation has been implemented in regions like Samarkand and Bukhara, demonstrating improved water use efficiency (WUE) in large-scale farming operations. Laser leveling technology complements these irrigation methods by ensuring a flat field surface, which prevents water pooling and runoff. By creating a uniform field gradient, laser leveling enhances water distribution efficiency, reducing consumption by 15-20%, as evidenced by studies conducted in Uzbekistan's Fergana, Andijan, and Khorezm regions. This technology is particularly valuable in areas with uneven topography or heterogeneous soil structures, where traditional irrigation methods often result in significant water loss. Laser leveling has been successfully integrated with both drip and sprinkler systems in Uzbekistan, contributing to higher yields and reduced environmental degradation. For instance, in Khorezm, laser-leveled fields have shown improved water retention and reduced soil salinization, a critical issue in the Aral Sea basin. The rational use of water resources in agriculture relies heavily on scientifically grounded approaches. Mathematical modeling, geographic information systems (GIS), and remote sensing technologies are indispensable tools for optimizing water management. Models such as CROPWAT, AquaCrop, and SWAT provide precise forecasts of crop water requirements, enabling the development of efficient irrigation schedules. These models integrate data on soil moisture, weather patterns, and crop growth stages to minimize water waste while maximizing productivity. In Uzbekistan, the AquaCrop model has been effectively used to assess the water needs of cotton and wheat, leading to tailored irrigation strategies that enhance yields under water-scarce conditions. Similarly, CROPWAT has been applied to optimize irrigation in vegetable farming, reducing water use by up to 25% in some regions.

Geographic information systems (GIS) play a crucial role in mapping water resource distribution, analyzing soil properties, and assessing irrigation needs at regional and local scales. By integrating spatial data, GIS enables policymakers and farmers to identify areas prone to water scarcity or soil

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degradation, facilitating targeted interventions. For example, GIS-based mapping in Uzbekistan's Fergana Valley has identified zones with high salinization risks, guiding the implementation of drainage systems and water-saving technologies. Remote sensing technologies, including satellite imagery (e.g., Sentinel-2) and drones, provide real-time data on soil moisture, crop health, and weather conditions. These tools allow farmers to monitor fields with high precision, adjusting irrigation schedules to avoid over- or under-watering. In Uzbekistan, Sentinel-2 data have been used to assess the irrigation needs of cotton and vegetable crops, improving water use efficiency by 10-15% in pilot projects. The successful adoption of water-saving technologies depends on their economic feasibility and adaptability to local conditions. The high upfront costs of drip irrigation systems, for instance, remain a significant barrier for small-scale farmers in Uzbekistan. To address this, government subsidies, low-interest loans, and capacity-building programs are essential. In recent years, Uzbekistan's government has launched initiatives like the "Agricultural Modernization" program, which provides financial support and training to farmers adopting water-saving technologies. These programs have facilitated the installation of drip irrigation systems in regions like Kashkadarya and Surkhandarya, boosting agricultural productivity and resilience. Additionally, raising farmers' awareness through workshops and extension services is critical for ensuring the proper operation and maintenance of these technologies. Community-based approaches, such as water user associations (WUAs), further enhance water management by fostering collaboration among farmers and promoting equitable water distribution.

Integrated Water Resources Management (IWRM) principles are vital for addressing the complexities of transboundary water use in Central Asia. Uzbekistan's reliance on the Amu Darya and Syr Darya necessitates regional cooperation to ensure fair and sustainable water allocation. Agreements on water sharing and joint monitoring systems among Central Asian countries have improved water distribution efficiency, reducing conflicts and enhancing resource availability. For example, the Interstate Commission for Water Coordination (ICWC) facilitates dialogue and data sharing, enabling better management of shared water resources. Moreover, addressing ecological challenges such as soil salinization and erosion is critical for long-term sustainability. Practices like crop rotation, cover cropping, and agroecological methods can mitigate these issues while improving soil health and water retention. Climate change adaptation requires a multifaceted approach that integrates technological innovation, scientific research, and socioeconomic support. In Uzbekistan, training programs and demonstration plots have played a key role in promoting technologies like drip irrigation and laser leveling. For instance, pilot projects in the Tashkent region have showcased the benefits of combining drip irrigation with fertigation, resulting in higher yields and reduced input costs. Similarly, educational campaigns targeting smallholder farmers have increased the adoption of precision irrigation techniques, empowering communities to cope with water scarcity. The government's commitment to modernizing agriculture, coupled with international partnerships, has further accelerated the deployment of water-saving technologies.

In conclusion, enhancing the efficiency of water-saving irrigation technologies and promoting rational water use are critical for ensuring the sustainable development of agriculture in the face of climate change. Technologies such as drip irrigation, sprinkler irrigation, and laser leveling significantly reduce water consumption while boosting crop yields, making them indispensable for water-scarce regions like Uzbekistan. Scientifically grounded tools, including mathematical modeling, GIS, and remote sensing, provide the foundation for optimizing water management and improving agricultural resilience. Adapting these technologies to local conditions, addressing

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economic and social barriers, and fostering regional cooperation are essential for success. Government support through subsidies, affordable financing, and capacity-building programs is crucial for scaling up adoption. By implementing these measures, agriculture can adapt to the challenges of climate change, safeguard ecological sustainability, and strengthen global food security.

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ECOLOGICAL CHARACTERISTICS AND IMPORTANCE OF ORNAMENTAL FLOWERING CHINESE WISTERIA (WISTERIA SINENSIS) IN THE CONDITIONS OF SURXONDARYO REGION AND VERTICAL LANDSCAPING

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ABSTRACT

This article examines in detail the role of the following species of ornamental flowering vines introduced to Uzbekistan: Chinese wisteria - *Wisteria sinensis*, in vertical landscaping in government agencies, residential areas, office buildings, as well as in the city of Termez and the Termez district of the Surkhandarya region. During my research, I described in detail the ornamental properties of these plants and their role in ecology, the environment and landscape design.

Keywords : *Research. Chinese wisteria, Wisteria Sinensis, Surkhandarya region, Termez city, Breeding technology, Bioecology.*

Chinese Wisteria - (*Wisteria Sinensis*) Bioecology and Landscape Characteristics

The introduction of moratoriums on the cultivation of plants, the reproduction of trees and shrubs, the increase in the mass of green energy, and the cutting of trees and shrubs in our country will greatly contribute to improving the ecology of our country. The greatest attention to this area is clearly reflected in the resolutions of our President and the resolutions of the Cabinet of Ministers.

The 80th goal of the “New Development Strategy of Uzbekistan for 2022-2026” in the direction of “Approaching global problems based on national interests” in the Decree of the President of the Republic of Uzbekistan No. PF-60 dated January 28, 2022: “The goal of protecting ecology and the environment, improving the ecological situation in cities and districts is also the result of major changes being made in the implementation of the “Green Space” national project.

The Cabinet of Ministers adopted a resolution "On further improving the procedure for planting, caring for and using trees and shrubs that are not included in the State Forest Fund."

According to the document, for each cut tree and shrub, there is an obligation to plant 10 large-sized seedlings of no less valuable than the trees and shrubs to be cut down as compensation and to maintain them for at least two years, as well as to plant 100 seedlings for illegally cut trees and shrubs, subject to maintenance for three years.

Chinese Wisteria - (*Wisteria Sinensis*). *Wisteria* (*Wisteria*) occupies the first place among the most beautiful flowering plants. Its graceful, cascade-like inflorescences, pleasant, sweet aroma captivate a person. After seeing this wonderful flowering plant ("live" or in the photo), everyone tries to grow this plant in their garden

The Latin name of wisteria is associated with the name of the American scientist Caspar Wistara. Chinese wisteria **is a plant belonging to the *Fabaceae* family**, which also includes the well-known genera *Bunduk*, *Bagryanik*, *Sophora*, and *Acacia*. Chinese wisteria belongs to the *Wisteria* genus,

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which is one of the most common species of Chinese and Japanese wisteria. Wisteria or Wisteria is a highly ornamental liana. There are 9 species of the Wisteria genus. However, only a few species are used in ornamental gardening and landscaping. It grows up to 20 meters in height, the length of the inflorescence is up to 30 cm. The simultaneous opening of flowers in the inflorescence creates a unique beauty. It blooms all summer, some forms bloom until September-October. It withstands frosts down to -20°C . It likes light and heat. It is mainly propagated vegetatively. In addition to open ground and vertical gardening, this species is also cultivated as a Bonsai plant in China and Japan. Chinese wisteria is naturally distributed in mountain forests in central and eastern China at an altitude of 500-1800 m above sea level. Chinese wisteria is distributed in Anhui, Fujian, Guangxi, Hebei, Henan, Hubei, Jiangsu, Jiangxi, Shaanxi, Shanxi and Shandong provinces, and Japanese wisteria is distributed in Japan.

Wisteria is propagated vegetatively. Seed propagation is less effective. Young plants lose some of their varietal characteristics. In addition, some of the sprouted and even grown seedlings may never flower. The period from seed sowing to flowering can last up to 10 years (Figure 1).



1. The importance of ornamental flowering Chinese Wisteria in vertical landscaping.

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Figure 2. Winter and summer growth period of the Chinese Wisteria mother plant (Andijan region, Andijan city, February and August 2024).

Table 1

Scale for evaluating the ornamental qualities of the ornamental flowering Chinese Wisteria

No.	Landscape characteristics of shrubs	Maximum score
1	Height	6
2	The shape of the horn	4
3	Density of hornbeam	6
4	Branch color	3
5	Seasonal leaf color	4
6	Flowering landscape	20
7	Flowering duration	10
8	Fruit color and size	10
9	Long-term storage of fruit on the bush	4
10	Leaf fall storage period	5
11	The period of preservation of the bush's decorativeness	5
	Total:	77

Table 2

Phenophases of ornamental shrubs in the mother collection (February and December 2024)

Uzbek, Latin, The	The growth of buds	Leaf development	Flowering	Fruit (seed) ripening and ripening	Growt h on a

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															branch
		Exaggeration	Opening.	New one formation	Leaves appear to be	Total leaf appearance	Flowering beginning	End of flowering	Flowering rate	End of ripening	The beginning of the spill	End of the spill	Productivity king	Beginning	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Chinese Wisteria	20. I II	25 .III	29.III	2.V	11.IV	20.IV	1. V	15.V	4 good	20 .X I	25 .X I	1 .X II	3 medium	23.I II	

There are about ten varieties of Chinese Wisteria , but the following varieties are most common in parks, alleys, parks , arboretums and areas of urban significance . Let's consider some of the above varieties:

CONCLUSION

One of the first experiments on the cultivation of Chinese wisteria, one of the ornamental flowering lianas, in the conditions of Surkhandarya region is being conducted. One of the main goals of this experiment is to show how Chinese wisteria, which grows and develops in countries such as Russia, China, Europe and the United States while maintaining its ornamental appearance, grows well in the cool and somewhat higher relative humidity regions of the Republic of Uzbekistan, such as Andijan region, Fergana region, Namangan region, Samarkand region, Tashkent city and Tashkent region, and does not lose its ornamental properties. In this case, the experiment is being conducted in the hottest region of our Republic, the Termez city and Termez district of Surkhandarya region, to what extent Chinese wisteria adapts to this region and grows and develops.

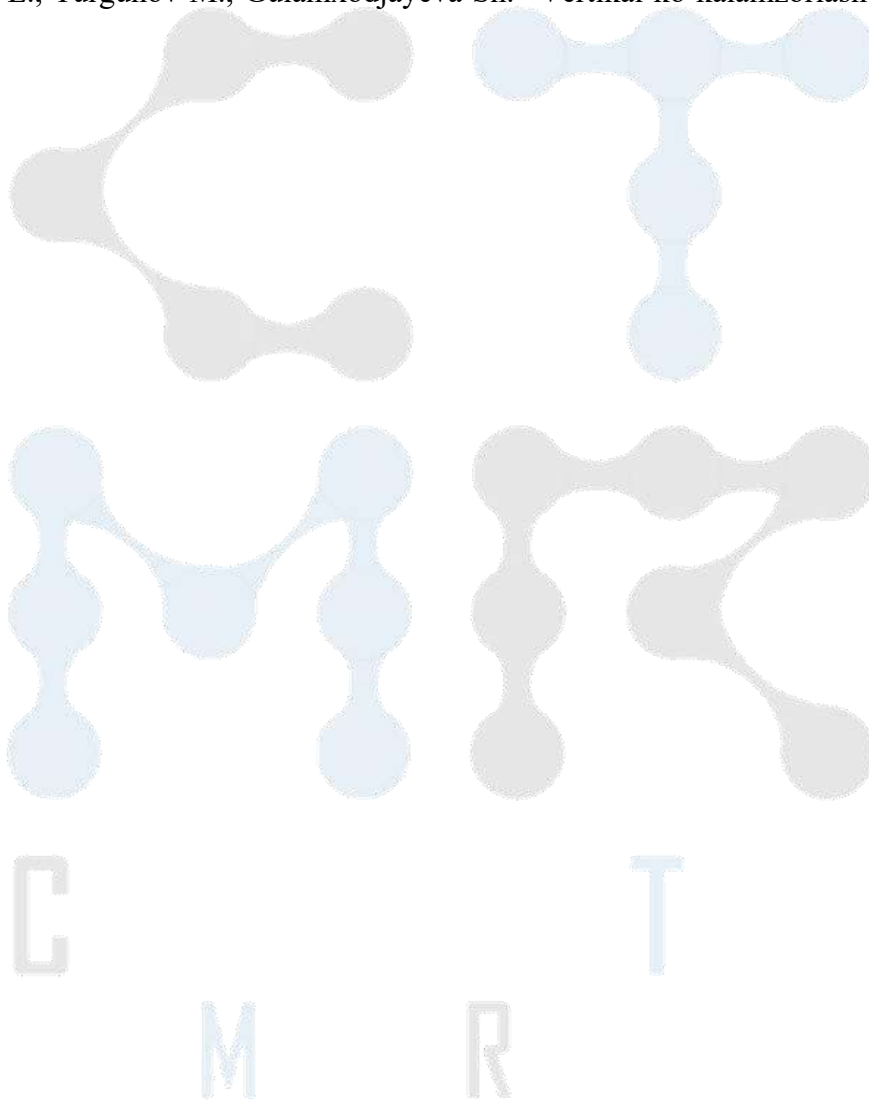
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MODERN DIAGNOSTICS OF CHRONIC PELVIC PAIN IN WOMEN: INTEGRATIVE APPROACHES AND EMERGING TECHNOLOGIES

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ABSTRACT

Chronic pelvic pain (CPP) is a debilitating condition affecting 5.7–26.6% of women globally, significantly impairing quality of life and posing substantial diagnostic challenges due to its multifactorial etiology. Causes range from gynecological conditions (e.g., endometriosis, adenomyosis) to urological, musculoskeletal, and neurological disorders. Traditional diagnostic methods, such as patient history and physical examination, are often insufficient to pinpoint specific causes due to symptom overlap. Recent advancements in diagnostic technologies, including high-resolution imaging (ultrasound, MRI), minimally invasive laparoscopy, biomarker assays, and artificial intelligence (AI)-driven tools, have transformed the diagnostic landscape. This article provides an in-depth review of current and emerging diagnostic modalities, emphasizing integrative approaches that combine clinical assessment, advanced imaging, molecular diagnostics, and multidisciplinary collaboration. The role of novel technologies, such as machine learning algorithms for pattern recognition and biomarker panels for non-invasive diagnosis, is explored in detail. The study underscores the need for personalized, patient-centered diagnostic strategies to improve outcomes and reduce diagnostic delays in women with CPP.

KEYWORDS: Chronic pelvic pain, women, diagnostics, transvaginal ultrasound, magnetic resonance imaging, laparoscopy, biomarkers, artificial intelligence, multidisciplinary care, integrative approach, endometriosis, adenomyosis, pelvic inflammatory disease

INTRODUCTION

Chronic pelvic pain (CPP), defined as noncyclical pain in the pelvic region persisting for six months or longer, is a prevalent and complex condition among women, with global prevalence rates estimated at 5.7–26.6% (Ahangari, 2014). CPP significantly impacts physical, emotional, and social well-being, contributing to reduced productivity, increased healthcare costs, and psychological distress. The condition's complexity stems from its diverse etiologies, which include gynecological disorders (e.g., endometriosis, adenomyosis, pelvic inflammatory disease), urological conditions (e.g., interstitial cystitis), musculoskeletal issues (e.g., pelvic floor dysfunction), and neuropathic pain syndromes. The overlap of symptoms, such as dysmenorrhea, dyspareunia, dysuria, and chronic lower abdominal pain, complicates accurate diagnosis, often leading to delayed treatment and prolonged patient suffering.

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Historically, CPP diagnosis relied heavily on patient history, physical examination, and basic imaging. However, these methods frequently fail to identify specific causes, particularly in cases of deep infiltrating endometriosis (DIE) or multifactorial pain syndromes. Over the past decade, advancements in diagnostic technologies have revolutionized the approach to CPP. High-resolution imaging modalities, such as transvaginal ultrasound (TVUS) and magnetic resonance imaging (MRI), offer improved visualization of pelvic structures. Minimally invasive techniques, like diagnostic laparoscopy, remain the gold standard for certain conditions but are increasingly complemented by non-invasive tools, including biomarker assays and AI-driven diagnostic algorithms. The integration of these modalities into a multidisciplinary framework has shown promise in enhancing diagnostic accuracy and tailoring treatment plans.

This article aims to provide a comprehensive overview of the modern diagnostic landscape for CPP in women, with a focus on integrative approaches that combine clinical, imaging, and molecular methods. Emerging technologies, such as AI-based diagnostics and novel biomarker panels, are evaluated for their potential to address current diagnostic challenges. The study also explores the role of multidisciplinary teams in optimizing patient outcomes and highlights future directions for research and clinical practice.

MATERIALS AND METHODS

This study is a systematic literature review of peer-reviewed articles published between 2015 and 2025, sourced from high-impact databases, including PubMed, Scopus, Web of Science, and Cochrane Library. Search terms included combinations of “chronic pelvic pain,” “diagnostics,” “women,” “imaging,” “ultrasound,” “MRI,” “laparoscopy,” “biomarkers,” “artificial intelligence,” “endometriosis,” “adenomyosis,” and “multidisciplinary care.” Boolean operators (AND, OR) were used to refine searches, and filters were applied to prioritize studies in English, human subjects, and female populations.

Inclusion criteria encompassed studies focusing on diagnostic methods for CPP in women, with an emphasis on modern technologies, integrative approaches, and clinical outcomes. Exclusion criteria included non-English articles, case reports, editorials, and studies not specific to female populations or CPP. A total of 128 articles were screened, with 78 meeting inclusion criteria after full-text review. Data were extracted on diagnostic modalities, including clinical assessments, imaging techniques (TVUS, MRI, CT), minimally invasive procedures (laparoscopy), and emerging tools (biomarker assays, AI-based diagnostics). The review also analyzed the role of multidisciplinary teams and patient-centered care in CPP diagnosis.

Data synthesis involved qualitative and quantitative analysis of diagnostic performance metrics, such as sensitivity, specificity, and clinical utility. A comparative table (Table 1) was developed to summarize the characteristics of key diagnostic modalities. Statistical data, where available, were compiled to assess the diagnostic accuracy of each method. The review adhered to PRISMA guidelines to ensure methodological rigor.

RESULTS AND DISCUSSION

The review identified a wide range of diagnostic modalities for CPP, each contributing uniquely to the diagnostic process. These modalities are categorized into clinical assessments, imaging techniques, minimally invasive procedures, and emerging technologies. Table 1 provides a detailed comparison of their performance and clinical utility.

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Table 1: Comparison of Diagnostic Modalities for Chronic Pelvic Pain in Women

Diagnostic Method	Sensitivity (%)	Specificity (%)	Advantages	Limitations
Transvaginal Ultrasound (TVUS)	70–90	80–95	Non-invasive, cost-effective, widely available, real-time imaging	Operator-dependent, limited for deep infiltrating endometriosis (DIE)
Magnetic Resonance Imaging (MRI)	85–95	90–98	High-resolution, excellent for soft tissue imaging, detects DIE and adenomyosis	High cost, limited availability, contraindications (e.g., metal implants)
Computed Tomography (CT)	60–80	70–90	Useful for acute settings, detects non-gynecological causes	Radiation exposure, low specificity for gynecological conditions
Diagnostic Laparoscopy	95–100	90–100	Gold standard, allows direct visualization and biopsy	Invasive, requires anesthesia, high cost, risk of complications
Biomarker Assays (e.g., CA-125, microRNAs)	50–85	60–90	Non-invasive, potential for early detection, complements imaging	Low specificity, requires validation, not diagnostic alone
AI-Assisted Diagnostics	80–95	85–95	Enhances pattern recognition, reduces diagnostic errors, integrates multi-modal data	Requires large datasets, high computational costs, still in development

Clinical Assessment

Clinical evaluation remains the foundation of CPP diagnosis. A detailed patient history, including pain characteristics (onset, duration, intensity, triggers), associated symptoms (e.g., dysmenorrhea, dyspareunia, dysuria), and medical history (e.g., prior surgeries, infections), is critical for guiding differential diagnosis. Physical examination, including pelvic palpation and assessment of pelvic floor muscle tenderness, helps identify potential sources of pain, such as trigger points or organ-specific abnormalities. However, the non-specific nature of CPP symptoms necessitates further diagnostic workup.

Multidisciplinary teams, comprising gynecologists, urologists, pain specialists, physiotherapists, and psychologists, play a pivotal role in addressing the multifactorial nature of CPP. For example, endometriosis may coexist with pelvic floor dysfunction, requiring input from both gynecological and musculoskeletal specialists. Patient-centered approaches, incorporating validated

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pain assessment tools (e.g., McGill Pain Questionnaire), enhance diagnostic precision and ensure holistic care (Speer et al., 2016).

Imaging Techniques**Transvaginal Ultrasound (TVUS)**

TVUS is the first-line imaging modality for CPP due to its accessibility, cost-effectiveness, and non-invasive nature. With a sensitivity of 70–90% and specificity of 80–95%, TVUS is effective for detecting ovarian cysts, uterine fibroids, and superficial endometriosis. Advanced techniques, such as 3D ultrasound and Doppler imaging, improve visualization of vascular patterns and pelvic adhesions. However, TVUS has limitations in detecting DIE, where lesions are located deep within pelvic tissues (Guerriero et al., 2018).

Magnetic Resonance Imaging (MRI)

MRI is a second-line imaging modality with superior resolution for soft tissue imaging, achieving a sensitivity of 85–95% and specificity of 90–98% for DIE and adenomyosis. T2-weighted and contrast-enhanced MRI sequences are particularly effective for identifying endometriotic lesions and distinguishing them from other pathologies, such as fibroids or malignancies. MRI is also valuable for preoperative planning in complex cases. However, its high cost, limited availability in resource-constrained settings, and contraindications (e.g., claustrophobia, metal implants) restrict its widespread use (Bazot & Daraï, 2018).

Computed Tomography (CT)

CT is less commonly used for CPP due to radiation exposure and lower specificity for gynecological conditions (60–80% sensitivity, 70–90% specificity). It is primarily employed in acute settings to rule out non-gynecological causes, such as appendicitis, diverticulitis, or ureteral stones. CT's role in CPP is limited to cases where other modalities are inconclusive or unavailable.

Minimally Invasive Techniques

Diagnostic laparoscopy remains the gold standard for CPP, particularly for endometriosis, with a sensitivity and specificity of 95–100%. Laparoscopy allows direct visualization of pelvic organs, enabling the identification and biopsy of endometriotic lesions, adhesions, or other abnormalities. Recent advancements, such as robotic-assisted laparoscopy, have improved precision and reduced recovery times. However, laparoscopy is invasive, requiring general anesthesia and carrying risks of complications, such as infection or organ injury. Its use is therefore reserved for cases where non-invasive methods are inconclusive or when therapeutic intervention (e.g., excision of endometriomas) is planned (Sinha et al., 2020).

Emerging Technologies**Biomarker Assays**

Biomarker research has gained traction as a non-invasive diagnostic tool for CPP. CA-125, a glycoprotein marker, is elevated in endometriosis but lacks specificity (50–80% sensitivity, 60–85% specificity) due to its association with other conditions, such as ovarian cancer. Recent studies have explored novel biomarkers, including microRNAs, inflammatory cytokines (e.g., IL-6, TNF- α), and nerve growth factor (NGF), which show promise in differentiating endometriosis from other causes of CPP. Combining biomarker panels with imaging improves diagnostic accuracy, but further validation is needed before clinical adoption (Nisenblat et al., 2016).

Artificial Intelligence (AI)-Assisted Diagnostics

AI-based tools, including machine learning and deep learning algorithms, are transforming CPP diagnostics by integrating multi-modal data (e.g., imaging, clinical history, biomarkers). AI models

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can identify patterns in complex datasets, improving the detection of subtle abnormalities, such as early-stage endometriosis or pelvic adhesions. For example, convolutional neural networks (CNNs) applied to MRI images have achieved diagnostic accuracies of 80–95% for DIE. AI also supports decision-making by predicting the likelihood of specific diagnoses based on symptom profiles and test results. However, challenges include the need for large, diverse datasets and high computational costs (Leonardi et al., 2020).

Wearable and Digital Health Technologies

Emerging wearable devices and digital health platforms offer novel approaches to CPP monitoring. Wearable sensors that track pain patterns, physical activity, and physiological parameters (e.g., heart rate variability) provide real-time data to support diagnosis and treatment monitoring. Mobile applications with symptom-tracking features enable patients to record pain episodes and triggers, facilitating communication with healthcare providers. While still in early stages, these technologies hold potential for personalized CPP management (As-Sanie et al., 2019).

Multidisciplinary and Integrative Approaches

The complexity of CPP necessitates a multidisciplinary approach, integrating expertise from gynecology, urology, gastroenterology, pain management, and psychology. Collaborative diagnostic protocols, such as those implemented in specialized pelvic pain clinics, reduce diagnostic delays and improve patient satisfaction. Integrative approaches combine clinical evaluation, imaging, and molecular diagnostics to create a comprehensive diagnostic algorithm tailored to individual patients. For example, a patient with suspected endometriosis may undergo TVUS, followed by MRI if DIE is suspected, and laparoscopy for confirmation. Psychological support and pain management strategies are also critical, as CPP often has a psychosomatic component (Speer et al., 2016).

Challenges and Future Directions

Despite advancements, several challenges persist in CPP diagnostics. The heterogeneity of CPP etiologies complicates the development of universal diagnostic protocols. Access to advanced imaging and laparoscopy is limited in low-resource settings, highlighting the need for cost-effective, scalable solutions. Biomarker assays and AI tools require further validation to ensure reliability across diverse populations. Future research should focus on developing non-invasive, point-of-care diagnostic tests and expanding AI applications to integrate real-time patient data. Additionally, training healthcare providers in multidisciplinary care models is essential to address the global burden of CPP.

CONCLUSIONS

Chronic pelvic pain in women is a multifaceted condition requiring a sophisticated diagnostic approach. Advances in imaging (TVUS, MRI), minimally invasive techniques (laparoscopy), and emerging technologies (biomarkers, AI) have significantly improved diagnostic accuracy. Integrative approaches, combining clinical assessment, advanced diagnostics, and multidisciplinary collaboration, are essential for addressing the complexity of CPP. While challenges such as cost, accessibility, and diagnostic specificity remain, ongoing research into non-invasive tools and personalized medicine offers hope for improved outcomes. Future efforts should prioritize scalable, patient-centered diagnostic strategies to reduce the burden of CPP and enhance quality of life for affected women.

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IMPROVING THE EFFECTIVENESS OF TREATMENT IN ACUTE SENSORINEURAL HEARING LOSS

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ABSTRACT

Acute sensorineural hearing loss (ASNHL) remains one of the pressing issues in otorhinolaryngology due to its sudden onset and high risk of persistent hearing impairment. This article examines modern and innovative approaches to the treatment of ASNHL, including the combined use of glucocorticoids, vascular agents, and neuroprotective drugs. An analysis of clinical data and literature review allows for the identification of the most effective treatment regimens aimed at improving auditory function and reducing the risk of long-term disability in patients.

Keywords: acute sensorineural hearing loss, treatment, glucocorticoids, neuroprotectors, hearing, therapy.

RELEVANCE OF THE PROBLEM

Acute sensorineural hearing loss (ASNHL) is a sudden loss of auditory function of a neurogenic origin, typically occurring within a 72-hour period and without an identifiable external cause such as trauma or infection. It is often accompanied by symptoms such as tinnitus, a feeling of ear fullness, and occasionally vertigo. Although spontaneous recovery may occur in some cases, a significant proportion of patients experience permanent hearing impairment, which can lead to long-term disability and reduced quality of life.

ASNHL is considered an otorhinolaryngologic emergency that requires prompt diagnosis and immediate initiation of therapy. However, the absence of a universally accepted treatment protocol, combined with the heterogeneous response to therapy among patients, poses a major clinical challenge. Current standard treatment strategies primarily include systemic or local administration of glucocorticoids, agents that improve microcirculation, and metabolic enhancers. Nonetheless, these approaches do not consistently result in satisfactory hearing recovery, particularly in cases where treatment is delayed or the initial hearing loss is severe.

Given the increasing incidence of sensorineural hearing loss, especially among the working-age population, improving the efficacy of therapeutic interventions for ASNHL is of high clinical importance. Recent research has focused on the integration of neuroprotective agents, antioxidants, and combination therapies into conventional treatment regimens to enhance outcomes. Furthermore, growing attention is being paid to prognostic factors such as the timing of treatment initiation, the degree of initial hearing loss, the presence of comorbidities, and patient age.

In addition, the development of evidence-based personalized treatment plans and exploration of innovative pharmacological and rehabilitative strategies are essential to improving patient

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outcomes. Interdisciplinary collaboration between otolaryngologists, audiologists, neurologists, and rehabilitation specialists also plays a critical role in achieving better clinical results.

Thus, optimizing treatment protocols and advancing the therapeutic approaches for acute sensorineural hearing loss remains a pressing issue in contemporary otorhinolaryngology. Continued research in this area holds significant scientific and practical value and may ultimately lead to improved auditory rehabilitation and quality of life for affected individuals.

PURPOSE

The primary purpose of this study is to evaluate and enhance the effectiveness of current therapeutic approaches used in the treatment of acute sensorineural hearing loss (ASNHL). By analyzing clinical outcomes, treatment timing, and pharmacological combinations, the research aims to identify the most efficient and evidence-based strategies that contribute to faster and more complete hearing recovery.

Additionally, the study seeks to determine the prognostic value of various clinical factors—including the severity of initial hearing loss, patient age, comorbidities, and time to treatment initiation—in order to develop individualized treatment protocols. The ultimate goal is to improve patient outcomes, reduce the incidence of long-term hearing disability, and provide a scientifically grounded foundation for optimizing clinical decision-making in the management of ASNHL.

MATERIALS AND METHODS

This study was conducted on a cohort of patients diagnosed with acute sensorineural hearing loss (ASNHL) who were admitted to the otorhinolaryngology department between [insert specific years or months]. Inclusion criteria were sudden hearing loss of at least 30 dB affecting three contiguous frequencies within a 72-hour period, absence of prior ear pathology, and no identifiable traumatic or infectious cause. Exclusion criteria included chronic sensorineural hearing loss, autoimmune disorders, and inner ear malformations.

The study population was divided into treatment groups based on the therapy modality applied:

1. **Group A** – received systemic corticosteroids (e.g., prednisone or methylprednisolone);
2. **Group B** – received a combination of corticosteroids with vasodilators and neuroprotective agents;
3. **Group C** – received only vasoactive and metabolic therapy;
4. **Group D** – control group, received symptomatic treatment only.

Audiometric evaluations, including pure-tone audiometry and speech audiometry, were performed at baseline, after 7 days, 14 days, and one month following the start of therapy. Hearing improvement was assessed by the change in pure-tone average (PTA) and speech discrimination scores. Additional clinical parameters such as tinnitus presence, vertigo, and patient-reported outcomes were recorded.

Statistical analysis was performed using [insert statistical software, e.g., SPSS v.26], with significance set at $p < 0.05$. Comparative analysis between groups was carried out using ANOVA and paired t-tests, depending on data distribution. Correlation analysis was used to evaluate prognostic factors influencing treatment efficacy.

RESULTS AND DISCUSSION

The study included a total of 120 patients aged 18 to 65 years with clinically confirmed acute sensorineural hearing loss (ASNHL). The distribution across treatment groups was as follows: Group A (systemic corticosteroids) — 30 patients; Group B (combination therapy) — 35 patients; Group C (vasoactive/metabolic therapy) — 25 patients; and Group D (control/symptomatic treatment) — 30 patients.

Hearing Improvement

After 30 days of follow-up, significant differences were observed between the treatment groups. The average improvement in pure-tone average (PTA) was:

- **Group A:** 18.6 ± 4.2 dB
- **Group B:** 29.4 ± 5.1 dB
- **Group C:** 12.2 ± 3.5 dB
- **Group D:** 6.3 ± 2.8 dB

Patients in **Group B**, who received combination therapy (systemic corticosteroids with neuroprotective and vasodilator agents), demonstrated the most significant improvement in hearing thresholds ($p < 0.01$), with 68.6% showing partial or complete recovery of hearing function. In contrast, **Group D** showed minimal recovery, emphasizing the limited effectiveness of symptomatic treatment alone.

Speech Audiometry

Improvement in speech discrimination scores closely correlated with the pure-tone audiometry results. Group B showed the highest gains in speech understanding (average increase of 32%), followed by Group A (24%), Group C (15%), and Group D (8%).

Subjective Symptom Relief

Reduction in tinnitus and vertigo symptoms was most pronounced in Group B, with 74% of patients reporting complete or significant relief. In comparison, only 41% in Group A and 26% in Group C reported similar outcomes. Patients in Group D largely reported persistence of symptoms throughout the observation period.

Time Factor

The time interval between symptom onset and initiation of therapy played a crucial role. Patients who began treatment within the first 72 hours had a significantly better prognosis in all groups. Among early-treated patients in Group B, the complete hearing recovery rate reached 42.8%, while among those treated after 5 days or more, it dropped to 18.1%.

Prognostic Factors

Multivariate analysis identified the following significant predictors of positive treatment response:

- **Early initiation of treatment (within 72 hours);**
- **Moderate initial hearing loss (<60 dB);**
- **Absence of vertigo;**
- **Younger patient age (<45 years).**

Discussion

The study results confirm that **early and combined therapy** provides superior outcomes in the management of ASNHL. Corticosteroids remain the cornerstone of treatment due to their anti-inflammatory and immunosuppressive effects; however, the addition of **vasodilators and**

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neuroprotective agents significantly enhances therapeutic efficacy, particularly in the acute stage of the disease.

The findings are consistent with previous studies that highlight the importance of **early intervention** and **multimodal pharmacotherapy**. The relatively low improvement observed in the control and monotherapy groups supports the notion that monotherapy may be insufficient in many cases, particularly in patients with severe initial hearing loss or delayed presentation.

Moreover, the data underline the need for personalized treatment protocols that consider not only the severity of hearing loss but also patient age, presence of associated symptoms, and comorbid conditions. Future clinical trials with larger sample sizes and long-term follow-up are needed to confirm these findings and to evaluate the role of novel therapies such as intratympanic steroid injections, antioxidants, and gene-based interventions.

CONCLUSION

This study demonstrates that the most effective treatment strategy for acute sensorineural hearing loss (ASNHL) involves early initiation of combination therapy, particularly within the first 72 hours of symptom onset. Patients receiving systemic corticosteroids in conjunction with neuroprotective and vasodilator agents experienced the greatest improvement in hearing thresholds, speech discrimination, and symptom relief. In contrast, monotherapy and symptomatic treatment alone yielded significantly lower rates of recovery.

The results highlight the importance of multimodal therapeutic approaches tailored to individual patient characteristics, such as age, degree of initial hearing loss, and the presence of vertigo. These findings support current clinical recommendations advocating for aggressive early treatment and suggest that treatment protocols should be personalized to maximize outcomes.

Further research involving larger cohorts and long-term follow-up is essential to validate these results and to explore the efficacy of emerging therapies. Establishing standardized, evidence-based guidelines will be critical in improving the prognosis and quality of life for patients affected by ASNHL.

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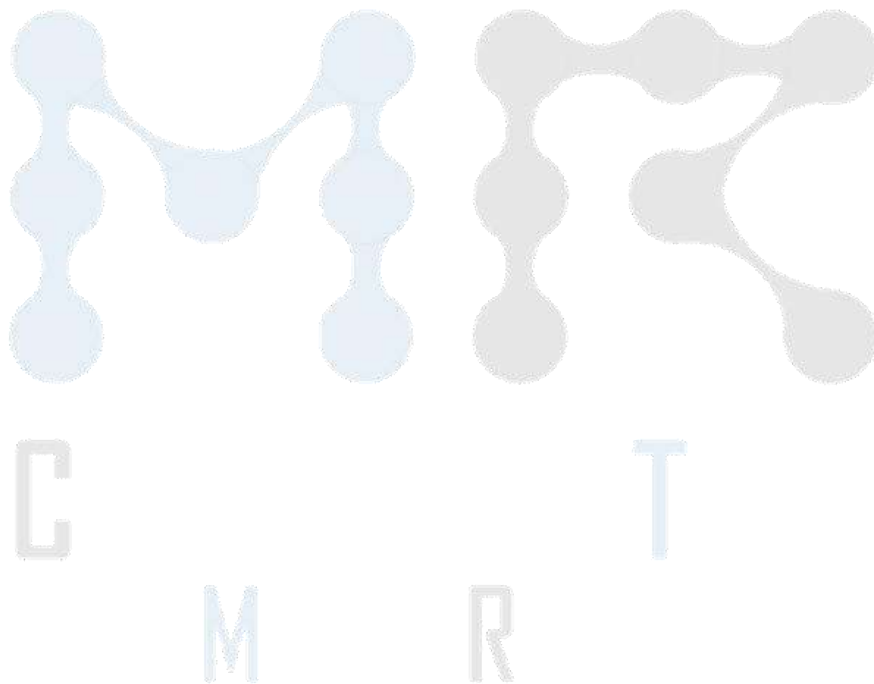
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TEXNOLOGIYA TA'LIMINI O'QITISHDAGI BUGUNGI KUN MUAMMOLARI VA YECHIMLARI

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ANNOTATSIIYA

Mazkur maqolada texnologiya ta'limi fanini o'qitishdagi dolzarb muammolar, ularning kelib chiqish sabablari va davlat siyosati asosida ularni hal qilish yo'llari ilmiy jihatdan tahlil etilgan. Muammolar texnik, metodik, tashkiliy va motivatsion jihatlar bo'yicha guruhlab yoritilgan. Shuningdek, texnologik ta'limni zamonaviylashtirishga doir qonun va qarorlar asosida takliflar ishlab chiqilgan.

Kalit so'zlar: texnologiya fani, o'quv jarayoni, raqamli ta'lim, pedagogik kompetensiya, o'quv dasturi, normativ-huquqiy asoslar.

АННОТАЦИЯ

В данной статье научно проанализированы современные проблемы в преподавании технологического образования, причины их возникновения и пути их решения на основе государственной политики. Проблемы сгруппированы в технические, методические, организационные и мотивационные аспекты. Также разработаны предложения на основе законов и постановлений по модернизации технологического образования.

Ключевые слова: технология, образовательный процесс, цифровое образование, педагогическая компетентность, учебная программа, нормативно-правовая база.

ANNOTATION

This article scientifically analyzes the current problems in teaching technology education, their causes and ways to solve them based on state policy. The problems are grouped into technical, methodological, organizational and motivational aspects. Also, proposals are developed based on laws and resolutions on the modernization of technology education.

Keywords: technology, educational process, digital education, pedagogical competence, curriculum, regulatory and legal framework.

KIRISH.

Texnologiya fani bugungi ta'lim tizimida o'quvchilarning texnik tafakkuri, amaliy ko'nikmalari va kasbiy qiziqishlarini shakllantirishda muhim rol o'ynaydi. Lekin bu fanni zamonaviy talablar asosida o'qitishda bir qator muammolar mavjud. Ular nafaqat moddiy-texnik yoki kadrlar bilan bog'liq, balki o'quvchi motivatsiyasi, raqamli ta'limga moslashuv va me'yoriy-huquqiy asoslarning amaliyotda qo'llanilish darajasi bilan ham bevosita bog'liq.

ASOSIY QISM

Texnologik ta'limni modernizatsiya qilish bo'yicha bir qator muhim hujjatlar mavjud bo'lib, bular - O'zbekiston Respublikasi Prezidentining 2019 yildagi PF-5712-sonli kasb-hunar ta'limini takomillashtirish to'g'risidagi Farmoni, O'zbekiston Respublikasi Prezidentining 2020 yildagi PQ-4699 "Raqamli O'zbekiston - 2030" strategiyasi, O'zbekiston Respublikasi Prezidentining 2021

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yildagi PQ–5252 professional ta’limda raqamli texnologiyalarni keng joriy etish to’g’risidagi qarori hamda Vazirlar Mahkamasining texnologiya fanini modernizatsiyalashga qaratilgan 2022 yildagi 289-sonli qarori, Xalq ta’limi vazirligining 2023 yildagi texnologiya faniga oid fanni yangilashga yo’naltirilgan o’quv dasturi mavzuning naqadar muhim ekanligini dalilidir. Ushbu hujjatlar asosida texnologiya fani ustaxonalarini jihozlash, yangi darsliklarni ishlab chiqish, o’qituvchilarni zamonaviy kurslarda tayyorlash, fan mazmunini raqamli platformalarga moslashtirish nazarda tutilgan.

Bugungi kunda texnologiya ta’limini o’qitishdagi dolzarb muammolar sifatida biz maktab va oliygohlarda moddiy-texnik ta’minotning zaifligini keltirishimiz mumkin, ya’ni ko’plab maktablarda texnologik jihozlar (tokarlik stanoklari, 3D printerlar, grafik planshetlar) mavjud emas. O’quv ustaxonalari va laboratoriyalar zamonaviy mehnat sharoitlariga javob bermaydi. Bu holat darslarni faqat nazariy ko’rinishda o’qitishga majbur qiladi. Nazariy bilimlar esa amaliyotda qo’llanilishini talab etadi.

Bundan tashqari metodik ta’minot va o’quv dasturlarining eskirganligi - o’quv dasturlarida zamonaviy texnologiyalar (robototexnika, dizayn, muhandislik asoslari) yetarlicha aks etmagan. Vaholanki texnologiya mashg’ulotlarida zamon bilan hamnafas bo’lish maqsadida darsliklarda robotlar yasash va ularni tuzilishiga oid ma’lumotlar berib borilishi ko’zlangan. Darslik va metodik qo’llanmalar zamonaviy interaktiv yondashuvlardan yiroq. Faoliyatga asoslangan, loyiha va muammo yechish metodlari kam qo’llaniladi.

O’qituvchilarning malaka darajasiga ham e’tibor qaratish muhim albatta. Texnologiya fani o’qituvchilari orasida raqamli savodxonligi past bo’lganlar ko’p. AutoCAD, TinkerCAD, SketchUp kabi dasturlarni bilmaslik, zamonaviy usullarda dars o’qitishdagi sustlik kuzatiladi. Malaka oshirish kurslari yetarlicha amaliy emas.

O’quvchilarning dars jarayonida past motivatsiya bilan qatnashishlari. O’quvchilar texnologiya darslarini hayot bilan bog’lamaydi. Amaliy natija, mustaqil loyiha, tanlovlar va real ishlab chiqarishga yaqin tajribalar yo’qligi sababli qiziqish sust. Bu esa fanning samaradorligiga salbiy ta’sir qiladi.

Ta’lim tizimida hamkorlik yetishmasligi ham fanning dolzarb muammolaridan biridir. Texnologiya ta’limida ishlab chiqarish korxonalari, kasb-hunar kollejlari bilan integratsiya mavjud emas. O’quvchilar real ishlab chiqarish muhiti bilan tanishmaydi.

TAKLIFLAR

Yuqorida keltirilgan mummolarga biz quyidagicha yechimlar berishni taklif qilamiz, ya’ni

- har bir maktabda zamonaviy texnologiya laboratoriyasi yoki mini ishlab chiqarish ustaxonalarini yaratish;
- O’qituvchilar uchun amaliy raqamli kurslarni joriy etish (AutoCAD, 3D printing, Arduino asoslari);
- Fan bo’yicha o’quvchilarning loyiha va ijodiy ishlarini baholash tizimini ishlab chiqish;
- Ishlab chiqarish bilan hamkorlikda seminarlar va master-klasslar tashkil qilish;
- Elektron darsliklar, video qo’llanmalar, onlayn simulyatsiyalar platformasini yaratish.

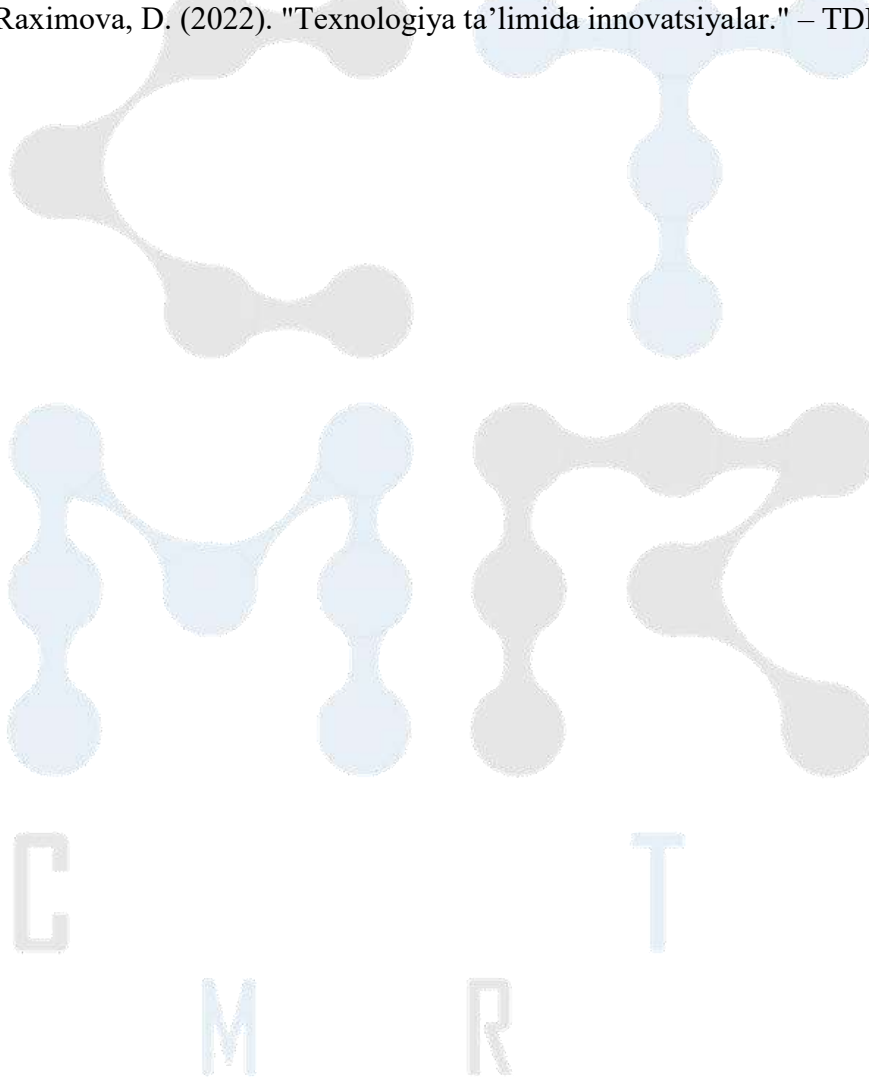
XULOSA

Texnologiya fani nafaqat amaliy ko’nikmalar, balki kasbiy yo’nalish, muammoli fikrlash va ijtimoiy mas’uliyatni ham shakllantiradi. Uni zamonaviy talablarga javob beradigan texnik va metodik asosda tashkil etish, davlat siyosati doirasidagi yondashuvlar asosida yangilash zarur.

Muammolarni tizimli yondashuv orqali hal qilish texnologik ta'lim sifatini yangi bosqichga olib chiqadi.

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“Do‘stlik” konseptining nemis tili frazeologik sathida ifodalanishi

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Annotatsiya. Ushbu maqolada do‘stlik konseptining nemis tilidagi frazeologik darajada ifodalanishi tahlil qilinadi. Tadqiqot davomida nemis tilidagi frazeologik birliklar orqali do‘stlik tushunchasining qanday ma’no va madaniy konnotatsiyalar bilan ifodlangani ko‘rsatib beriladi. Shuningdek, do‘stlik konsepti xalqning mentaliteti, qadriyatlari va ijtimoiy munosabatlarini aks ettiruvchi til hodisasi sifatida izohlanadi. Maqola natijalari nemis va o‘zbek tillarida do‘stlik konseptini qiyosiy tahlil qilish imkoniyatlarini ham ochib beradi.

Kalit so‘zlar: do‘stlik konsepti, nemis tili, frazeologik birliklar, madaniy konnotatsiya, til va mentalitet, konseptual analiz

Аннотация. В статье рассматривается выражение концепта дружбы на фразеологическом уровне немецкого языка. Анализируются фразеологические единицы, через которые в немецком языке передаётся представление о дружбе, а также выявляются их культурные и ценностные коннотации. Концепт дружбы объясняется как языковое явление, отражающее менталитет народа, его социальные отношения и мировоззрение. Результаты исследования создают основу для дальнейшего сопоставительного анализа концепта дружбы в немецком и узбекском языках.

Ключевые слова: концепт дружбы, немецкий язык, фразеологические единицы, культурная коннотация, язык и менталитет, концептуальный анализ

Abstract. This article explores the expression of the concept of friendship within the phraseological system of the German language. It analyses idiomatic expressions and set phrases that convey the notion of friendship in German, highlighting their cultural and value-based connotations. Friendship is interpreted as a linguistic phenomenon reflecting the mentality, values, and social relations of a community. The findings of the study also provide a basis for further comparative analysis of the friendship concept in German and Uzbek languages.

Keywords: friendship concept, German language, phraseological units, cultural connotation, language and mentality, conceptual Analysis

Hozirgi vaqtda tadqiqotchilar madaniyatlararo muloqot masalalarini faol o‘rganmoqdalar, chunki chet tillarini bilishning ahamiyati oshdi. Bir nechta tillarning frazeologiyasini o‘rganish turli tillarning frazeologik materiallarini semantik darajada qiyosiy tahlil qilishning eng qiyin jihatlaridan birini ko‘rib chiqish uchun yangi ilmiy istiqbolni ochadi.

Ma’lumki, do‘stlik – bu butun insoniyatga xos bo‘lgan universal ijtimoiy hodisa, ammo har bir madaniyatda u har xil tarzda talqin qilinadi va turli millat vakillari uni o‘ziga xos tarzda idrok etishlari mumkin. Shuningdek, “do‘stlik” konsepti ma’lum xalqning “milliy xarakterini” aks ettiruvchi madaniy xususiyatlarni o‘z ichiga oladi. Nemis tilida so‘zlashadigan jamiyatlarda “do‘stlik” tushunchasi yaqinlik, qo‘llab-quvvatlash, sevgi, aloqa va birodarlik kabi boshqa bir qancha yuqori baholangan tushunchalar bilan bog‘liq.

Zamonaviy germanistik tadqiqotlarida konseptual analiz usullari tobora muhim o‘rin tutib bormoqda. Nemis davlat arbobi va yozuvchilarining “do‘stlik” mavzusidagi iqtiboslarini chuqur

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tadqiq etish orqali nemis tilida so'zlashuvchilarning "Freund" va "Freundschaft" tushunchalari haqidagi qarashlarini ilmiy jihatdan tahlil qilish mumkin. Bu tadqiqot yo'nalishi J.Lakoff va M.Jonson tomonidan ishlab chiqilgan konseptual metafora nazariyasi¹ hamda A.Vejbitskayaning kulturologik lingvistika tamoyillari² asosida amalga oshiriladi.

Nemis tilida do'stlik bir necha asosiy metaforik model orqali konseptuallashtiriladi. "Do'stlik – bino" metaforasi "Freundschaft aufbauen" (do'stlik qurish), "feste Grundlage der Freundschaft" (do'stlikning mustahkam asosi), "Freundschaft zerbrach" (do'stlik buzildi) kabi iboralarda namoyon bo'ladi va do'stlikni puxta qurish hamda parvarish qilish kerak bo'lgan tuzilma sifatida tasavvur qiladi.

"Do'stlik – o'simlik" metaforasi "Freundschaft wächst" (do'stlik o'sadi), "Freundschaft blüht" (do'stlik gullab-yashnaydi), "Freundschaft gedeiht" (do'stlik rivojlanadi) iboralarida do'stlikning organik rivojlanish jarayoni va vaqt o'tishi bilan mustahkamlanishi ko'rsatiladi³. "Do'stlik – yo'l" metaforasi esa "Weg der Freundschaft" (do'stlik yo'li), "gemeinsam gehen" (birga borish), "Freundschaft führt uns zusammen" (do'stlik bizni birlashtiradi)da do'stlikni hayot safari va umumiy maqsadlar sari harakatlanish sifatida ifodalaydi.

Nemis tilshunosligida "Freundschaft" konsepti "friendship" yoki "дружба" tushunchalaridan sezilarli farq qiluvchi etnomadaniy xususiyatlarga ega. Nemis madaniyatida do'stlik e'lon qilish jiddiy qadam hisoblanadi va bu jarayon ma'lum rasmiylik darajasini talab qiladi⁴. Do'stlik va oddiy tanishlik o'rtasida aniq chegara mavjud bo'lib, nemislar bu farqni jiddiy qabul qiladilar. Vaqt faktori ham muhim rol o'ynaydi – haqiqiy do'stlik uzoq muddat davomida turli sinovlardan o'tishi va o'zini isbotlashi lozim. Ushbu madaniy jihatlar nemis jamiyatida individual va ijtimoiy manfaatlarni muvozanatlashtirishning o'ziga xos yo'lini ko'rsatadi. Anglashiladiki, nemis lingvomadaniyatida "Freundschaft" konsepti murakkab kognitiv tuzilma bo'lib, u nemis xalqining ijtimoiy munosabatlarga bo'lgan chuqur va o'ylangan yondashuvini aks ettiradi. Bu konseptning tahlili nemis mentalitetining asosiy qatlamini ochishga yordam beradi va tilshunoslikning zamonaviy antroposentrik yo'nalishining samaradorligini yaqqol namoyon qiladi. Chunki Germaniyada do'stlik juda jiddiy qabul qilinadi; do'stlar mustahkam rishtalar bilan bog'langan, ular ko'pincha hatto oila a'zolaridan ham ustundir. Binobarin, nemis tilida so'zlashadigan madaniyatlarda do'st har bir inson hayotida hal qiluvchi rol o'ynaydigan umrbod sherik hisoblanadi.

"Do'stlik" konseptini insonning ichki dunyosi va ma'naviy hayotining eng muhim elementi sifatida ko'rish uchun ko'plab sabablar mavjud bo'lib, ular butun madaniy va ijtimoiy rivojlanish davomida mavjudlikning asosiy jihati va insoniy munosabatlarning zarur omili sifatida tan olingan. Bu tushuncha do'stlikning lingvistik nuqtayi nazardan qanday konsepsiyalashuvida ham yaqqol namoyon bo'ladi. "Do'stlik" konsepti bilan bog'liq frazeologik birliklar ichida "rozilik" tushunchasini ifodalovchi turli xil barqaror iboralar alohida ahamiyatga ega. Nemis tilida Freundschaft va Feindschaft – do'stlik va adovat konseptlari atrofida joylashgan ko'plab

¹Lakoff G., Johnson M. Metaphors We Live By. – Chicago: University of Chicago Press, 1980. – 128 p. P. 3 – 13.

²Wierzbicka A. Understanding Cultures through Their Key Words. – Oxford: Oxford University Press, 1997. – 328 p. P. 15-31.

³Baldauf Ch. Metapher und Kognition: Grundlagen einer neuen Theorie der Alltagsmetapher. – Frankfurt am Main: Peter Lang, 1997. – S. 145-167.

⁴Hofstede G. Culture's Consequences: Comparing Values, Behaviors, Institutions and Organizations Across Nations. – Thousand Oaks: Sage Publications, 2001. – P. 215-234.

frazeosemantik guruhlar mavjud. Ushbu iboralar nemis xalqining madaniy xususiyatlari va axloqiy qadriyatlarini aks ettiradi, bu ularni yozma va og‘zaki tilning muhim manbasiga aylantiradi. Shuni e‘tiborga loyiqki, Freund va Freundschaft – do‘st va do‘stlik, semantik kategoriyasi bilan bog‘liq iboralar, ayniqsa, hissiy kengligi va yorqinligi bilan ajralib turadi.

“Do‘stlik” konsepti bilan bog‘liq iboralarni tahlil qilishda ularning uslubiy boyligini ta’kidlash kerak, bu ularning obrazlilik va ekspressivligini kuchaytiradi, shuningdek, ularning lingvistik va madaniy xususiyatlarini chuqurroq tushunishga imkon beradi. Xususan, dushmanlik tuyg‘usini mimika orqali ifodalash mumkin, masalan, tishlarni g‘ijirlash – bu harakat tarixiy jihatdan qadimgi jamiyatlarda tajovuzkorlik belgisi hisoblangan, biroq zamonaviy madaniyatda bunday his-tuyg‘ular yanada nozik shaklda namoyon bo‘ladi. Nemis tilida bu hodisa “die Zähne zeigen” (tishini ko‘rsatish, g‘azab bildirish) frazeologik birligida aks etgan. Dushmanlik semantikasini kuchaytirish maqsadida ushbu turdagi iboralarga “messer” (pichoq), “axt” (bolta), “bajonett” (qilich) kabi keskin qurol nomlarini kiritish ularning emotsionalligini va salbiy konnotatsiyasini yanada mustahkamlaydi.

Lug‘at ta’riflarida do‘stlik o‘zaro bog‘liqlik, muloqotga bo‘lgan kuchli istak va o‘zaro his-tuyg‘u hamda imtiyozlarning umumiy umidlari bilan tavsiflangan shaxslararo munosabatlarning barqaror, tanlangan turi sifatida tavsiflanadi⁵.

Do‘stlikni ijtimoiy konsept sifatida ko‘rib chiqsak, u nafaqat shaxslar o‘rtasida, balki guruh yoki turli madaniyat vakillari o‘rtasidagi munosabatlarga ko‘proq ishora qiladi⁶. Bu konsept kognitiv tilshunoslikning asosiy jihati bo‘lib, inson kognitiv faoliyatining murakkab va ko‘p qatlamli mahsulidir. Dastlab mavhum g‘oya bo‘lib, u inson ongi tomonidan qayta ishlanadi va o‘ziga xos tuzilgan hodisalarni tilda aks ettirish qobiliyatiga ega⁷. Nemis frazeologiyasi tematik modellarga asoslangan ko‘plab birliklarni o‘z ichiga oladi. Nemislar nuqtayi nazaridan do‘stlik juda qadrlanadi va “hayot tuzi” deb ta’riflanadi. Bu tuyg‘u nemischa Freundschaft ist des Lebens Salz (Do‘stlik hayotning tuzidir) iborasida aks etgan. Masalan, bu ibora 2008-yil 22-noyabrda “Thüringer Allgemeine” gazetasida do‘stlik mavzusidagi maqola sarlavhasi sifatida ishlatilgan.

Ingliz tilida bo‘lgani kabi nemis madaniyatida ham eski do‘stlar ijobiy baholanadi, buni “die alten Freunde sind die besten”⁸ (eski do‘stlar eng yaxshi) iborasida ifodalangan model tasdiqlaydi. Biroq zamonaviy matnlarda bu g‘oya teskari ma’noda ham qo‘llanilishi mumkin. Masalan: **Die alten Freunde aus seinem Heimatdorf Hinterschmieding lehnt er deshalb sehr bald ab, er strebt nach Besserem und vor allem höheren Kreisen** (Shunday qilib, u tez orada o‘zining tug‘ilgan qishlog‘i Hinterschmiedingdagi eski do‘stlaridan voz kechadi, u eng yaxshi va eng yuqori doiralarga intildi). Ushbu parchada yuqori ijtimoiy mavqega ega bo‘lish uchun eski do‘stlarini tashlab ketgan qishloq amalparasti tanqid qilinadi.

Do‘st va dushman o‘rtasidagi qarama-qarshilik nemis dunyo manzaralarida keng tarqalgan tushunchadir. “Sadoqatli do‘stlik hech qachon o‘zgarmaydi” degan fikr **Die nächsten Freunde, die ärgsten Finde** frazeologik birligi bilan ifodalanadi.

⁵Новейший философский словарь / В.А.Кондрашов, Д.А.Чекалов, В.Н.Копорулина; Под общ. ред. А.П.Ярещенко. 2-е изд. – Ростов-на-Дону: Феникс, 2006. – 672 с.

⁶Лызлов А.И., Сулейманова О.А. Дружеские отношения в отражении русской, немецкой и английской фразеосистем. Вестник МГПУ. Серия «Филология. Теория языка. Языковое образование», 2(54), 2024. – 136 – 150.

⁷Красных В. «Свой» среди «чужих»: миф или реальность? – Москва: Гнозис. – 2003. – 375 с.

⁸Лызлов А.И. Относительность оценки в языковом сознании на примере английских фразеологизмов о правде и неправде. Когнитивные исследования языка, 2017. 29, 327–333.

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Qiyin paytlarda do'stona yordamning ahamiyatini tushunish universal tushunchadir. Turli tillarda "qiyin vaziyatda do'stingizga yordam berish juda qadrli" degan fikrni aks ettiruvchi frazeologik birliklar mavjud. Nemis tilida bu tuyg'u Freund in der Not, Viele Freunde und wenig Nothelfer⁹ (Kulfatdagi do'st, do'stlar ko'p, biroq yordam beradigan kam) kabi frazeologik iboralarda ifodalanagan.

Tarixiy jihatdan "Freund in der Not" (qiyinchilikdagi do'st) atamasi nemis adabiyotida ancha vaqtdan beri qo'llanib kelinmoqda. Napoleon urushlaridan so'ng XIX asrning boshlarida urush qurbonlarini, ayniqsa yarador va yetimlarni qo'llab-quvvatlash uchun "Gesellschaft der Freunde in der Not" ("Qiyinchilikdagi do'stlar jamiyati") tashkil etildi. Ushbu tashkilotning nomi yuqorida aytib o'tilgan iborani aks ettiradi. "Thüringer Allgemeine" gazetasining maqolasida ushbu tarixiy kontekst shunday yoritilgan: "Im Oktober wird es sich zum 25. Mal jähren, dass er sich gründete und damit die "Gesellschaft der Freunde in der Not" wieder ins Leben rief, mit der sich der Sozialpädagoge und Schriftsteller Johannes Daniel Falk ab 1813 in Weimar um obdach-und elternlose Kinder gekümmert hatte" ("Oktyabr oyida ijtimoiy pedagog va yozuvchi Johannes Daniel Falk tomonidan 1813-yilda Veymarda boshpanasiz va ota-onasiz qolgan bolalar uchun tashkil etilgan "Qiyinchilikdagi do'stlar jamiyati"ning qayta tiklangan kunining 25 yilligi nishonlanadi"). Bundan tashqari, "do'stlarning harakatlari bizga foyda keltiradi" modeli sevgi yoki ilohiy yordam bilan bog'liq tasvirlar orqali do'stlik harakatlariga ijobiy nuqtayi nazarni yetkazadigan bir nechta frazeologik birliklar bilan ifodalanadi. Bu Freundes Schlage, liebe Schlage, Freundes Stimme va Gottes Stimme kabi iboralar bilan tasvirlangan.

Nemis tilida vaziyat modellariga asoslangan ko'plab frazeologik birliklar mavjud. Ular orasida qiyosiy baho beradigan birliklar alohida e'tiborga loyiqdir. Ular predikat yoki batafsil konstruksiyalar frazeologik birliklarning ma'nolarini o'zgartirishi mumkin bo'lgan taxminiy maksimumlarni ifodalaydi.

"Do'st yaqin atrofingda bo'lsa, uzoqdagi birodaringdan yaxshiroq" (**ein Freund in der Nähe ist besser als ein Bruder in der Ferne**) va "uzoqdagi do'st yaqindagi dushmandan yaxshi" (**besser Freund in der Ferne als Feind in der Nähe**) kabi nemis frazeologizmlarining chuqur ma'noli va paradoksal xususiyatini yaqqol namoyon qiladi. Birinchi iboraning semantik tuzilishi ikki qarama-qarshi konseptni qiyoslaydi: "Nähe" (yaqinlik) va "Ferne" (uzoqlik) hamda "Freund" (do'st) va "Bruder" (aka-uka) tushunchalaridagi qarama-qarshilik biologik va ijtimoiy bog'lanishlarning pragmatik qiymatini taqqoslashga asoslanadi. Ikkinchi ibora esa "Freund" (do'st) va "Feind" (dushman) qarama-qarshiligini masofa kontekstida ko'rib chiqadi. Bu frazeologizm strategik fikrlashning ifodasi bo'lib, yaqin atrofdagi zararli ta'sirlardan saqlanish g'oyasini ilgari suradi.

"Do'stlarsiz yashash mumkin emas/qiyin" tipidagi vaziyat modeli nemis frazeologik birliklarida "Ohne Bruder kann man leben, nicht ohne Freund, wer ohne Freund ist, lebt nur halb" (birodarisiz yashash mumkin, do'stsiz emas; kim do'stsiz bo'lsa, yarim yashaydi) kabi iboralar bilan aks ettirilgan. Amaliy nutqda ushbu frazeologik birlikning qisqartirilgan varianti ishlatilishi mumkin, unda faqat "do'st" komponenti saqlanadi va qiyosiy element tushirib qoldiriladi. Natijada to'liq ibora "Ohne Freunde kann man nicht leben" (Do'stlarsiz yashash mumkin emas) ko'rinishida qisqaradi.

⁹Козеренко А.Д., Крейдлин Г.Е. Фразеологические обороты как показатели некооперативного поведения участников диалога. Вопросы языкознания, 2021. 2, 53–65. <https://doi.org/10.31857/0373-658X.2021.2.53-65>.

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Nemis frazeologiyasida universal do'stlik konseptiga nisbatan tanqidiy yondashuv ham namoyon bo'ladi. "Hamma uchun do'st bo'lishning imkonsizligi" haqidagi konsepsiya "Jedermans Freund, jedermans Narr, jedermanns Gesell ist niemand's Freund" (hammaning do'sti, hammaning masxarabozi, hammaning hamrohi hech kimning do'sti emas) frazeologik birligida konseptuallashgan. Ushbu iboraning strukturaviy tahlili uch parallel komponentning takrorlanuvchi "jedermans" (hammaning) elementi orqali semantik kuchayish yaratishini ko'rsatadi, "niemand's" (hech kimning) komponenti esa kontrastiv semantikani hosil qiladi. Pragmatik jihatdan bu frazeologizm do'stlarni sinchiklab tanlash tamoyilini ta'kidlaydi va nemis madaniyatidagi do'stlik munosabatlarining eksklyuziv xususiyatini aks ettiradi.

Nemis tilida "do'stlik" konseptining frazeologik ifodalanishi odatiy barqaror iboralar bilan cheklanib qolmay, balki murakkab idiomatik konstruksiyalar va til o'yinlari orqali ham namoyon bo'ladi. Zamonaviy germanistik tadqiqotlarda bu konseptning kognitiv-diskursiv xususiyatlari alohida e'tiborga loyiq hisoblanadi, chunki ular nemis lingvomadaniyatining chuqur qatlamlarini ochib beradi. Nemis tilida do'stlik munosabatlarining dinamikasini ifodalovchi frazeologik birliklar orasida temporal semantikani aks ettiruvchi konstruksiyalar muhim o'rin tutadi. "Mit der Zeit wird man Freunde" (Vaqt o'tishi bilan do'st bo'ladi) iborasi do'stlikning gradual rivojlanish jarayonini tasvirlaydi va nemis madaniyatida do'stlik e'lon qilishning jiddiy, o'ylangan jarayon ekanligini ta'kidlaydi¹⁰. Bu semantik model "Freundschaft braucht Zeit" (Do'stlik vaqt talab qiladi) va "Zeit prüft die Freundschaft" (Vaqt do'stlikni sinaydi) kabi parallel konstruksiyalar bilan mustahkamlanadi.

Nemis frazeologiyasida do'stlik konseptining yetik jihati "Freundschaft verpflichtet" (Do'stlik majburiyat yuklaydi) va "Freundschaft hat ihre Pflichten" (Do'stlikning o'z majburiyatlari bor) kabi iboralar orqali namoyon bo'ladi. Bu konstruksiyalar nemis mentalitetida do'stlikni nafaqat his-tuyg'u, balki aniq majburiyat va mas'uliyatlar tizimi sifatida idrok etishni ko'rsatadi. Pragmatik jihatdan bu iboralar nemis jamiyatidagi do'stlik institutining formallashgan xususiyatini aks ettiradi, bu yerda do'stlik o'zaro xizmat va qo'llab-quvvatlashning aniq majburiyatlari bilan bog'liq.

Do'stlik konseptining gender aspektlari ham nemis frazeologiyasida o'ziga xos ifodalanadi. "Männerfreundschaft" (Erkaklar do'stligi) va "Frauenfreundschaft" (Ayollar do'stligi) atamalarining semantik maydonlari turli xil frazeologik ifodalarda namoyon bo'ladi¹¹. "Unter Männern gibt es keine Freundschaft, nur Kameradschaft" (Erkaklar orasida do'stlik yo'q, faqat o'rtoqlik bor) iborasi gender farqlarini ta'kidlaydi va do'stlikning erkaklar hamda ayollar orasidagi turli xil ko'rinishlarini ta'kidlaydi. Bu frazeologik birlik nemis lingvomadaniyatida maskulin va feminin do'stlik modellarining farqlanishini aks ettiradi. Nemis tilida do'stlik konsepti bilan bog'liq metonimik iboralar ham alohida diqqatga sazovor. "Ein Herz und eine Seele" (Bir yurak va bir jon) frazeologizmi do'stlikning eng yuqori darajasini tasvirlaydi va anatomik metonimiya orqali ruhiy birlikni ifodalaydi.

Nemis frazeologiyasida do'stlik konseptining musiqa metaforasi orqali ifodalanishi ham keng tarqalgan. "In Harmonie leben" (uyg'unlikda yashash), "den gleichen Ton anschlagen" (bir xil ohangda gapirish) va "nicht aus dem Takt kommen" (ritmdan chiqmaslik) kabi iboralar do'stlik

¹⁰ Burger, H. Phraseologie: Eine Einführung am Beispiel des Deutschen. Berlin: Erich Schmidt Verlag, 2015. – S. 78-92.

¹¹ Mellado Blanco, C. Phrasem-Konstruktionen kontrastiv: Deutsch-Spanisch. Tübingen: Narr Verlag, 2020. – S. 145-162.

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munosabatlarini musiqa ijrosi bilan o'xshatadi¹². Bu metaforik model nemis madaniyatida musiqaning ijtimoiy ahamiyatini va do'stlikni koordinatsiyalangan, uyg'unlashtirilgan faoliyat sifatida idrok etishni ko'rsatadi.

Zamonaviy nemis tilida do'stlik konseptining raqamli davr metafori orqali yangi frazeologik birliklar paydo bo'lmoqda. "Virtuelle Freundschaft" (virtual do'stlik), "online Freunde" (onlayn do'stlar) va "digitale Nähe" (raqamli yaqinlik) kabi atamalar an'anaviy do'stlik tushunchasining zamonaviy transformatsiyasini aks ettiradi. Bu yangi frazeologik qatlamning paydo bo'lishi nemis tilining innovatsion xususiyatini va madaniy o'zgarishlarga moslashish qobiliyatini namoyish etadi.

Do'stlik konseptining falsafiy aks etishi ham nemis frazeologiyasida o'z ifodasini topgan. "Freundschaft ist ein Geschenk des Himmels" (Do'stlik – osmonning sovg'asi) va "Freundschaft ist des Lebens größter Schatz" (Do'stlik hayotning eng katta xazinasini) kabi iboralar do'stlikning transendent qiymatini ta'kidlaydi. Bu frazeologik birliklar nemis madaniyatida do'stlikni moddiy ne'matlardan ustun qo'yishni va unga ma'naviy qiymat berishni ko'rsatadi.

Nemis frazeologiyasida do'stlik konseptining yumoristik jihati ham muhim ahamiyat kasb etadi. "Freunde kann man sich nicht aussuchen, aber Feinde schon" (Do'stlarni tanlay olmasangiz, dushmanlarni tanlay olasiz) kabi qarama-qarshi ma'noli konstruksiyalar kinoyali semantikani hosil qiladi va do'stlik munosabatlarining murakkabligini ta'kidlaydi. Bunday iboralar nemis hazilining aqliy xususiyatini hamda til vositalari orqali chuqur fikrlarni ifodalash mahoratini namoyon qiladi.

Nemis tilida do'stlik konseptining professional kontekstdagi ifodalanishi ham alohida tadqiqotga loyiq. "Geschäftsfreundschaft" (biznes do'stligi), "Arbeitsfreundschaft" (ish do'stligi) va "Kollegialität" (hamkasblik) kabi atamalar do'stlik konseptining institutionallashtirilgan variantlarini yaratadi¹³. Bu frazeologik birliklar nemis jamiyatida professional va shaxsiy sferalar o'rtasidagi murakkab bog'lanishlarni aks ettiradi va do'stlikning turli kontekstlardagi adaptatsiyasini ko'rsatadi.

Korpus manbalarini o'rganish shuni ko'rsatadiki, zamonaviy nemis tilida ko'pincha butun frazeologik ibora emas, balki uning faqat bir qismi ishlatiladi. Shuning uchun turli xil kontekstlarda frazeologik iboralar haqida eslatmalar mavjud. Ushbu o'ziga xos model juda keng tarqalgan va yozma manbalarda 50 dan ortiq misollar mavjud. Masalan, kontekstlardan birida do'stlik konsepti ulug'lanib, haqiqiy do'st har doim yordamga tayyor degan fikr bor: **Es ist irgendwie immer ein Freund in der Nähe.** (Haqiqiy do'st har doim yoningda bo'ladi.)

Korpusda uchraydigan **"Freund in der Not"** frazeologik birligining ba'zi misollarini ko'rib chiqaylik. Bu iqtibos XX asrning ikkinchi yarmida nemis siyosatchilarining kayfiyatini ta'kidlaydi, chunki nemislar ikkinchi jahon urushidan keyin boshqa davlatlardan olgan yordami uchun minnatdorchilik bildiradilar: **Voll Dankbarkeit gedenkt unser Volk dieser Hilfe, die die Weisheit bestätigt, daß manden guten Freund in der Not erkennt (Xalqimiz bu yordamni minnatdorchilik bilan eslaydi, bu odamlar qiyin paytlarda yaxshi do'stni tan olishlarining donoligini tasdiqlaydi.)**

Shaxslararo munosabatlar va qiyin vaziyatlarda do'stga yordam berish zarurligini ko'rsatadigan yana bir lingvistik misol korpus materiallarida aks etgan: "um einem zu helfen, sich für den Freund in der Not einzusetzen oder sich nach Kräften für eine gute Sache einzusetzen" (biror kishiga yordam berish, qiyinchilikdagi do'stni qo'llab-quvvatlash yoki yaxshi ish uchun imkoniyat darajasida harakat qilish). Ushbu konstruksiyaning semantik tuzilishi uch parallel komponentdan iborat bo'lib, har biri

¹² Schemann H. Deutsche Idiomatik. Stuttgart: Ernst Klett Verlag, 1993. – S. 189-205.

¹³ Sandig B. Stilistik der deutschen Sprache. Berlin: De Gruyter, 2006. – S. 234-251.

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yordam berish kontseptining turli aspektlarini – umumiy yordam (1), do'stona qo'llab-quvvatlash (2) va ijtimoiy faollik (3)ni – aks ettiradi.

Nemis tili frazeologik sathida "do'stlik" konseptining tadqiqi shuni ko'rsatadiki, bu lingvistik hodisa nemis xalqining dunyoqarashi va madaniy qadriyatlarining o'ziga xos aks etishidir. Frazeologik birliklar orqali ifodalangan do'stlik tushunchasi oddiy shaxslararo munosabatlardan ancha chuqurroq ma'noga ega bo'lib, u nemis jamiyatining ijtimoiy tuzilishi, axloqiy me'yorlari va madaniy xususiyatlarini aks ettiradi. Tadqiqot jarayonida aniqlandiki, nemis tilining frazeologik tizimi do'stlik konseptini turli semantik va stilistik qatlamlar orqali namoyon qiladi. Bu qatlamlar qadimiy mifologik tasavvurlardan tortib to zamonaviy texnologik ta'sirgacha bo'lgan keng spektrni qamrab oladi. Frazeologik birliklarning tarixiy rivojlanishi va zamonaviy transformatsiyasi nemis tilining dinamik tabiatini va madaniy o'zgarishlarga moslashish qobiliyatini yaqqol ko'rsatadi.

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МЕТОДИКА СТИЛЕВОГО ПОДХОДА В ВОСПИТАНИИ ХУДОЖЕСТВЕННОГО ВКУСА У УЧАЩИХСЯ

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Аннотация. В статье рассмотрена методика стиливого подхода как эффективное средство воспитания художественного вкуса у учащихся. Раскрыта сущность и задачи стиливого подхода, его педагогические принципы и этапы реализации в образовательном процессе.

Ключевые слова: художественный вкус, стиливой подход, эстетическое воспитание, искусство, стиль, творческая деятельность, анализ произведений искусства.

Abstract. The article examines the methodology of the stylistic approach as an effective means of cultivating students' artistic taste. It reveals the essence and objectives of the stylistic approach, its pedagogical principles, and the stages of its implementation in the educational process.

Key words: artistic taste, stylistic approach, aesthetic education, art, style, creative activity, analysis of works of art.

В современном образовательном процессе особое значение приобретает эстетическое развитие личности. Одной из важнейших задач художественно-эстетического воспитания является формирование художественного вкуса — способности воспринимать, оценивать и создавать произведения искусства с позиции гармонии, выразительности и ценностного содержания. В этом контексте стиливой подход занимает особое место, так как он предполагает системное освоение учащимися художественных стилей, направленное на формирование целостного мировоззрения и развитие. Художественный вкус — это индивидуально-психологическая способность личности отличать подлинно художественное от поверхностного, гармоничное от безвкусного, высокое от низкого.

Наличие развитого художественного вкуса является показателем культурного уровня личности, её способности к эстетической оценке окружающего мира. Стиливой подход в педагогике искусства основан на признании того, что каждый исторический период и каждое направление в искусстве выражают особую систему художественных средств, мировоззрения и эстетических норм.

Методика реализации стиливого подхода

1. Ознакомление с историко-культурным контекстом. Изучение стиля начинается с рассмотрения исторических условий его возникновения: социального строя, философских идей, религиозных представлений. Такой подход позволяет учащимся понять, почему именно так складывались художественные формы.

2. Анализ художественных образцов. Необходимо использовать репродукции, аудио- и видеоматериалы, посещение музеев и выставок. Важно, чтобы учащиеся умели выделять характерные черты стиля:

в архитектуре — форма, орнамент, пропорции;

в живописи — цветовая гамма, композиция, образный строй;

в музыке — мелодические линии, ритмика, ладовая основа;

в литературе — стиль языка, художественные приёмы, тематика.

3. Сравнение стилей. Сопоставление, например, готики и ренессанса, классицизма и романтизма помогает учащимся осознавать, что каждый стиль несёт свою уникальную художественную логику.

4. Практическая художественная деятельность. выполнение творческих заданий «в стиле эпохи» (например, рисунки в духе барокко, эссе в стиле романтизма, музыкальные импровизации в стиле джаза); проектная работа – создание коллективных проектов, отражающих специфику определённого стиля.

5. Дискуссии и эстетическая рефлексия. Учителю важно создавать ситуации, где учащиеся могут выразить собственное мнение о стиле, сравнить его с современными эстетическими тенденциями. Это развивает критическое мышление и индивидуальный художественный вкус.

Педагогические принципы стилового подхода включают: историзм (рассмотрение стиля в его временных рамках), наглядность (широкое использование репродукций, аудио- и видеоматериалов, посещение музеев), деятельностный подход (объединение анализа и практики), диалог культур (сравнение разных традиций и школ искусства) и индивидуализацию (учёт уровня развития и эстетических предпочтений каждого учащегося). Учитель в данном процессе выполняет роль проводника и организатора: он не диктует готовые оценки, а побуждает школьников к самостоятельным выводам и поиску личных эстетических ориентиров.

Пример практического применения стилового подхода может выглядеть следующим образом: на уроке учащиеся знакомятся с эпохой Возрождения, рассматривают архитектуру (собор Святого Петра, флорентийские дворцы), живопись (работы Леонардо да Винчи, Рафаэля, Микеланджело), музыку (полифонические композиции), литературу (сонеты Петрарки). Затем они выполняют задание – создать рисунок или эссе в стиле Ренессанса, выразив в нём идею гармонии человека и природы. В завершение проводится дискуссия: «Что означает для нас сегодня идеал гармонии?», где учащиеся формулируют свои эстетические выводы. Подобный опыт сочетает познание, творчество и личностную рефлексию, что является ключевым для воспитания вкуса.

Значение стилового подхода заключается в том, что он помогает школьникам не только изучить факты истории искусства, но и развить способность видеть за художественной формой ценности и идеи, которые делают искусство подлинно духовным. Воспитание вкуса при этом выходит за рамки урока: учащиеся начинают более осознанно относиться к выбору музыки, фильмов, книг, формируют устойчивую ориентацию на культурные и эстетические ценности.

Методика стилового подхода в воспитании художественного вкуса у учащихся позволяет соединить историко-культурное знание, аналитическую деятельность и творческое самовыражение. Она формирует целостное восприятие искусства, развивает способность к критическому осмыслению и помогает школьникам ориентироваться в мире культурных ценностей. Благодаря стиловому подходу учащиеся не только знакомятся с богатством художественного наследия, но и приобретают умение делать собственный эстетический выбор, что способствует развитию гармоничной и духовно богатой личности.

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OPTIMIZATION OF SURGICAL MANAGEMENT IN OBESE PATIENTS WITH INCISIONAL HERNIAS

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Abstract. The purpose of the scientific study is improve, optimize the results of operations performed in patients with "hanging abdomen" syndrome due to abdominal (ventral) hernia and obesity. In 153 patients treated in VKTTTM I-surgery department, the results of the operations of patients with abdominal wall hernia and obesity were analyzed into 2 groups. In the first group, 76 (control group) patients with obesity and ventral hernia performed a hernia-cutting procedure, in which surgical intervention on the "hanging" Corine was not performed; the main group (II group) was studied as a result of 77 patients undergoing resection of pannikulis, abdominoplasty and cut-off of the ventral hernia. Conclusion weight loss was found to be a positive result of the implementation of the reduction of the subcutaneous fat layer in the case of the abdomen (II, III levels of the paniculus) "hanging" along with the cutting of the ventral hernia, alloprotizing in patients, when as a result of the disease of obesity and the occurrence of the ventral hernia, along with the.

Keywords: ventral hernias, alloprotizing, obesity, skin and subcutaneous, fart surgical treatment

Introduction: the presence of obesity in patients with more than 50% of ventricular hernia is known from the literature (3,4). In this case, the dressing of the hernia, the recurrence after the operation, the increase in pressure in the abdominal cavity is one of the main features of the hernia. Along with this, patients experience dystrophic changes in the muscles of the anterior wall of the corineum and joint hairs, as well as their fullness of fat deposits. One of the severe complications of obesity is the development of Panniculus, that is, the abdominal wall is accompanied by an increase in the volume of the ventral hernia, in which there is an increase in the size of the skin and subcutaneous fat pharynx at different levels and a direct effect on the quality of life of the patient (1,6). When drawing up an operation plan caused by the appearance of the syndrome of "hanging abdomen" due to the disease of the ventral hernia and obesity in front of the surgeon, the anesthesiologist reveals the degree of risk, reveals the selection of the access cylinder directly in accordance with the hernia, the choice of the individual approach and type of plastic (5,11).

Today, in these cases, 3 different approaches are distinguished. The first is to perform the procedure of cutting the hernia without taking into account the concomitant disease with respect to the ventral hernia by the method of alloprosthesis; in the second type – to perform the procedure of cutting the hernia without paniclectomy, that is, without violating the integrity of the fat fold of the skin and subcutaneous pharynx; in the third type (7,8)

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In all three operations, the commonality lies in the fact that the defect in the anterior abdominal wall is performed with a puddle of local and deep alloprotizing methods. As practice experience shows, in most cases, surgeons know that the second type of surgery should be performed more often. The advantage of this method is a positive result of the operation, since in the removal of fat deposits in a large volume, complications after a series of operations may arise.(2,9,10)

D. Jr. Jgwectal (2000) 5 classification of patients with pannikulis in Group skin-subcutaneous fat it is written that the size of the pharynx is determined in relation to the degree of hanging of the Corine. Resection weight loss of pannikulis is complex from the technical background, it is appropriate to take into account the possible positive and negative complications that can occur in its base.

The purpose of the scientific study: to improve, optimize the results of operations performed in patients with "hanging abdomen" syndrome due to abdominal (ventral) hernia and obesity.

Material and methods: In 153 patients treated in VKTTTM I-surgery department, the results of the operations of patients with abdominal wall hernia and obesity were analyzed into 2 groups. In the first group, 76 (control group) patients with obesity and ventral hernia performed a hernia-cutting procedure, in which surgical intervention on the "hanging" Corine was not performed; the main group (II group) was studied as a result of 77 patients undergoing resection of pannikulis, abdominoplasty and cut-off of the ventral hernia. During the operation, on the basis of a tactical algorithm, an fart consisting of a cutlet of skin and subcutaneous fat at the I level of the "hanging abdomen" pannikulis is not taken. In the 2 and 3 degree pannikulis, a bulging fart consisting of skin and subcutaneous fat cutlet was removed and a hernia cutting procedure was performed. In this group, such a radical procedure was carried out so that the ventral hernia does not recur.

Results: in 153 patients treated in the surgical department of the Bukhara regional Multidisciplinary Medical Center I abdominal wall hernia and obesity disease – the existing practice results of the "hanging abdomen" sign were analyzed into 2 groups. The age of the patients was around 20 – 80 years, men 26 (17%) , women – 127 (83%). In these patients, the procedure of hernia incision and subcutaneous fat fold resection was performed. Age and gender of the patients in the cross-section of all groups bulinishi Tab.Indicated on No 1.

Table No. 1

Division of patients by age and gender into groups

Age, year	Group 1			Group 2		
	Man	Woman	Total	Man	Woman	Total
21 – 30	2	6	8	2	7	9
31 – 40	3	10	13	3	10	19
41 – 50	2	15	17	2	15	17
51 – 60	6	11	17	6	11	17
61 – 70	3	10	18	3	10	13

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71 – 80		4	4	8	4	4	8
	A6c	20	56	76	20	57	77
Total	%	13	37	50	13	37	50

Table №2

Patients with hernia and IMT (body weight index) – according to the size of the hernia and the degree of obesity

Hernia size	Obesity at the level of obesity (by gruppes)					
	Group 1			Group 2		
	I *	II **	III ***	I *	II **	III ***
W ₁	9	9	7	8	7	6
W ₂	3	8	6	10	5	8
W ₃	15	9	10	9	14	10
Total	27	26	23	27	26	24

*IMT I degree

**IMT II degree

***IMT III degree

According to the location of the hernia on the anterior abdominal wall, the middle (M) and lateral (L) hernia, according to the size of the hernia gate W₁ (small, 4cm small), W₂ (medium) = 4 – 10 cm, W₃ (large) greater than 10cm (based on the classification of whole-body health care (1997 y)) Tab№2. I degree of obesity (IMT=30,0 – 34,9) II degree of obesity (IMT=35,0 – 39,9) III degree of obesity (IMT – 40). These data are presented in 2 tables.

During the procedure of cutting the hernia, which is performed pannikulis (without taking subcutaneous fat cutletchatka) in patients with a hernia of the middle three parts of the abdominal cavity, the hernia bag is separated from the side of the limb, the hernia bag is poured into the abdominal cavity, the procedure of performing alloprotection in a combined manner over the aponeurosis. When the width of the gate of the hernia defect exceeds 12cm, the submuscular prosthetic plastic method was pounded:

Skin – subcutaneous fat in 2 group of patients was continued until the part of the side walls of the abdomen with the help of Oval incisions rotating the transverse part of the pharynx. Subcutaneous fat cuttings were obtained by resection of the superficial fascia and the subcutaneous fat cuttings. The next churra cutting bandits performed an alloprotizing amadiotomy over aponeurosis, that is, as in Group I.

Results of surgical procedure in the presence of post – operative ventral hernia and obesity in patients of both groups, the surface of the complications after the operation of gernioplasty methods without resection of the skin – subcutaneous fatty tissue (1 group) and after the weight of the resection (2 Group), the presence of the hernia in patients of the operation for several years, the absence enigma ($p>0,05$).

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From the Anamnesis of patients it was found that the average presence of hernia in I group of patients was 3.7 years, in II group of patients 2 – 3.5 years. In Group I patients, 98% of the ventral hernia was Primary, 2% of the patients had recurrent (relapsed) hernia. In 2 group of patients, this ratio was 96,8% and 3,2%.

In connection with an increase in the level of obesity in patients, it is permissible to insist that the "hanging belly" in accordance with the increase in body weight is at the level of manifestation of fat fart yakkol. The hanging of the skin – subcutaneous fat on the various stadiums of pannikulis d. Dindo (2004) carried out the compilation of boyicha algorithm to Level III. The procedure for cutting a hernia at the I level of pannikulis was carried out standing under the fat fold. At the II – III level of pannikulis. In our II group of patients, of course, abdominoplasty was performed by pulling down the anterior abdominal wall along with resection weight loss of subcutaneous fat in abdominal syndrome, which "hangs" the practice of cutting the hernia.

When analyzing the results of the operation, seroma was detected in 8 cases in I group of patients, hematoma in 1 case. In 2 cases of seroma in patients of II Group, hematoma was not observed.

Conclusion weight loss was found to be a positive result of the implementation of the reduction of the subcutaneous fat layer in the case of the abdomen (II, III levels of the paniculus) "hanging" along with the cutting of the ventral hernia, alloprotizing in patients, when as a result of the disease of obesity and the occurrence of the ventral hernia, along with the.

Conclusion: what complication did xech cause in patients with a "hanging belly" sight, in which the skin and subcutaneous fat cuticle had a ventral hernia and obesity.

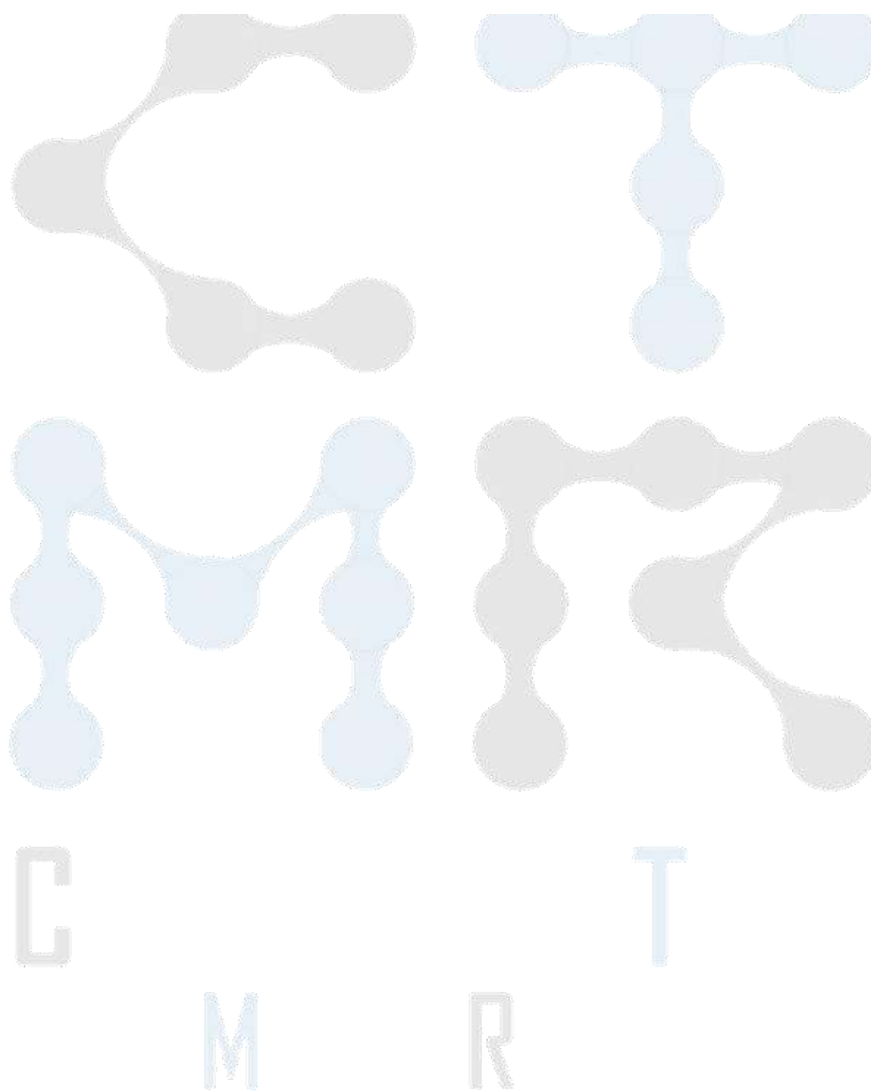
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ФИЗИКАНИ РАҚАМЛИ ТЕХНОЛОГИЯЛАРДАН ФОЙДАЛАНИШ ҲАҚИДА ЎҚУВЧИЛАРНИНГ ҲАЁТИЙ КЎНИКМАЛАРИНИ ШАКЛЛАНТИРИШ МЕТОДИКАСИ

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Мазкур мақолада умумўрта таълим тизимида физика фани бўйича таълим узвийлигини таъминлаган ҳолда рақамли технологияларни (РТ) қўллаш, уларнинг имкониятларидан ўқув жараёнида фойдаланиш ва янада ривожлантиришнинг устувор йўналишлари аниқланган. Назарий билимларини амалиёт билан боғлаш орқали ўқувчиларни ҳаётий кўникмаларини шакллантириш масалалари кўриб чиқилган.

Калит сўзлар: физика, назария, амалиёт, кўникма, умумўрта таълим, ўқув жараёни, рақамли технология, таҳлил, имконият, жорий этиш.

В данной статье определены приоритетные направления применения цифровых технологий (ЦТ), использования их возможностей в образовательном процессе и дальнейшего развития, обеспечивающие непрерывность обучения физике во всей образовательной системе. Были рассмотрены вопросы формирования жизненно важных навыков студентов путем увязки их теоретических знаний с практикой.

Ключевые слова: физика, теория, практика, навыки, общее образование, образовательный процесс, цифровые технологии, анализ, возможность, внедрение.

This article identifies priority areas for the use of digital technologies (CT), the use of their capabilities in the educational process and further development, ensuring the continuity of teaching physics throughout the educational system. The issues of formation of vital skills of students by linking their theoretical knowledge with practice were considered.

Key words: physics, theory, practice, skills, general education, educational process, digital technologies, analysis, opportunity, implementation.

Ўзбекистон Республикаси Президентининг 2021йил 19-мартдаги “Физика соҳасидаги таълим сифатини ошириш ва илмий тадқиқотларни ривожлантириш чора-тадбирлари” тўғрисидаги ПҚ-5032-сонли қарори [1].

Республикада таълим тизимини техника – технология ўзгаришини эътиборга олган ҳолда янги босқичга ўзгартириш, рақамли технологиялар (РТ)ни ишлаб чиқиш ва ўқув жараёнида қўллаш, фанларнинг методик таъминотини такомиллаштириш, физика фанини ўқитишда назария билан амалиётни боғлаш орқали ўқувчиларда ҳаётий кўникмаларини шакллантириш, ўқувчиларнинг фанга оид компетенцияларини ривожлантириш, дарсларда анимацион, аудио-визуал воситаларни ҳамда ахборот-коммуникация технологияларини қўллаш бўйича тадқиқот ишлари олиб борилмоқда [2].

Физика экспериментал фан. Физикадаги лаборатория ва намоиш тажрибалар ўтказиш кўникмалари эгалланади, олинган экспериментал маълумотлардан хулоса чиқаришни ва назарий материални амалиётга жорий қилиб тўлиқроқ ўзлаштиришни ўрганиш мумкин бўлади. Лаборатория ва намоиш тажриба давомида ўқувчилар томонидан мустақил равишда ўтказилган тажриба давомида улар физик ҳодисаларнинг қонуниятларини ўрганадилар, уларни тадқиқ қилиш усуллари билан танишадилар, физик қурилмалар билан ишлашни

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ўрганадилар. Иложи бўлса, ўқувчилар билан лаборатория ва амалий ишларни бажаришга ҳаракат қилинади, ўқувчилар қурилмалар билан ишлаш қобилиятига эга бўладилар. Аммо лаборатория ва намоёиш тажрибаларни бажариш учун керак бўлган асбоб-ускуналар ва намуналар етишмаслиги туфайли барча режалаштирилган лаборатория ишларини бажариш имкони бўлмайди. Бу вазиятдан чиқишликнинг ягона йўли РТдан фойдаланишдир. Албатта, рақамли технологиялардан фойдаланиб лаборатория ва намоёиш тажрибаларини бажариш, лаборатория ишларни кўз билан қўл билан бажаришни ўрнини боса олмайди, лекин у ўқув жараёнида катта ёрдам беради.

Рақамли технологияларни таълим жараёнига киритилиши қуйидаги имкониятларини беради [3]:

таълим-тарбия жараёнига ижодий ёндошилади ва тизимлилигини кенгайтиради;

таълимда ўқувчиларга бериладиган билим, малака ва кўникмаларига эга бўлиш имкониятлари сезиларли даражада ошади;

атроф-муҳитни ўрганишда катта ҳажмли жараёнлар билан ишлаш *tasavvurlarimizni shakllantiradi*;

tabiat hodisalarini tabiat qonunlari bilan boshqarilishini tushuntirishni ta'minlaydi;

tabiat qonunlari asosida esa simmetriya tamoyillari yotadi degan mantiqiy ketma-ketlik doimo o'rinligi asoslanadi;

ta'lim tizimining raqamli texnologiya makoniga moslashishi va axborot madaniyatini shakllantirishga zamin yaratadi;

таълим жараёнини диагностика қилиш *aniqligini oshiradi* ва янада самарали бўлишини таъминлайди;

Шуни таъкидлаш лозимки, умумўрта таълим жараёнини рақамлаштиришнинг афзал томонлари билан бир қанча камчиликдан ҳам мавжуддир. Улардан энг муҳими қуйидагилар ҳисобланади [4-5]:

таълим тизимини *qisqa vaqt oraligida o'zgarib turishi* (узвийлик ва узлуксизликни таъминланмаганлиги);

ДТСт ва ўқув режаларни қисқа вақт оралиғида *tez-tez* ўзгариши;

ўқувчиларнинг билим кўрсаткич (ёзиш, ҳисоб, ўқиш, мантиқ) сифатларини пасайганлиги;

ўқувчиларни мутахассислик фанларга қизиқишини камайиши амалий кўникмаларга эга бўлмаганлиги;

ўқувчиларни дарс жараёнида жонли мулоқот шаклида намоён қилиш ҳислатларининг йўқ бўлиб бориши.

Қуйида РТдан лаборатория ва кўргазма тажрибаларидан фойдаланиб лаборатория ишни бажариш мисол тариқасида келтирилган:

физика фанидан лаборатория ишларини, кўргазма ва тажрибаларни Adobe Flash ва 3 DS MAX дастурлари орқали бажариш;

янги мавзу материалларини Power Pointда тақдимот кўринишида тайёрлаб мультимедиа проектори ёрдамида экранга тушириладиган интерактив иллюстрация;

тингловчиларга дарс давомида MS Excel дастури ёрдамида физик боғланишлар график диаграммаларини чизиш;

тингловчилар томонидан дарсда компьютер технологиялари ёрдамида (MS Power Point, MS Excel ва бошқа) ўқув материалларини мустақил ўрганиш жараёнида.

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Умумтаълим мактабларида физика фанининг молекуляр физика бўлимига доир лаборатория ва намойиш бажаришда куйидаги тажриба қурилмалари берилган. Бу қурилма ёрдамида бир вақтнинг ўзида уч жараён (изотермик, изобарик ва изохорик) лаборатория ишларини ва шунга ўхшаш тажрибаларини амалиётда бажариш имкониятига эга. Изотермик жараёнларни амалиётда бажариш учун керакли физик асбоб-ускуналар, ишдан мақсад ва ишнинг бажарилиш тартиби, худди, шунингдек, тажрибадан олинган натижалардан фойдаланиб иккинчи усул, мультимедиали ахборот технологиялар (Adobe Flash, 3DS MAX, Borland Delphi7 ёки PHOTOSHOP) дастурлари асосида ҳам графикларни чизиб кўрсатиш мумкин [4].

Izojarayonlar.

Izotermik жараёни ($T=\text{const}$ бўлганда $pV=\text{const}$) тажрибада ўрганиб РТ орқали дастурларини тузиб керакли маълумотлар олиниб графиклар чизиш имкониятига эга бўламиз.

Kerakli asbob va uskunalar:

“Fizika” kabinetini o‘g‘uv jihozlar majmuasi bo‘limidan taglik, plastic stakan, metal fiksator, hajmi 1,5 mlli shpris, qisgich, manometr, troynik, termometr.

Ishdan maqsad: ma‘lum massali gazning temperaturasi o‘zgarmagan holda bosim bilan hajm ko‘paytmasi o‘zgarishini tajribada tekshirish.

Ishning bajarilish tartibi:

1. Taglikni stol ustiga qo‘ying.
2. Plastik idishni (1) taqlik ustiga o‘rnatish.
3. Hajmi 150mlli shprisni (2) plastic idish ichiga o‘rnatish.
4. Monometrni (4) troynik (5) orqali plastic idishga ulang.
5. Shprisning old tomonida ko‘rsatilgan yozuvlardan foydalanib uning hajmini kamaytirish.
6. Idish ichidagi qazning bosimi o‘zgarishini monometr yordamida kuzatish.
7. Tajribani bir necha marta takrorlang.



Endi yuqorida berilgan labarotoriya ishini Borland Delphi7 dasturlash tilidan foydalanib bajaramiz. Bu quyidagi tartibda amalga оширилади [5].

Dastur tasnifi:

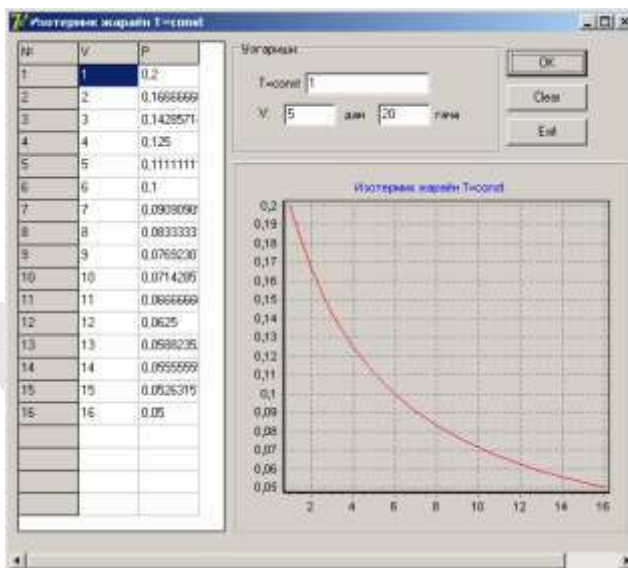
Dastur Delfi7 dasturlash muhitida yaratildi. Jadvalda hajm va bosimlarning qiymatli hisoblangan. Rasmda $T=\text{const}$, ya‘ni 1 ga teng, Hajm 5 мм³ dan 20 мм³ gacha o‘zgargan va bosim o‘zgarishi keltirilgan. V,P lar yordamida grafik chizilgan.

Dastur kodi quyidagicha:

```
procedure TForm1.Button1Click(Sender: TObject);
var i,j:integer; {ўзгарувчиларни эълон қилиш}
begin {дастур бошланиши}
Series1.Clear; {графикни тозалаш}
j:=0; {қадамни ҳосил қилиш}
StringGrid1.RowCount:=strtoint(Edit2.Text)+1; {жадвалнинг максимал қатори сони}
For i:=StrToInt(Edit1.Text) to StrToInt(Edit2.Text) do {цикл бошланиши}
Begin
```



```
inc(j);{кадамни биттага ошириш};
StringGrid1.Cells[0,j]:= inttostr(j);
{жадвалнинг 1-устини қиймати};
StringGrid1.Cells[1,j]:=
inttostr(j);{ жадвалнинг 2-устини
қиймати яъни V};
StringGrid1.Cells[2,j]:=
floattostr(strtoint(edit3.Text)/i); {
жадвалнинг 3-устини қиймати, яъни
series1.AddXY(j,(strtoint(edit3.Text)/i)
,",clTeeColor); {қийматлар асосида
графикни хосил қилиш}; end; end
{цикл тугаши}.
```



P};

Таълимга замонавий рақамли технологияларни жорий этиш ҳамда ундан фойдаланиш самарадорлигини оширишда ўқитувчиларнинг рақамли саводхонлигини ошириш ҳамда олинган натижалар таҳлили асосида рақамли кўникмаларини ривожлантириш муҳим аҳамиятга эга. Бу эса, ўз навбатида, лаборатория ва намоиш тажрибаларини бажаришда рақамли технологиялардан самарали фойдаланиши учун ўзига хос бўлган омиллардан бири ҳисобланади.

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NEIL FLEMING ON LEARNING STYLES

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Abstract. Neil Fleming and Colin Mills proposed the VARK model, which identifies four types of learning preferences: Visual, Aural, Read/Write, and Kinesthetic. This model has become popular in the educational environment and is used to develop teaching materials that take into account different types of people.

Key words: learning styles, Neil Fleming, VARK model, information perception, multimodal method.

НИЛ ФЛЕМИНГ О СТИЛЯХ ОБУЧЕНИЯ

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Нил Флеминг и Колин Миллс предложили модель VARK, которая выделяет четыре типа предпочтений в обучении: визуальный, аудиальный, чтение/письмо и кинестетический. Эта модель стала популярной в образовательной среде и используется для разработки учебных материалов, учитывающих различные типы людей.

Ключевые слова: стили обучения, Нил Флеминг, модель VARK, восприятие информации, мультимодальный способ.

NIL FLEMING O'QITISH USLUBLARI HAQIDA

Zafar Jo'raboyev, o'qituvchi

28-son maktab, Boyovut tumani, Sirdaryo viloyati, O'zbekiston

Nil Fleming va Kolin Mills VARK modelini taklif qildilar, u o'rganishning to'rtta turini aniqlaydi: vizual, eshitish, o'qish/yo'zish va kinestetik. Ushbu model ta'lim muhitida mashhur bo'lib, har xil turdagi odamlarni hisobga olgan holda o'quv materiallarini ishlab chiqishda qo'llaniladi.

Kalit so'zlar: o'qitish uslublari, Nil Fleming, VARK modeli, axborotni idrok qilish, multimodal usul.

Introduction. Teachers have always been trying to help their students to study better. They use different methods and ways to make the learning process easier and more beneficial for the students. I have heard about VARK classification only in 2023. I find the idea of defining what kind of learner each student is very important and useful. I am sure it will help to improve the process of teaching and learning English.

Learning styles is a term generally used to describe an individual's natural or habitual pattern of acquiring and processing information in [learning](#) situations. There is no commonly accepted definition of learning styles; however, a core concept is that individuals differ in how they learn. The idea of individualized "learning styles" originated in the 1970s, and acquired "enormous popularity".

One of the most common and widely-used categorizations of the various types of learning styles is Fleming's VARK model (sometimes VAK) which expanded upon earlier [Neuro-linguistic programming \(VARK\)](#) models:

1. [visual learners](#);

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2. [auditory learners](#);
3. [kinesthetic learners](#) or [tactile learners](#)

Literature review. Neil Fleming and his colleagues in a number of works revealed the essence of the VARK model and learning styles [1; 2]. L. Volodina in her article provides methods for determining the type of perception and gives them a brief description [3]. E. Shumova and Z. Mirzaeva paid attention to three types of language learning: visual, auditory and kinesthetic [6; 7]. The question of the effectiveness of using the VARK model was revealed by a number of foreign scientists who conducted research, surveys, tests among students and teachers [5].

Discussion and results. Fleming claimed that visual learners have a preference for seeing (think in pictures; visual aids such as overhead slides, diagrams, handouts, etc.). Auditory learners best learn through listening (lectures, discussions, tapes, etc.). Tactile/kinesthetic learners prefer to learn via experience - moving, touching, and doing (active exploration of the world; science projects; experiments, etc.). Its use in pedagogy allows teachers to prepare classes that address each of these areas. Students can also use the model to identify their preferred learning style and maximize their educational experience by focusing on what benefits them the most [1].

Neil Fleming has been learning about teaching and learning for forty years. His full time teaching was divided between secondary, teacher education and university (Lincoln University, New Zealand) with ample recognition of his teaching and research prowess in those three sectors. For the past ten years he has been facilitating active workshops on a variety of topics in North America, Asia and Europe travelling there in spring and fall. He has been the main author of the VARK books available online. Recently he has been in demand for work with customer service applications of the VARK principles in business environments. He has also been working with elite sports coaches on a learning-preferences approach to coaching. Apart from managing the interesting contacts with the VARK website he has frequent grandchildren duties, volunteers a day each week at a low decile primary school, tends his collection of 80 heritage roses and makes solid wood furniture as a hobby.

VARK tells you something about yourself that you may or may not know. It can be used to understand your boss, your colleagues, your parents, your workmates, your partner, your customers, your teacher, your relatives, your clients and yourself. It is a short, simple inventory that has been well-received because its dimensions are intuitively understood and its applications are practical. It has helped people understand each other and assists them to learn more effectively in many situations [1] .

Although copyrighted and trademarked for business use, VARK is free for use in colleges, high schools, and universities for student or faculty development as long as attribution is given.

Although we have known for centuries about the different modes, this inventory, initially developed in 1987 by Neil Fleming, Christchurch, New Zealand, was the first to systematically present a series of questions with helpsheets for students, teachers, employees, customers, suppliers and others to use in their own way. Many inventories label people who then want to ask "**So what?**" VARK goes on to provide strategies that help people understand and move on from any label. Once you know about VARK, its power to explain things will be a revelation.

The principal creator of the VARK learning styles model, Neil Fleming, wrote: "I was surprised that some excellent teachers could not reach certain students, while other, less experienced teachers were successful". Fleming based his model on the Barb model, dividing the visual type into text (Reading/writing) and symbolic (Visual). The teacher also relied on developments, his own observations and conversations with students and teachers. According to Fleming's theory, students

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can have more than one dominant learning style. In one of his articles, he cited the following statistics from online testing: 41% of those who took the test have one dominant learning style; 27% have two styles; 9% have three styles and as many as 21% of those tested have a focus in all four styles. Fleming and colleagues call the tendency to more than one style multimodality [4].

Based on the research of Neil Fleming, a theory of four-channel perception of information emerged. According to this theory, a person perceives the world with the help of several senses, but only one of them dominates. For better assimilation of the material, it is necessary to combine different types of tasks, different methods of presenting the material and different methods of control (for example, tests or classic tests, or teach not only verbally, but also visually).

Conclusion. Currently, one of the potential alternatives to classical models of learning styles may be a multimodal method that combines all learning styles VARK. This method involves relying on different types of perception: when explaining, you can see a picture, listen to the information and read it, just as we do when watching videos on social networks. Neil Fleming outlines the basic principles of his model:

Preferred styles influence people's behavior, including learning.

Learning styles are not fixed, but they are stable in the medium term.

Both students and teachers can reliably identify and provide examples of how their preferred style is used in learning and teaching.

Preferences can be compared to learning strategies. There are learning strategies that are better suited to some styles than others. Using your weakest styles to learn is useless; so is using other students' preferred styles.

Information that is accessed using strategies that match the learner's preferred learning styles is more likely to be understood and motivated.

Using study strategies that match your learning style is also likely to give you the impetus to study harder, learn more deeply, and engage in active and effective metacognition.

Knowing and acting on your learning style is an important prerequisite for improving your learning.

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MARKAZIY OSIYO XALQLARIDA TO'Y BILAN BOG'LIK URF-ODATLAR

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Annotatsiya. Maqolada Markaziy Osiyo va Qozog'iston xalqlarining to'y bilan bog'liq bo'lgan urf-odatlari va marosimlari tahlil qilinmoqda. Kopchilik urf-odatlar va an'analar qadimgi diniy qarashlar bilan bog'liqligi ta'kidlanmoqda.

Kalit so'zlar: etnos, to'y, nikoh, urf-odatlar, marosim, to'y bosqichlari, diniy e'tiqod.

WEDDING RITES AMONG THE PEOPLES OF CENTRAL ASIA

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Abstract. The article analyzes the rites and rituals associated with the wedding of the peoples of Central Asia and Kazakhstan. It is emphasized that many rites and traditions are associated with ancient religious beliefs.

Key words: ethnicity, wedding, marriage, rites, ritual, stages of the wedding, religious belief.

ОБРЯДЫ, СВЯЗАННЫЕ СО СВАДЬБОЙ У НАРОДОВ ЦЕНТРАЛЬНОЙ АЗИИ

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Аннотация. В статье анализируются обряды и ритуалы, связанные со свадьбой у народов Центральной Азии и Казахстан. Подчеркивается, что многие обряды и традиции связаны с древними религиозными воззрениями.

Ключевые слова: этнос, свадьба, брак, обряды, ритуал, этапы свадьбы, религиозное верование.

Kirish. Nikoh to'ylari o'zining turli marosimlar, an'analarga boyligi, etnografik manbalarining rang-barangligi bilan alohida ajralib turadi. Markaziy Osiyo va Qozog'iston xalqlari nikoh to'ylari oilaviy turmush va ma'naviy madaniyatning tarkibiy qismi bo'lib, uning ishtirokchilari tomonidan azaldan murakkab urf-odatlar va udumlar bajarilgan. "Nikoh" so'zining o'zbek tilida ikki xil lug'aviy ma'nosi bor. Nikoh (arab. – uylanish, er-xotinning qovushishi) – er-xotinlikni shariat yo'li bilan rasmiylashtirish marosimi va shu marosimda domulla (Imom) tomonidan o'qiladigan shartnoma [16, b.38]. Ya'ni, erkak va ayol turmush qurishining islomga xos diniy shakli bo'lib, shariatda oilaviy munosabatlarni tartibga soladi va nikohga, birinchi navbatda, ikki tomonning majburiyati va huquqlariga asoslangan shartnoma sifatida qaraydi [6, 139-140 b]. Hozirgi vaqtda nikoh ikki xil – dunyoviy va diniy mazmunga ega.

To'ylar tashkil etilishi, mazmun-mohiyati, o'z maqsadi va vazifalariga ko'ra bir qancha turlarga bo'linadi. Ularning har birini ilmiy o'rganish va tahlil etish alohida tadqiqotni talab etadi. Birgina o'zbek xalqini oladigan bo'lsak, bizda nikoh to'yigacha bo'lgan marosim va rasm-rusumlar qadimdan ko'p bo'lgan. Bularga beshik kerti, etak yirtish, quloq tishlatish, og'iz bog'lash, qiz ko'rar, uy ko'rar,

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unashar, non sindirish, to'y yuborish, idish qaytdi, bo'g'cha ochar, sabzi to'g'rar kabi rasm-rusumlar kiradi.

Bugungi kunda mamlakatimizda olib borilayotgan oqilona siyosat, doimiy iqtisodiy barqarorlik va rivoj, kuchli ijtimoiy himoya, yosh avlodning ta'lim-tarbiyasiga doimiy e'tibor, tarixiy va madaniy merosimizni qadrlash, diniy qadriyatlarimizni hurmat qilish va asrash, ma'naviy tarbiyani mustahkamlash, millatimiz haqiqiy urf-odat va marosimlarini saqlab qolish tufayli O'zbekiston jahon hamjamiyatida o'ziga xos o'rniga va e'tirofiga sazovor bo'lib kelmoqda. M.Asqarov [2] to'g'ri ta'kidlaganidek, xalqimizning ko'p yillar davomida shakllanib kelgan muqaddas an'ana, marosim, urf-odat va ibratli udumlarini saqlab qolish va asrash bugungi kunning eng muhim vazifalaridan biridir. Ammo, to'y/motam/ziyosat marosimlarini kim uchundir "ko'z-ko'z" yoki "kim o'zarga" qilish emas, balki, barcha tadbirlarimizda keng jamoatchilik bilan uyushgan holda, oila, mahalla, jamiyat fikr va takliflarini hisobga olib, ortiqcha isrofgarchiliksiz o'tkazish kerakligini yoshlar ongiga singdirish muhimdir. Bu muammoga Prezidentimiz Sh.Mirziyoyev ham katta e'tibor qaratish zarurligini bir necha bor ta'kidlaganlar.

Akademik A.Asqarov "o'zbekchilik" tushunchasi mohiyatini tushuntirib, o'zbek qiyinchilik bilan bo'lsa ham topgan puliga to'y qilib, elga bepul dasturxon soladi, bu bilan o'ziga ruhan quvvat bag'ishlaydi, rohatlanadi, bu – o'zbekchilik, – deb yozadi [3]. XX asr boshlarida A. Qodiriy tomonidan yozilgan "Baxtsiz kuyov" dramasi bosh qahramon – Solihning "katta to'y" qilishi, to'yni o'tkazish uchun katta miqdorda qarz olgani, qarzni o'z vaqtida to'lay olmay yosh kelin-kuyovning fojeali halok bo'lgani – biz uchun ibrat bo'lishi kerakligini yodda saqlashimiz darkor. Tarix – o'tmishda yo'l qo'yilgan ba'zi xato va kamchiliklar ko'zgusi, ulardan to'g'ri xulosa chiqarish hamda ularni takrorlanishidan ehtiyotlanish, oilamiz, jamiyatimiz, millatimiz, yurtimiz kelajagini yanada porloq bo'lishi uchun muhimdir [3].

Adabiyotlar tahlili. To'y davomida amalga oshiriladigan urf-odatlar va marosimlar tartibi, qatnashchilari, to'y davomida yoziladigan ziyofat turlari va tartibi tasnifi, to'y davomida kiyiladigan marosimiy kiyim-kechaklar va sovg'a-salomlar ta'rifi, to'y yordamida amalga oshiriladigan ijtimoiy hamkorlik va munosabatlar, hududlar bo'yicha umumiy va farqli jihatlar tahlili, to'y-ziyofat berishning iqtisodiy tomonlari va uning oila byudjetiga ta'siri va boshqa ko'plab masalalar turli darajada sovet davridayoq N.P.Lobachyova, N.A.Kislyakov, I.Jabborov va boshqalar tadqiqotlarida yoritilgan [9; 8; 4].

Hozirgi tadqiqotlarga kelsak, M.Asqarov o'zbeklarda to'ylar, ularni o'tkazish uchun qilinadigan katta sarf-harajatlar haqida fikr yuritgan [2]. Sh.Saydamov va S.Qobilovlar maqolasida Jizzax vohasi aholisining nikoh to'yi bilan bog'liq urf-odatlar, an'analari va marosimlarida qadimgi diniy e'tiqodlarning saqlab qolingani va islomiy marosimlarning modernizatsiyalashuvi xususida fikr yuritilgan [13]. Z.Kasimova maqolasida turkiy tilli xalqlarning folklorida o'xshashliklar haqida ma'lumot keltirilgan va bu odatlar maishiy turmush va diniy e'tiqodlar bilan bog'lik ekanligi ko'rsatilgan [7]. M.I.Dusnazarova XX asrdagi nikoh to'yi marosimlarining o'ziga xos jihatlarini tahlil qilgan [5]. M.Xodjanov Qoraqalpog'istonda yashayotgan o'zbeklarning sovcilik marosimlarini tahlil qilgan [15]. N.Matkarimova Xorazm vohasi o'zbeklari nikoh to'yi marosimlarining vohaga xos mahalliy udum va an'analari (xo'n ochish, novvot sindirish, qulluq aytish, olma otish, ko'shayana bichar, taxa tashar, belbog' yechar, kuyov suzildi, rapida go'ydi, kapkir go'ydi) kabi etnolokal xususiyatlarini ochib bergan [11].

Muhokama va natijalar. Odamlarning hayotida muhim bosqichlardan biri nikoh to'yi hisoblanadi. Ko'plab xalqlarda to'y bir qator an'anaviy urf-odatlar va marosimlarga rioya qilgan

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holda o'tkaziladi. Bu urf-odatlar ma'naviy va diniy qarashlar bilan bog'langan bo'lib, ramziy ma'no kasb etadi. N.P.Lobachyova ta'kidlaganidek: "an'anaviy nikoh to'yi marosimi turli tarixiy davrlarga mos bo'lgan ijtimoiy va diniy mezonlarning murakkab uyg'unlashuvi bo'lib, xalqning ijtimoiy rivojlanishining zamonaviy darajasiga moslashgan" [10, b.298].

To'ylarni o'tkazishda aniq stsenariy, an'anaviy qoidalar va marosimlarga rioya qilish – o'ziga xos institut bo'lib, yuksak ijtimoiy maqomga va axloqiy-tarbiyaviy maqsadlarga ega. To'ylar xalqning milliy ruhini, ma'naviyatini, milliy madaniyati va dunyoqarashini aks ettiradi. To'ylarni o'tkazish jarayoni ko'plab urf-odatlar va marosimlarni qamrab olib, arxaik elementlarni ham o'z ichiga oladi, ya'ni ularda butparastlik bilan bog'lik e'tiqodlar, otashparastlik ham tasvirlanib, keyinchalik islom, xristianlik va boshqa dinlarning elementlari kiritilgani namoyon bo'ladi. Masalan, so'vchilik bosqichida "non sindirish" marosimi qadimgi afsungarlik ko'rinishlari bilan bog'liq bo'lgan.

Vaqt o'tishi bilan to'y jarayonlari evolyutsiyaga uchraydi, ijtimoiy, iqtisodiy, siyosiy, diniy, madaniy shart-sharoitlar tufayli o'zgarishlarga duchor bo'ladi. Yangicha ijtimoiy shart-sharoitlar vujudga kelsa, ayrim marosimlar o'z ahamiyatini yo'qotishi, o'z funktsiyalarini o'zgartirishi, ayrimlari esa umuman yo'q bo'lib ketishi va o'z o'rnini boshqa marosimlarga, ularning demokratik turlariga bo'shatishi mumkin. Markaziy Osiyo (shu jumladan Qozog'istonda ham) respublikalarida sobiq sovet davrida tarixiy-iqtisodiy va ijtimoiy o'zgarishlar natijasida xalqning dunyoqarashi qisman o'zgarib, an'analarning aylim elementlari o'z funktsiyalarini yo'qotgan edi. Shunga qaramay turkiy tilli xalqlar umumiy genetik ildizlarga va belgilarga ega bo'lgani holda, qadimiy urf-odatlar va marosimlarni saqlab qolgan. Turk dunyosi ko'plab qardosh, va shu bilan birga bir-biridan farq qiladigan etnoslarni birlashtiradi.

Qozog'istonlik olim Murod Aji ta'kidlaganidek, ikki ming yil avval bir tilda so'zlashadigan qabilalarda nafaqat tilga, balki madaniyatga, falsafiy qarashlarga, e'tiqodlarga, tashqi ko'rinishiga, xo'jalik faoliyatlariga oid belgilar namoyon bo'la boshlagan. Ulkan hududlarda istiqomat qilgan turkiy qabilalar urushlar natijasida boshqa etnik madaniyatlar bilan aralashib ketishdi. Boshqa xalqlar bilan geografik jihatdan qo'shnichiligi esa ularning madaniyati va an'alariga ta'sir ko'rsatib, o'zgacha ma'no va mohiyat kasb eta boshladi [12].

Bugungi kunda Markaziy Osiyo va Qozog'iston xalqlarining to'ylar bilan bog'lik urf-odatlari va marosimlari deyarli o'xshash, ammo ayrim urf-odatlarning izchilligida farqlar uchraydi. Ko'pchilik tadqiqotchilar turkiy tilli xalqlarda nikoh to'ylari odatda uch davrdan iborat ekanligini, har bir davrda ko'plab marosim harakatlari bajarilishini ta'kidlaydilar. Shunday bo'lsa-da, mintaqaning turli joylaridagi odatlar ayrim lokal xususiyatlarga ega. To'yni har bir bosqichi ziyofat, raqslar, qo'shiqlar bilan birga o'tkaziladi. Nikoh to'yi 3ta bosqichdan iborat bo'lib, har birida o'ziga xos marosimlar bajariladi:

- 1) so'vchilik – maslahat, kuyov va kelinning tanishuvi va uchrashuvlari, kuyov tomonidan qalin, kelin tomonidan sep tayyorlanishi, fотиha, kuyov to'yi va sarpo jo'natish;
- 2) nikoh to'yi – kelinning uyida qizlar bazmi (qiz maylis), kuyovni jo'ralari bilan kelishi, nikohning o'qilishi, kelinni olib ketish, kuyov uyida katta to'y – bazm;
- 3) to'ydan keyingi marosimlar – yuz ochish, kelin salom, ota ko'rdi, chaqiriq.

Demak, har bir bosqichning o'ziga xos urf-odatlari va marosimlari bor (masalan, kelinni yig'lab ota-onasi, qarindoshlari bilan xayrlashuvi, kuyov uyiga kirishdan oldin gulxan atrofida aylanish, uchoq boshidagi marosimlar, chimildiqdagi marosimlar va hokazo). M.I.Dusnazarova Surxon vohasida nikohning "bel quda", "etak yirtish" kabi shakllari mavjud bo'lganini yozadi. «Bel quda»

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udumida qalin oshna og'aynilar xotinlarining xomiladorlik davrida dunyoga keladigan bo'lajak o'g'il va qizlarini bir-biriga atab qo'yganlar. Dunyoga kelgan bu farzandlar o'sib-ulg'aygach bir-birlari bilan turmush qurishgan. «Etak yirtish» marosimida esa tug'ilgan o'g'il va qizni ota-onalarining kelishuvi, roziligi asosida chaqaloqlarni chaqaloqlik davridayoq unashtirib qo'yilgan. O'g'il va qizning chaqaloqlik davrida bunday unashtirishlari Markaziy Osiyoning boshqa xalqlarida ham mavjud bo'lib, «quloq tishlash», «beshikdagi unashtirish», «beshik kerti» deb nomlangan [5, b.41]. Shuningdek, qadimdan mavjud bo'lgan nikohning levirat, sororat shakllari bilan «qarshi quda», «kuch kuyov», «ich kuyov», «voyg'voy nikoh» kabi turlari ham bo'lgan. Masalan, «qarshi quda» udumi bo'yicha ikki xonadon o'zaro bir-birlariga qiz olib, qiz berishgan, «ich kuyov» udumida esa o'g'il farzandi yo'q xonadon qiz berayotganda, kuyov qaynotasining uyida ich kuyov bo'lib yashaydi. Beshik kerti, beshik ketdi, quloq tishlash – bolalarni beshikdaligidayoq unashtirib qo'yish odati. O'tmishda bir-biriga yaqin oilalarning birida o'g'il, ikkinchisida qiz tug'lsa, ular voyaga yetganlarida birga turmush qurishlari belgilab qo'yilardi. Otaonalar kelishib, qizning boshini bog'lab qo'yish uchun beshik dastasiga pichoq bilan kertib – belgi qilib qo'yganlar. Beshik kerti urug'qabilachilik davrining qoldig'i. Qo'shni, urug', qabilalar o'zaro do'stlikni mustahkamlashda Beshik kerti dan foydalanganlar. Beshik kerti qilingan farzandlar voyaga yetganlarida turmush qurishlari shart bo'lgan [14, b.151].

R.S.Abdullayev, I.Altinsarin, N.P.Lobachyova va boshqalar nikoh to'yining ana shunday – sovchilik, nikoh to'yi, sharaflash – bosqichlarini ajratishadi. Z.Kasimova esa 5ta davrdan iborat umumturkiy tizimni taklif qiladi [7, b.145]:

- 1) kelin-kuyovni tanishtirish;
- 2) sovchilik;
- 3) to'ydan oldingi marosimlar;
- 4) bevosita nikoh to'yi marosimlari;
- 5) to'ydan keyingi marosimlar.

Xulosa. Agar Markaziy Osiyo va Qozog'iston xalqlarining nikoh to'ylaridagi urf-odat va marosimlarni qiyosiy-solishtirish jihatidan tahlil qilsak, shuni qayd etish mumkinki, o'zbeklar, qozoqlar, qirg'izlar, tojiklar, qoraqalpoqlar, turkmanlar, uyg'urlarda nikoh to'yi marosimlari bir xil marosimlardan iborat bo'lib, faqat ayrim o'ziga xos elementlar bilan ajralib turadi. Nikoh to'yi marosimlarida to'y boshlanishidan to'y tugagunicha bo'lgan davrdagi marosimlarni uch guruxga: nikoh to'yigacha o'tkaziladigan urf-odatlar, nikoh to'yi davrida o'tkaziladigan udumlar va nikoh to'yidan keyin o'tkazilgan rasm-rusumlarga bo'lish mumkin.

Qayd etish mumkinki, xalq orasida urf bo'lgan marosimlar besabab emas, ular ma'lum bir maqsad va niyatni ko'zlagan holda o'tkaziladi hamda ushbu jarayonda barcha xatti-harakatlar ko'zlangan maqsadga tezroq yetishish uchun qaratilgan bo'ladi. Udumlar, urf-odatlar, marosimlar insonning dunyoga kelishidan boshlab to vafotiga qadar davom etadi, ya'ni inson hayotining asosiy mazmunini qamrab oladi. Shu sababli inson qayerda va qanday muhitda yashashidan qat'iy nazar, avloddan-avlodga ma'naviy va amaliy meros sifatida o'tib kelayotgan oilaviy, milliy qadriyat darajasida qadrlanib, avaylab-asrab kelinayotgan marosimlarning asosiy ijrochisi, davomchisi va kelajakka uzatuvchisidir [14, b.151].

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CHEMICAL MEASURES FOR CONTROLLING PESTS IN INTENSIVE PISTACHIO ORCHARDS

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ABSTRACT.

This article provides an overview of the distribution and harmful effects of sucking pests in intensive pistachio orchards. Particular attention is given to their bioecological characteristics and the damage they cause to plant growth and yield. Furthermore, the article discusses control strategies with a focus on the application of chemical methods. The biological effectiveness of insectoacaricides against the dominant pest species has been evaluated, providing a scientific basis for improving integrated pest management (IPM) programs in intensive pistachio cultivation.

INTRODUCTION.

In our Republic, a set of comprehensive measures is being implemented to intensively develop fruit growing, increase soil fertility, improve the productivity of fruit crops, enhance product quality, expand the production of processed goods, and fully meet the population's demand for fruits. Among nut-bearing trees, pistachio is considered one of the most important species. Today, great attention and interest are being paid to the development of pistachio cultivation in our country. In particular, large-scale reforms are being carried out in the agricultural sector to improve household income by developing pistachio orchards on rainfed and foothill lands that are currently underutilized.

Pistachio is highly adapted to extreme environmental conditions, withstanding temperatures from +46 °C in summer to -40 °C in winter, making it second only to almond in terms of resilience. The tree is long-lived, capable of bearing fruit for up to 300 years. Pistachio nuts are highly valued as a dietary product, containing 49–60% oil, 15–20% protein, 3–8% sugars, and a variety of micronutrients. The nuts are in high demand not only in the domestic market but also internationally. Currently, pistachio orchards in Uzbekistan cover about 30,000 hectares [8].

The pistachio tree (*Pistacia* L.), belonging to the family Anacardiaceae, is a small tree or shrub-like perennial species. Central Asia, including Uzbekistan, is considered the center of origin of pistachio. This is confirmed by the wide genetic diversity of wild pistachio forms found in this region, many of which are tolerant to cold and extreme drought, as well as resistant to diseases and insect pests. According to Academician N. I. Vavilov (1935), all cultivated pistachio varieties distributed worldwide originated from the natural pistachio forests of Central Asia [1].

The true pistachio (*Pistacia vera* L., Anacardiaceae) forms unique stands of trees and shrubs naturally adapted to arid environments. Pistachio is remarkable not only for its resistance to the hot and dry summers of foothill regions but also for its tolerance to cold. In natural pistachio groves located at altitudes of 1,500–2,000 m above sea level, trees have been observed to survive winter frosts as low as -30 °C in certain years [2].

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However, in recent years, the productivity and sustainability of pistachio orchards have been increasingly threatened by various harmful organisms, particularly insect pests. Among them, **sucking pests** such as psyllids (*Forda formicaria*) and aphids (*Slavum pistaciae*) are considered the most economically damaging. These pests weaken trees by extracting plant sap, reduce photosynthetic activity, promote the development of sooty mold through honeydew secretion, and ultimately lead to a decline in both the quality and quantity of nuts.

Therefore, studying the bioecology of these pests and developing effective control strategies, particularly under the conditions of intensive orchards, is of great importance. Among available methods, chemical control remains the most widely applied approach, although it must be integrated with biological and cultural measures to ensure ecological safety and long-term effectiveness.

Literature Review

Among nut crops cultivated in Central Asia, walnut (*Juglans regia*) and pistachio (*Pistacia vera*) occupy the largest areas. Both are affected by numerous insect pests. It has been recorded that walnut is damaged by 43 different pest species, while pistachio is attacked by 42 species [3].

Certain aphid species, such as *Forda hirsuta*, *Slavum lentiscoides*, and *Slavum mordvilkovi*, induce the formation of various types of galls on pistachio trees (*Pistacia vera*) [4]. Another serious pest of pistachio is *Eriosoma lanigerum* Hausm., which is considered one of the most harmful species. This pest is widely distributed not only in Uzbekistan but also in neighboring countries and other regions of the world [5].

In studies conducted in Iran and Turkey, the common pistachio psyllid (*Agonoscena pistaciae* Burckhardt & Lauterer) was reported as one of the most destructive pests in commercial orchards, causing severe leaf deformation, honeydew excretion, and promoting sooty mold development [10]. Similarly, *Aphis gossypii* and *Slavum pistaciae* are recognized as key pests that weaken trees by sap-feeding and reducing photosynthetic efficiency.

Scale insects, including *Ceroplastes rusci* and *Saissetia oleae*, have been documented in pistachio orchards of the Mediterranean region, where they significantly reduce tree vigor and nut yield [11]. Furthermore, spider mites (*Tetranychus* spp.) represent another group of pests that frequently cause economic damage under hot and dry conditions typical of pistachio-growing areas [12].

Recent literature emphasizes the importance of studying the **bioecology of pistachio pests** under local agroclimatic conditions. Understanding their seasonal population dynamics, reproductive potential, and host-pest interactions provides a basis for the development of effective integrated pest management (IPM) strategies. Special attention has been given to the evaluation of insecticides and acaricides, as well as the potential of biological control agents, in order to reduce environmental risks and pesticide resistance [13,14].

Research Methodology and Materials

The research was carried out at the Gallaaral Pistachio Research Station, Jizzakh region, Uzbekistan, where pistachio orchards are maintained under intensive cultivation conditions. The study aimed to identify major sucking pests, assess their population dynamics, and evaluate the effectiveness of selected insectoacaricides under field conditions.

Entomological surveys were performed regularly during the growing season. Pest species were identified using the classical entomological method described by G.Ya. Bei-Bienko, while the population density and damage level of pests were determined according to the methodology of Sh.T. Khojaev. The biological efficacy of insectoacaricides was assessed under natural infestation, with

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observations taken before and after treatment applications. Standard experimental design and statistical approaches were applied to ensure accuracy and reliability of results [6, 7, 9].

Results and Discussion

During the study, several species of gall-forming aphids were recorded on pistachio trees. *Slavum pistaciae* was observed to settle along the margins of pistachio leaves, inducing leaf curling and marginal galls. *Forda formicaria* was found to produce nut-shaped galls on the abaxial (underside) surface of pistachio leaves. In some cases, damage caused by the pistachio psyllid *Agonoscaena pistaciae* was also recorded.

Our observations, conducted from March to September 2025, revealed that these aphids reproduce parthenogenetically, producing 6–7 generations per season. The first generation induced gall formation, while subsequent generations developed and survived within the galls. This continuous gall colonization significantly disrupted leaf morphology and physiological functions, thereby affecting the overall photosynthetic activity and productivity of pistachio trees.

In field trials, insectoacaricides were tested against sucking pests in pistachio orchards. The experiments were conducted on the pistachio cultivar *Sitora*, using five treatment variants with three replications.

According to the results, when Rimon Fast 10% SC was applied at a rate of 0.5 L/ha, the highest efficacy was recorded on the 7th day after spraying, reaching 93.3%. In subsequent observations, a slight decline in the biological effectiveness of the preparation was noted (Table 1).

In the treatment with Tiamectin 16.9% SC at a rate of 0.2 L/ha, the biological efficacy reached 66.5% on the 3rd day after application, 78.1% on the 7th day compared to the control, and increased to 91.0% by the 14th day.

In the treatment with Viproklem 15% WG at a rate of 0.2 kg/ha, the efficacy was 62.8% on the 3rd day, 78.6% on the 7th day compared to the control, and 88.0% on the 14th day after application.

In the treatment with Nurell Super 55% EC at a rate of 1.0 L/ha, the biological efficacy was 59.6% on the 3rd day, 76.3% on the 7th day compared to the control, and reached 87.4% by the 14th day after application.

Table 1.

Biological efficacy of different insectoacaricides against major sucking pests of pistachio (cv. *Sitora*).

(The field experiment was conducted at the Gallaaral Pistachio Research Station, Gallaaral District, Jizzakh Region, Uzbekistan, in 2025).

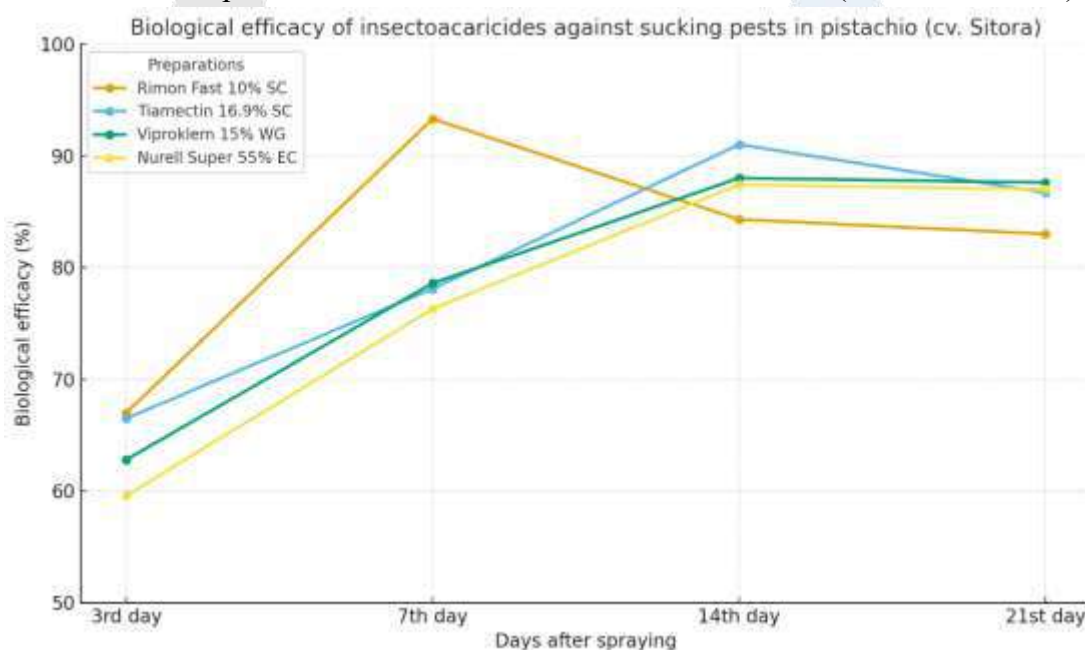
No.	Variants	Active ingredient and application rate	Average number of pests per leaf (pcs)				Biological efficacy				
			Before spraying	After spraying (days)							
				3	7	14	21	3	7	14	21
1	Rimon Fast 10% SC	Novaluron + Bifenthrin, 0.5 L/ha	10,0	3,3	0,7	1,6	1,7	67,0	93,3	84,3	83,0
2	Tiamectin 16.9% SC	Thiamethoxam + Abamectin, 0.2 L/ha	8,5	3,3	2,2	0,9	1,3	66,5	78,1	91,0	86,7

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3	Viproklem 15% WG	Emamectin benzoate + Abamectin, 0.2 kg/ha	9,1	3,7	2,1	1,2	1,2	62,8	78,6	88,0	87,6
4	Nurell Super 55% EC*	Cypermethrin + Chlorpyrifos, 1.0 L/ha (standard)	7,8	4,0	2,4	1,3	1,3	59,6	76,3	87,4	87,0
5	Control (untreated)	-	9,4	10,0	15,3	20,0	25,0	-	-	-	-

*Note: Nurell Super 55% EC was used as the reference standard (control treatment).



Discussion

The results of the field experiments clearly demonstrate that different insectoacaricides varied in their effectiveness against sucking pests in pistachio orchards. Among the tested preparations, **Rimon Fast 10% SC (Novaluron + Bifenthrin)** showed the highest efficacy, reaching **93.3% on the 7th day after application**. However, a slight decline in effectiveness was observed by the 14th and 21st days, indicating that its residual activity is limited.

Tiamectin 16.9% SC (Thiamethoxam + Abamectin) also exhibited high performance, with biological efficacy increasing to **91.0% on the 14th day**, suggesting good residual action compared to Rimon Fast. Similarly, **Viproklem 15% WG (Emamectin benzoate + Abamectin)** maintained relatively stable results, achieving **88.0% efficacy on the 14th day** and remaining effective up to 21 days.

The reference standard, **Nurell Super 55% EC (Cypermethrin + Chlorpyrifos)**, demonstrated moderate effectiveness, with a maximum of **87.4% efficacy on the 14th day**, which was slightly lower than the newly tested preparations. This suggests that while Nurell Super is traditionally used

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in pest management programs, other modern insectoacaricides may provide higher and more stable control.

The untreated control variant showed a continuous increase in pest population density, confirming the necessity of chemical interventions under high infestation conditions.

Overall, the study indicates that Rimon Fast, Tiamectin, and Viproklem are effective candidates for controlling sucking pests in intensive pistachio orchards. However, their use should be incorporated into an **integrated pest management (IPM) strategy**, including rotation of active ingredients to prevent resistance development and minimize environmental risks.

CONCLUSION.

1. Timely identification of the species composition, distribution, and harmfulness of sucking and chewing pests of pistachio, as well as the implementation of appropriate control measures, is of great importance.

2. Among the most common sucking pests in pistachio orchards are the gall-forming aphids *Forda formicaria* and *Slavum pistaciae*.

3. Against gall-forming aphids of pistachio, the use of insectoacaricides from different chemical groups such as Rimon Fast 10% SC (0.5 L/ha), Tiamectin 16.9% SC (0.2 L/ha), Viproklem 15% WG (0.2 kg/ha), and Nurell Super 55% EC (1.0 L/ha) showed a high level of biological effectiveness, ranging from **87.4% to 93.3%**.

4. The timely and effective management of harmful organisms in pistachio orchards is essential for preserving yield and plays a key role in strengthening the export potential of pistachio production in our Republic.

Parthenogenetically reproducing females are protected inside galls from external factors, including natural enemies. Therefore, for effective control of these pests, it is advisable to consider their development in relation to the vegetation period of pistachio: applying entomophages or contact insecticides during the period when aphids emerge from galls, or using systemic insectoacaricides that can affect aphids living in symbiosis with plant tissues.

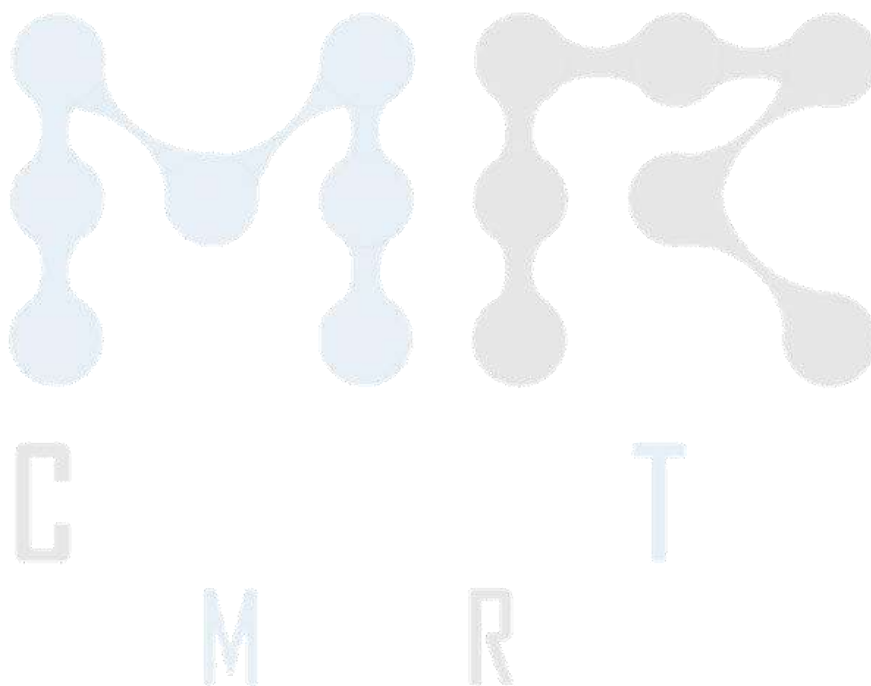
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ПРИМЕНЕНИЕ НЕЙРОМОДУЛЯЦИИ И НЕЙРОСТИМУЛЯЦИИ ПРИ ЭПИЛЕПСИИ

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Аннотация: Эпилепсия относится к числу наиболее распространённых хронических неврологических заболеваний, характеризующихся рецидивирующими судорожными приступами и снижением качества жизни пациентов. Несмотря на эффективность медикаментозной терапии, у значительной части больных формируется фармакорезистентная эпилепсия, требующая применения альтернативных методов лечения. Нейромодуляция и нейростимуляция занимают особое место среди современных хирургических подходов. Наиболее распространёнными методами являются стимуляция блуждающего нерва, глубокая стимуляция головного мозга и транскраниальная магнитная стимуляция.

Ключевые слова: эпилепсия, нейромодуляция, нейростимуляция, стимуляция блуждающего нерва, глубокая стимуляция мозга, фармакорезистентная эпилепсия.

Эпилепсия является одним из наиболее распространённых хронических заболеваний центральной нервной системы, характеризующихся повторяющимися эпилептическими приступами, возникающими вследствие патологической гиперсинхронной активности нейронов головного мозга. По данным Всемирной организации здравоохранения, эпилепсией страдают около 50 миллионов человек во всём мире, что делает данную патологию значимой медицинской и социальной проблемой. Несмотря на успехи фармакотерапии, примерно у 30–35 % пациентов формируется фармакорезистентная эпилепсия, при которой стандартные противосудорожные препараты оказываются малоэффективными или не дают должного контроля над приступами. Длительное течение заболевания сопровождается снижением когнитивных функций, эмоционально-аффективными нарушениями, ограничением трудоспособности и снижением качества жизни. В связи с этим особое внимание уделяется развитию альтернативных и вспомогательных методов лечения, среди которых нейромодуляция и нейростимуляция занимают особое место. Эти технологии направлены на регуляцию патологической нейрональной активности с помощью электрической или магнитной стимуляции определённых структур мозга и нервной системы. Современные методы — такие как стимуляция блуждающего нерва, глубокая стимуляция головного мозга и транскраниальная магнитная стимуляция — показали значительную эффективность в снижении частоты и тяжести приступов у пациентов с фармакорезистентной эпилепсией. Нейромодуляция и нейростимуляция представляют собой современные методы функционального воздействия на нервную систему, направленные на коррекцию патологической активности нейронов и восстановление нарушенного баланса возбуждения и

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торможения в головном мозге. Их использование при эпилепсии обусловлено необходимостью влиять на те механизмы, которые не поддаются фармакологической терапии. Основной принцип нейромодуляции заключается в целенаправленном воздействии электрических или магнитных стимулов на определённые структуры центральной или периферической нервной системы. Это воздействие изменяет функциональное состояние нейронных сетей, снижает гиперсинхронность корковых разрядов и препятствует распространению патологической активности. При стимуляции блуждающего нерва достигается активация широкого спектра церебральных структур, включая таламус, гиппокамп и ретикулярную формацию, что приводит к снижению возбудимости коры. Глубокая стимуляция мозга действует непосредственно на подкорковые структуры (например, переднее ядро таламуса), регулируя их участие в формировании эпилептических разрядов. Транскраниальная магнитная стимуляция, в свою очередь, позволяет модулировать активность коры головного мозга неинвазивным путём. В норме головной мозг поддерживает динамическое равновесие между возбуждающими и тормозными процессами. При эпилепсии это равновесие нарушается в сторону чрезмерного возбуждения. Методы нейромодуляции обеспечивают возможность восстановления физиологического баланса, уменьшая вероятность возникновения патологических разрядов и, как следствие, снижая частоту приступов. Кроме того, стимуляция оказывает влияние не только на электрическую активность, но и на нейрохимические процессы. Исследования показали, что под воздействием нейромодуляции меняется уровень нейротрансмиттеров (ГАМК, серотонин, норадреналин), что дополнительно способствует противосудорожному эффекту. Современные технологии нейростимуляции открывают новые возможности в лечении фармакорезистентной эпилепсии, позволяя существенно снизить частоту и тяжесть приступов у пациентов. Наиболее клинически значимыми и широко применяемыми методами считаются стимуляция блуждающего нерва (VNS), глубокая стимуляция головного мозга (DBS) и транскраниальная магнитная стимуляция (TMS). Этот метод основан на имплантации генератора электрических импульсов, соединённого с левым блуждающим нервом. Электрическое раздражение передаётся в различные структуры мозга, включая таламус, гиппокамп и ретикулярную формацию, что способствует снижению возбудимости коры. Клинические исследования показали, что у 50–60 % пациентов наблюдается уменьшение частоты приступов более чем на 50 %. Метод отличается относительной безопасностью и может применяться у детей. DBS представляет собой высокотехнологичную методику, при которой электроды имплантируются в определённые подкорковые структуры, чаще всего в переднее ядро таламуса. Электрическое воздействие модулирует патологическую активность нейронных сетей и препятствует генерации эпилептических разрядов. Клинические наблюдения подтверждают эффективность метода у пациентов с генерализованными и фокальными формами эпилепсии. Несмотря на инвазивность, DBS рассматривается как перспективный метод для тяжёлых случаев заболевания. TMS является неинвазивной методикой, основанной на воздействии магнитных импульсов на кору головного мозга. При эпилепсии используется низкочастотная стимуляция, которая снижает гипервозбудимость эпилептогенных зон. Метод отличается хорошей переносимостью и отсутствием серьёзных осложнений, однако требует дальнейшего изучения и стандартизации протоколов применения. Сравнительный анализ показывает, что все методы

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нейростимуляции обеспечивают клинически значимое снижение частоты приступов у пациентов с фармакорезистентной эпилепсией. При этом:

- VNS демонстрирует наибольшую доказательную базу и стабильность результатов.
- DBS эффективна при тяжёлых и генерализованных формах эпилепсии, особенно при поражении глубоких структур.
- TMS перспективна как вспомогательный метод, позволяющий проводить терапию без хирургического вмешательства.

Помимо противосудорожного эффекта, у пациентов отмечается улучшение когнитивных функций, снижение тревожности и депрессивных расстройств, повышение качества жизни. Осложнения, как правило, минимальны и связаны в основном с инвазивными методиками (DBS, VNS). Развитие технологий нейромодуляции и нейростимуляции продолжается быстрыми темпами, что открывает новые горизонты в терапии эпилепсии. В последние годы активно разрабатываются имплантируемые устройства нового поколения, обладающие возможностью автоматической адаптации к индивидуальной нейрональной активности пациента. Эти системы способны регистрировать эпилептические разряды в реальном времени и автоматически подавлять их с помощью электрических импульсов (так называемая responsive neurostimulation, RNS). Другим перспективным направлением является оптогенетическая стимуляция, при которой воздействие осуществляется с использованием светочувствительных белков, внедряемых в нейроны. Данная технология пока находится на экспериментальной стадии, однако обладает высоким потенциалом точности и избирательности. Эпилепсия остаётся одной из наиболее актуальных проблем современной неврологии и нейрохирургии, особенно в связи с высокой распространённостью фармакорезистентных форм заболевания. Методы нейромодуляции и нейростимуляции зарекомендовали себя как эффективные инструменты в снижении частоты приступов, улучшении когнитивных и психоэмоциональных функций, а также повышении качества жизни пациентов. Стимуляция блуждающего нерва, глубокая стимуляция головного мозга и транскраниальная магнитная стимуляция имеют различный механизм действия, но объединяются общей целью — восстановлением нарушенного баланса нейрональной активности.

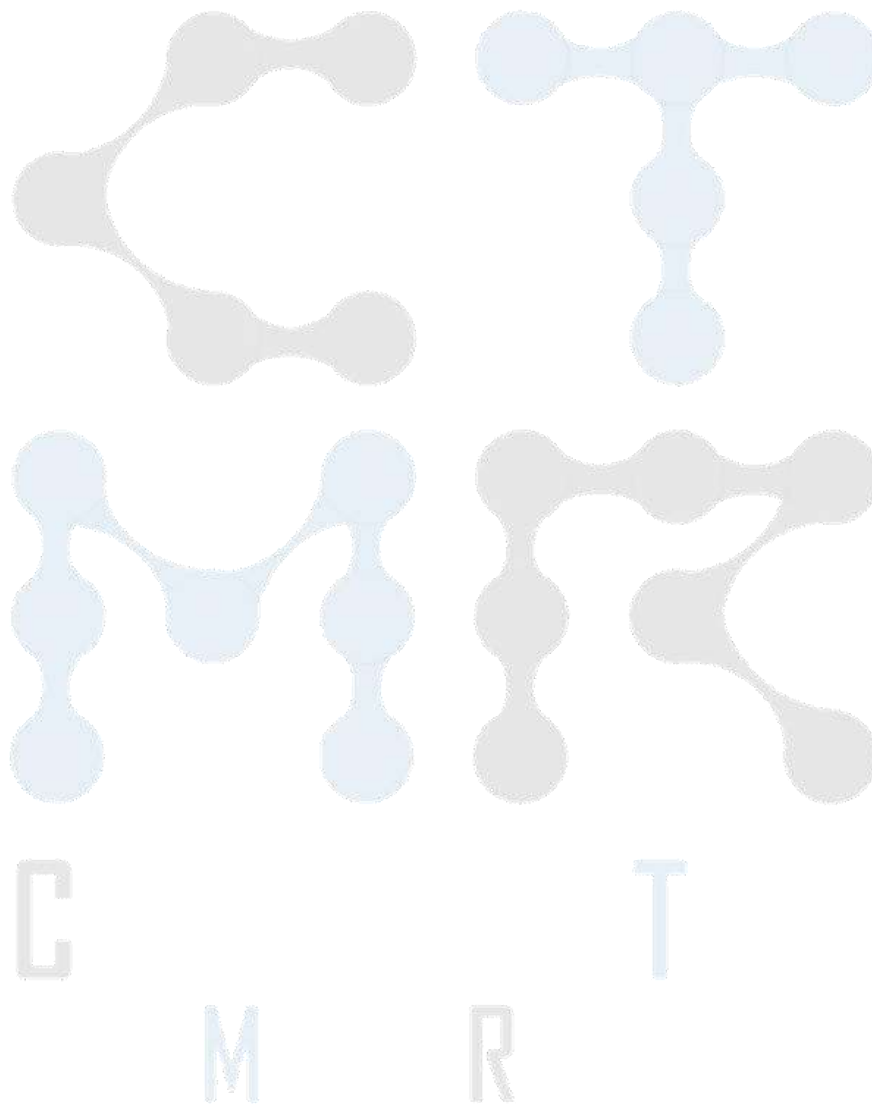
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STRATEGIES FOR ADDRESSING NEONATAL PROBLEMS IN NEWBORNS: AN EVIDENCE-BASED APPROACH

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Abstract: Neonatal complications, manifesting within the first 28 days of life, pose a significant global health challenge, particularly in developing nations like Uzbekistan, where neonatal mortality remains a concern at approximately 12 per 1,000 live births (Uzbekistan Ministry of Health, 2023). These complications encompass respiratory distress syndrome (RDS), neonatal jaundice, infections, hypothermia, hypoglycemia, and congenital anomalies, which collectively contribute to nearly half of under-five mortality worldwide (World Health Organization, 2020). This article provides an in-depth, evidence-based exploration of strategies to mitigate these issues, emphasizing prenatal diagnostics, intrapartum management, and postnatal interventions. Drawing on global research and localized studies from Uzbekistan, it highlights interventions such as antenatal corticosteroids, surfactant therapy, phototherapy, kangaroo mother care (KMC), and surgical corrections for congenital anomalies. The integration of culturally sensitive, cost-effective approaches tailored to Uzbekistan's healthcare infrastructure is discussed, alongside future directions involving innovative technologies. The article aims to inform policy and practice to reduce neonatal mortality and improve long-term health outcomes.

Keywords: neonatal care, newborn health, respiratory distress syndrome, neonatal jaundice, kangaroo mother care, prenatal screening, Uzbekistan healthcare, evidence-based medicine, neonatal mortality, congenital anomalies

INTRODUCTION

The neonatal period, spanning the first 28 days of life, is the most vulnerable phase for infant survival, with global estimates indicating that 2.4 million newborns die annually due to preventable complications (World Health Organization, 2020). In Uzbekistan, despite improvements in maternal and child health services, neonatal mortality persists as a critical issue, driven by preterm births, infections, and congenital anomalies. The Uzbekistan Ministry of Health (2023) reports a neonatal mortality rate of 12 per 1,000 live births, with rural areas facing additional challenges due to limited access to specialized care. Addressing neonatal complications requires a comprehensive, evidence-based approach that integrates prenatal screening, skilled intrapartum care, and advanced postnatal interventions. In Uzbekistan's context, where resource constraints and cultural factors influence healthcare delivery, strategies must be both scientifically robust and locally adaptable. This article synthesizes global and Uzbek research to outline effective methods for managing neonatal problems, emphasizing multidisciplinary collaboration and the potential of emerging technologies to enhance outcomes.

The foundation of neonatal complication management lies in proactive prenatal care. Advanced diagnostic tools, such as ultrasonography, non-invasive prenatal testing (NIPT), and amniocentesis, enable early identification of congenital anomalies, including Down syndrome, neural tube defects,

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and cardiac malformations. In Uzbekistan, the expansion of ultrasonography in district-level hospitals has reduced adverse neonatal outcomes by 25%, as evidenced by Abdullaev and Makhkamova (2022). Antenatal corticosteroid therapy, such as betamethasone or dexamethasone administered between 24–34 weeks of gestation, promotes fetal lung maturation, reducing the incidence of respiratory distress syndrome (RDS) by up to 40% (Cochrane Review, 2020). This intervention has been increasingly adopted in Uzbekistan's tertiary care facilities, with training programs ensuring standardized administration. Additionally, maternal health interventions, such as nutritional supplementation and management of gestational diabetes, mitigate risks like low birth weight and hypoglycemia, which are prevalent in Uzbekistan due to socioeconomic factors. During labor, skilled intrapartum care is critical to prevent complications like birth asphyxia and trauma. Techniques such as cesarean sections or vacuum extraction are employed in high-risk deliveries, guided by continuous fetal monitoring. The Apgar scoring system, applied within the first minute post-delivery, assesses newborn vitality across five parameters (heart rate, respiratory effort, muscle tone, reflex irritability, and color), enabling rapid identification of infants requiring resuscitation. Uzbekistan's adoption of the Neonatal Resuscitation Program (NRP), endorsed by the American Academy of Pediatrics, has reduced hypoxic-ischemic encephalopathy by 30% in urban maternity hospitals. The following table summarizes key prenatal and intrapartum interventions:

Intervention	Purpose	Impact
Ultrasonography	Detect congenital anomalies	Reduces adverse outcomes by 25% (Abdullaev & Makhkamova, 2022)
Antenatal Corticosteroids	Accelerate fetal lung maturation	Decreases RDS incidence by 40% (Cochrane Review, 2020)
Apgar Scoring & NRP	Assess vitality, guide resuscitation	Reduces hypoxic-ischemic encephalopathy by 30% (Mirzakulova, 2021)
Cesarean Section/Vacuum Extraction	Prevent birth asphyxia and trauma	Lowers neonatal morbidity by 20% (Uzbekistan Ministry of Health, 2023)

Postnatal care addresses a spectrum of neonatal complications, with respiratory distress syndrome (RDS) being a primary concern, particularly in preterm infants. RDS, caused by surfactant deficiency, is managed through exogenous surfactant therapy and non-invasive ventilation techniques like continuous positive airway pressure (CPAP). In Uzbekistan, the introduction of CPAP devices in neonatal intensive care units (NICUs) in cities like Tashkent and Samarkand has reduced RDS-related mortality by 20% (Uzbekistan Ministry of Health, 2023). Training programs for neonatologists and nurses have further improved the efficacy of ventilatory support, ensuring compliance with international protocols.

Neonatal jaundice, characterized by elevated bilirubin levels, requires prompt intervention to prevent kernicterus, a severe neurological complication. Phototherapy, supported by transcutaneous bilirubinometry for non-invasive monitoring, is the standard treatment. In Uzbekistan, the widespread availability of phototherapy units in regional hospitals has decreased the need for exchange transfusions by 50% (Rakhimova, 2020). Standardized protocols for bilirubin monitoring have been implemented to ensure timely intervention, particularly in rural settings where access to laboratory diagnostics may be limited.

Infections, such as neonatal sepsis caused by group B Streptococcus (GBS), are a significant cause of morbidity. Intrapartum antibiotic prophylaxis for GBS-positive mothers, using agents like

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penicillin, has reduced sepsis rates in urban hospitals. Broad-spectrum antibiotics, tailored to local antimicrobial resistance patterns, are critical for managing established infections, as highlighted by a Tashkent Medical Academy study (2022). Preventive measures, including hepatitis B vaccination at birth, have further reduced infection-related complications.

Hypothermia and hypoglycemia, common in low-resource settings, are effectively managed through kangaroo mother care (KMC), which involves continuous skin-to-skin contact between mother and infant. KMC stabilizes temperature, promotes breastfeeding, and regulates glucose levels, reducing neonatal mortality by 20%, according to randomized controlled trials. In Uzbekistan, KMC has been integrated into rural healthcare programs, with community health workers trained to educate mothers, leading to a 15% increase in uptake (Ismailova et al., 2021). Congenital anomalies, such as cardiac defects or neural tube defects, require specialized interventions, including pediatric surgery or catheterization. Uzbekistan's National Children's Medical Center has enhanced surgical outcomes by 15% through early prenatal diagnosis and genetic counseling (Karimov, 2023). The table below outlines key postnatal interventions:

Condition	Intervention	Impact
Respiratory Distress Syndrome	Surfactant therapy, CPAP	Reduces mortality by 20% (Uzbekistan Ministry of Health, 2023)
Neonatal Jaundice	Phototherapy, bilirubinometry	Reduces exchange transfusions by 50% (Rakhimova, 2020)
Sepsis	Antibiotic prophylaxis, therapy	Decreases sepsis incidence (Tashkent Medical Academy, 2022)
Hypothermia/Hypoglycemia	Kangaroo Mother Care	Reduces mortality by 20% (Ismailova et al., 2021)
Congenital Anomalies	Surgical intervention, counseling	Improves outcomes by 15% (Karimov, 2023)

A multidisciplinary approach is essential for comprehensive neonatal care, involving neonatologists, pediatricians, geneticists, and epidemiologists. Population-based cohort studies in Uzbekistan have identified risk factors such as maternal malnutrition, consanguinity, and inadequate antenatal care, informing targeted interventions. For instance, community-based nutritional programs have reduced low birth weight incidence by 10% in rural areas (Uzbekistan Ministry of Health, 2023). Vaccination programs, particularly hepatitis B and rotavirus, have decreased infection-related morbidity. Looking forward, innovations like gene therapy and stem cell treatments hold promise for addressing congenital anomalies and metabolic disorders, though their implementation in Uzbekistan requires further research and infrastructure development. Epidemiological surveillance, supported by digital health records, enhances the ability to track and respond to neonatal health trends.

In conclusion, the management of neonatal complications in Uzbekistan requires a synergy of evidence-based interventions and localized strategies. Prenatal screening, skilled intrapartum care, and postnatal treatments like surfactant therapy, phototherapy, KMC, and surgical interventions have significantly improved neonatal outcomes. However, challenges such as limited NICU access in rural areas, healthcare worker shortages, and socioeconomic barriers persist. Policymakers should prioritize expanding NICU infrastructure, scaling up KMC and vaccination programs, and investing in continuous professional training. The integration of digital health technologies and epidemiological surveillance can further enhance care delivery. By leveraging global standards and adapting them to Uzbekistan's context, the country can reduce neonatal mortality and align with Sustainable

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Development Goal 3, which targets a neonatal mortality rate below 12 per 1,000 live births by 2030. Future advancements in gene therapy and precision medicine offer transformative potential, but their adoption must be supported by robust research and equitable healthcare access.

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ENGLISH ROMANTICISM IN THE POLEMIC ON THE NEW PARADISE

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Abstract: *The article examines the correlation, in the poetry of the elder English Romantic poets, between the images of the Golden Age, the restored Paradise, and the New Jerusalem, as well as the gradual transformation of these images. It also considers Byron's interpretation of humankind and human history through the biblical myth in comparison with the interpretations of his elder contemporaries. It is argued that the key poles of the polemic on Paradise in English Romantic poetry are the discourse of the lost and the new Paradise, formed in the works of the elder Romantics, and its transformation in Byron's works, which rests on the rejection of the possibility of both universal and individual Paradise.*

Keywords: Wordsworth; Coleridge; Byron; biblical myth; French Revolution; images of the Golden Age; myth of Paradise

The question of the New Paradise is essentially the question of the possibility of happiness—either granted once and for all or repeatedly attainable, whether universally or individually. For modern humanity, this question is especially acute. It is provoked by the crisis of various value systems, including the system of values in consumer society, built around the notion of the constant pursuit of pleasure as a fundamental value and the very definition of happiness. The urgency of this issue is also determined by contemporary scientific research in biochemistry, neuroethics, and bioethics, aimed at either discovering a formula for universal happiness or setting ethical boundaries for the implementation of such formulas. In this context, turning to the polemic on the New Paradise that emerged in English Romantic poetry under the influence of the French Revolution and subsequent events in Western Europe and the United States at the beginning of the nineteenth century is a natural attempt to look into the history of literature as a testimony not only of aesthetic but also of spiritual and intellectual efforts to answer a question that continues to concern the modern reader.

For Byron's elder contemporaries, the French Revolution appeared as a sign of the end of the old history and a harbinger of the breakthrough to the New Jerusalem. This view has become well established in modern literary scholarship. It is clearly articulated in the section “**Apocalyptic Expectations by Preachers and Poets**” of *The Norton Anthology of English Literature* [14], as well as in monographs and individual scholarly articles [18; 20; 23]. At the same time, such issues as the correlation in the poetry of the elder English Romantics between the images of the Golden Age, the restored Paradise, and the New Jerusalem, and the gradual transformation of these images, remain insufficiently explored. Even less clarified is the question of Byron's interpretation of humankind and human history through the biblical myth in relation to the interpretations of his elder contemporaries. Let us examine each of these issues in turn.

In the early poetry of W. Wordsworth and S. T. Coleridge, the French Revolution is consistently portrayed both as an event leading to the recovery of the lost Paradise and the return of the Golden Age and as a breakthrough to a new, unprecedented blessedness. In Wordsworth's early poem *The Prelude* (1798–1805), the motif of humanity's (Europe's) return to the Golden Age is voiced as a foretaste in the lines about France standing on the very threshold of the Golden Age (“golden hours”): *Europe at that time was thrilled with joy,*

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*France standing on the top of golden hours,
And human nature seeming born again* [11, p. 346].

Inseparable from this is the biblical apocalyptic allusion to the complete rebirth of human nature (“And human nature seeming born again”) after the Last Judgment. Byron could not have been familiar with these lines, since the poem was first published only in 1850. However, he carefully read many other works by Wordsworth, including *The Excursion* (1806–1814) [21, p. ???; 22, p. ???]. In this poem, the lyrical hero explicitly recalls his—already past—perception of the French Revolution through the ancient myth of the Golden Age: for him it becomes the return of Saturn’s mythological reign, abundant and free from inequality, the offspring of the Golden Age (“I sang Saturnian rule / Returned—a progeny of golden years”) [10, p. 444].

The motif of blissful return in connection with the theme of the French Revolution is no less characteristic of the early poetry of Coleridge—another of Byron’s elder contemporaries, whose works Byron admired and knew well [24]. In *Religious Musings* (1794–1796), Coleridge gives direct expression to the motif of restored blessedness in the exhortation “Return...,” with which the poet-lyrical hero addresses “pure Faith” and “meek Piety” [7, p. 2]. The poem concludes with an affirmation of the coming universal salvation, the first step toward which, in the poet’s vision, is the French Revolution [7, pp. 13, 23].

In the early poetry of the elder English Romantics (as in the religious-philosophical writings of English thinkers of the period), the present appeared not so much as the herald of a mere closure of the historical cycle in the return to humanity’s primordial bliss as a leap or breakthrough into the unprecedented—beyond the boundaries of human history itself: to the New Jerusalem of the Apocalypse, to the eternal reign of Christ [13]. In this interweaving of biblical myth and the contemporary moment, of myth and history, it was not only the latter but also the former that was reinterpreted. The biblical myth was transformed into a model of human history, whose key narrative and semantic moments were retrospectively linked with specific stages in the development of human society, from the vantage point of the present transition to an existence beyond time. One of the earliest embodiments of this historical reinterpretation of the biblical myth is Immanuel Kant’s essay “Conjectural Beginning of Human History” (1796), which evoked a wide response among his contemporaries [16].

The starting point of human history—the primordial existence of humankind in Eden—was reinterpreted in the poetry of early English Romanticism, in the spirit of Rousseau’s philosophy and the revolutionary age, as a pre-civilizational state of humanity, close to nature and free from socio-political conventions. In Coleridge’s *Religious Musings*, this “pre-civilizational” blessedness of man is described through images of the “primeval age,” the “idling shepherd,” and the “green grass” [7, p. 18], among others.

The focus of poetic representation also included the blissful inner state of primordial humanity; thus, the Rousseauistic motifs were significantly enriched and deepened by the broader Christian understanding of blessedness as true (self-sacrificial) love. In Wordsworth’s *Descriptive Sketches*, the blessed “infant age” of humankind (“he was Nature’s child”) is associated with man’s absolute freedom (“Once Man entirely free”), which implies subjection to no laws except those of reason and desire (“Confessed no law but what his reason taught, / Did all he wished”), and, at the same time, true conformity to the image of the Creator (“He, all superior, but his God disdained; wished but what he ought”) [9]. A necessary condition of blessedness in this poem is man’s communion with nature, which proves to be the guardian of divine truth about happiness and harmony.

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The second stage of historical movement in the biblical myth was represented in the works of the elder English Romantic poets as the loss of this blessed state in connection with the emergence of human society. Its principal characteristic was seen as the oppression of man through the establishment of various social institutions and norms. Unlike the Enlightenment thinkers, however, the Romantics sought the causes of oppression primarily within human nature itself.

In Coleridge's *Religious Musings*, oppression is linked to the awakening of possessive interests within man. These desires lead to the rise of property, followed by the rule of warriors, landowners, and priests. Selfish desires generate sins, which in turn suppress the human soul and deprive it of true knowledge. In Coleridge's poem, the oppression of the human soul is inseparably connected with socio-political oppression [7, p. 20].

At the same time, the creation and development of society and the state appear in Coleridge's poem as a natural stage in the progress of human history, inevitably leading toward a new phase. It is precisely the development of goodness within sin, of creative potential within blindness, that brings humankind to the final, third stage of history—the storm of the French Revolution, associated with a new kingdom of blessedness. These sprouts of the new order in Coleridge are, on the one hand, bound to the person and teaching of Christ [7, pp. 20, 22] (in this respect the poet is heir to the Christian tradition), and, on the other, to the ideas of the Enlightenment and the achievements of science (and in this sense he is a man of the age of the French Revolution). Newton, Hartley, and Priestley appear in the poem as sages and saints leading humanity to universal salvation [7, p. 22].

The twofold nature of oppression in civilized society is depicted in Wordsworth's *Prelude* both in images of the suppression of human freedom and creativity ("Oppression under which even highest minds / Must labour, whence they are not free!") and in images of man's inner oppression by false thoughts and feelings ("sorrow, disappointment, vexing thoughts, confusions of the judgement... <...> ...that had been turned aside from Nature's way...") [11, pp. 351, 363–364]. Yet for Wordsworth the seeds of happiness lie not in the exaltation of human thought and spirit, but in a return to nature, to its divine harmony.

The final stage of human history in the poetry of the elder English Romantics bears the unmistakable imprint of contemporaneity: the struggle for socio-political freedom is seen as the principal sign of the breakthrough to new blessedness; the French Revolution becomes its herald. At the same time, along with the acquisition of external freedom, the poets foretold the transformation of human nature itself—a transformation promised in the Apocalypse.

In Coleridge's poem *Ode to the Departing Year* (1796), Liberty acquires a divine status, since it brings with it justice and truth [5]. In *Religious Musings*, the author foresees in the coming age the triumph of faith, humility, and "almighty, all-embracing love" [7, p. 23].

Gradually, largely under the influence of unfolding events in Europe, during which the Revolution in the name of *liberté, égalité, fraternité* was transformed into a predatory war of conquest, the tendency toward the interiorization of history in its union with myth intensified. Interiorization and individualization in the perception of history and of humanity's role within it became the basis for the reinterpretation of the biblical myth in English poetry of the early nineteenth century. The narrative-semantic nodes of primordial blessedness, the Fall and suffering in the state of exile from Paradise, and the attainment of new blessedness (simultaneously understood as the restoration of the old) in the mature poetry of Wordsworth and Coleridge (as well as Blake and Southey) came to be firmly associated with the inner development of the individual. Apocalyptic expectations of social transformation gave way to a belief in personal, individual transformation.

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The figure of the lyrical hero—humanity merging in sacred union with nature and thereby attaining a new blessedness (the biblical “new heaven and new earth”)—is central to Coleridge’s ode *Dejection* (1802). What should lead humankind to conscious unity with nature is the “primary imagination”—“the living power and prime agent of all human perception,” as Coleridge explicitly formulates it in Chapter XIII of his *Biographia Literaria* (1817) [4, p. 313].

The symbol of movement in the opposite direction—toward the oblivion of one’s consubstantiality with the Other and toward death-in-life—in Coleridge’s mature works becomes Cain’s fratricide. The most famous embodiment of Cain in Coleridge’s oeuvre is, of course, the figure of the Ancient Mariner, although *The Wanderings of Cain* (1797) is no less significant ideologically. By killing the Albatross in *The Rime of the Ancient Mariner* (1797–1798), the Mariner, through inner suffering, gradually gains insight precisely because, in Coleridge’s vision, man’s separation from the world, from the Other, is a cruel delusion. The chief mark of the transformed human being is love for the world, bringing with it true understanding of divine being. “He prayeth well, who loveth well: / Both man and bird and beast,” the Mariner tells the Wedding Guest at the close of the poem [6, p. 68].

In a similar way, myth (and not only the biblical one) is reinterpreted in Wordsworth’s mature work. In the *Prospectus* (1798–1839; first published in 1850) to the unfinished *The Recluse*—a kind of declaration of Wordsworth’s mature creative position—the poet takes myth as a symbol of universal human development in order to look within man and discern the path indicated by myth in the depths of the human soul:

“...Not Chaos, not / The darkest pit of lowest Erebus... <...> ...Into our Minds, into the Mind of Man,— / My haunt, and the main region of my Song” [12, p. 302].

Here the author refers the reader to the ancient Greek myth only to deny the significance of speaking of the external world at large and instead to affirm the necessity of attending to the inner development of the individual.

Exploring the nature of mythological tradition, Wordsworth discovers the essential equivalence of the biblical myth with the ancient: Paradise, in the *Prospectus*, appears on the same plane as the ancient Elysian groves, merging with them to the point of indistinguishability. Thus, myth in Wordsworth becomes the archetype of human consciousness—a symbolic image of the movement of the human soul [12, p. 302]. The pathos of Wordsworth’s *Prospectus* lies in the affirmation of the attainability of happiness by any individual here on earth, in the reality of everyday life. The condition of blessedness, as for Coleridge, is man’s integral awareness of his unity with the world.

The interiorization of myth, and thereby of human history, proclaimed in the *Prospectus*, is enriched by its individualization in *The Prelude*. Placing at the center of the poem the image of the Poet—who appears simultaneously as author, narrator, and lyrical hero—Wordsworth depicts the path of a single individual, endowed with inspired impulses, with a developed imagination, and with a concrete, personal destiny. The poem’s emphatically psychological autobiographical character ensures not only the uniqueness and individuality of the Poet’s depiction but also the reader’s reception of his image. The confessional, diary-like quality of the work produces the effect of blending, of merging the levels of artistic and real, objective reality.

Thus, in their interpretation of the biblical myth of Paradise, the elder Romantics Wordsworth and Coleridge (as well as Southey and Blake) follow similar paths. In their early works, the main plot nodes of the biblical myth serve as the most important means of comprehending human history in terms of humanity’s gradual transition from a blissful primordial harmony of love-unity to a divided condition, associated with selfish desires and socio-political forms of oppression, and then to

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universal transfiguration and a new blessedness. In their mature works, however, the biblical myth of Paradise becomes interiorized and individualized, appearing as a symbol of changes within concrete human consciousness. Its essential motifs are linked to the primordial blessed state of a person whole within himself, the loss of this integrity, and the attainment of new blessedness through the release of the creative power of imagination.

Byron, in his works, takes over from his elder contemporaries the tendency toward a historical reading, individualization, and interiorization of the biblical myth, but at the same time he debunks other constants in their dual interpretation of biblical history and contemporaneity: both the general history of humankind and the individual history of man invariably close upon themselves in a cycle of loss of Paradise and the impossibility of attaining new blessedness.

Byron's elaboration of the biblical myth is linked with the superimposition upon the rigid "Creator-man" vertical—rooted in the Old Testament and of Calvinist origin, in which God appears as unattainably separate from and incomprehensible to man—of the interiorized and individualized notions generated by the age of Romanticism, which affirmed human selfhood, as well as of Enlightenment views of man's fixed position in the world. In this semantic field, rigid hierarchy clashes with the individuality of selfhood, on the one hand, and with the movement of historical time, on the other. The result of this collision is a particular worldview in which man inevitably struggles with God, the individual with the universal, and individual linear time with collective cyclical time. Byron turns to the biblical Paradise as both the starting point of human existence (the collective past of humanity) and a model of the blessed state in individual consciousness (the individual future) in his three "metaphysical dramas." In both the historical (collective) and the individual (psychological) dimensions, the elder Romantics' idea of a return to blessedness or a breakthrough to it is debunked. The theme of the individual Paradise, unattainable for the hero, becomes the plot foundation of the dramatic poem *Manfred*. The image of this Paradise, conceived in relation to the image of the biblical Eden lost by humankind, first appears in the hero's opening monologue:

*Sorrow is knowledge: they who know the most
Must mourn the deepest o'er the fatal truth,
The Tree of Knowledge is not that of Life.* [1, p. 85]

Manfred, even before the action of the poem begins, has lost his Eden; sought in the love union with the hero's alter ego, Astarte, his personal Paradise inevitably bears within itself its own destruction. The cause of this destruction the hero locates in knowledge, or self-knowledge. Speaking of the death of his beloved, Manfred tells the Fairy (Act II, Scene 2): "It [her heart] gazed on mine, and wither'd" [1, p. 106]. Self-knowledge reveals to man the inner contradiction of his nature, in which divinity and dust ("half dust, half deity") do not merge but wage war against each other ("[we] with our mix'd essence make a conflict of its elements") [1, p. 95].

Through the disharmonious contradictoriness of his nature, Manfred inevitably bears within himself the seeds of Cain's sin ("thy brotherhood of Cain") [1, p. 94]. In this, Byron does not converge with Coleridge, as might seem at first glance, but rather distances himself from him. For Coleridge, Cain is a man unaware of his unity with the world, yet still bearing within himself the seeds of harmonious being in oneness with nature; for Byron, any man is Cain by essence, since harmony and unity are unattainable not only with the external world but also within himself. In this, Byron, drawing upon the skepticism of Hobbes and Bayle and the subjectivism of Hume, argues not only with Coleridge but with all the elder Romantic poets who inherited Rousseauist (and more broadly Enlightenment) notions of man's natural righteousness.

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Reversing the elder Romantics' concept of grasping truth in unity with the world through imagination, Byron asserts the link between the impossibility of harmony and the impossibility of attaining truth. The only accessible and limited means of cognition for man in Byron's world is reason ("the Mind—the Spirit—the Promethean Spark") [1, p. 90], with its ability to analyze, to be aware, and to investigate.

The search not so much for an individual as for a universal Paradise forms the thematic and plot foundation of Byron's two other metaphysical dramas, constructed around the biblical stories of Cain (*Cain*, 1821) and the Flood (*Heaven and Earth*, 1821). In the first of these, the search is directly conditioned by the loss of Eden; it is precisely the significance of loss that is foregrounded in the author's stage direction introducing the drama's first scene: "The Land without Paradise" [2, p. 213]. The search for a new Paradise, carried out in different ways by all the human characters in the play, is thus tied to the question of the cause of the loss of the first (and, in Byron's world, the only) Paradise. Consequently, the motifs of the unknowability of God and personal guilt as the fundamental trait of human existence come to the fore.

In Byron's drama, what proves inaccessible to man is no longer the paradise of unity with the world (as in *Manfred*), but rather the paradise of humble submission (to God, to destiny, to fate): the common impulse of the first family toward movement, associated with knowledge, drives Eve to the forbidden fruit and Cain (following Lucifer) into the cosmic abyss. Starting from the Enlightenment notion of the peaceful acceptance of one's place in the world—expressed in Pope's famous formula, "Know then thyself, presume not God to scan; / The proper study of mankind is Man" [8, p. 2561]—Byron exposes this as false, unattainable for man because of the contradictions and instability of his nature.

The result of the individual's striving for knowledge in the world of *Cain* proves to be, just as the result of striving for self-knowledge in the world of *Manfred*, not the attainment of happiness but a distancing from it. Cain undergoes two stages of this distancing: the denial of the righteousness of the universe and the denial of his own belonging to the world. This double denial determines the root cause of Cain's fratricide: in this act he externally (impulsively yet inevitably) expresses what has already taken place within him. This, in turn, reveals to him the abyss of his own unrighteousness and leads to self-knowledge. Cain, upon whom the Angel of God sets a mark, admits: "It burns / My brow, but nought to that which is within it" [2, p. 273]. In this interrelation of the crime against the Other and self-knowledge, Byron proves close to Coleridge. The subsequent movement of man in the worlds of Byron and Coleridge, however, diverges: in Coleridge it is a movement toward transfiguration and happiness; in Byron—toward a future unknown to the characters, but known to the reader as anything but happy.

The second mystery play, whose very title refers to the affirmation of possible human (or humanity's) transfiguration so characteristic of the turn of the century, dismantles the belief in a breakthrough toward new bliss ("New Heaven and New Earth"). In the drama, heaven and earth lose the qualifier "new": Byron once again turns to the past rather than the future, as a result of which the present of the reader and author appears as the outcome of an event that functions in the work as apocalypse—the great flood. The new paradise of humankind, like the individual paradise of the human soul, proves desired but unattainable: appealing to the reader's experience, the Spirits of the Earth (Scene 3) predict humanity's postdiluvian existence as one of sorrow ("Thy new world and new race shall be of woe") [3, p. 298]. Japhet's affirmation of future endless bliss ("The eternal Will / Shall... <...> / Restore the beauty of her birth, / Her Eden in an endless paradise...") [3, pp. 299–300] turns out to

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be a dream, or a matter of faith. Thus, from the realm of universal human future in the biblical myth, from the reality of the individual present in Coleridge and Wordsworth, the new paradise on earth in Byron's work is transformed into a human dream, the goal of human striving.

Thus, the polemic on paradise in English Romantic poetry emerges from the evolution of the discourse on the lost and new paradise in the works of the elder Romantics and its transformation in Byron's texts based on biblical myth. In the latter, a sharp clash occurs between Enlightenment and Calvinist views of the world and the belief in the attainability of universal or individual transfiguration and bliss—the most essential elements of the “Romantic” discourse on paradise. At the same time, Byron inherits such general features of this discourse as the interpretation of biblical myth in terms of contemporary history and human psychology, the merging of the images of the lost and the new paradise, and the role of knowledge and self-knowledge in the search for bliss.

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O'ZBEK OILALARIDA KUYOV-KELIN MAROSIMLARINING RAMZIY-MA'NAVIY MA'NOLARI

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Termiz davlat universiteti davlat va huquq
asoslari kafedrası o'qituvchisi

Annotatsiya: ushbu maqolada o'zbek oilaviy turmushida kuyov-kelin marosimlarining ramziy va ma'naviy ma'nolari etnografik hamda madaniy-antropologik yondashuv asosida tahlil qilinadi. Marosimlarda qo'llaniladigan urf-odat, udum, ramz, ishora va qo'shiqlarning mazmun-mohiyati ochib berilib, ularning ijtimoiy birlikni mustahkamlashdagi, avlodlararo qadriyatlarni uzatishdagi va oilaviy hayotga tayyorlashdagi o'rni yoritiladi. Shuningdek, Surxon-Sherobod vohasi misolida XIX asrning ikkinchi yarmi – XXI asr boshlarida kuyov-kelin bilan bog'liq marosimlarning o'zgarish dinamikasi, zamonaviy davrda an'ana va yangilikning uyg'unlashuvi ilmiy tahlil qilinadi. Tadqiqot natijalari kuyov-kelin marosimlarining nafaqat estetik va madaniy, balki ijtimoiy-ma'naviy birlikni shakllantiruvchi ahamiyatini ko'rsatadi.

Kalit so'zlar: O'zbek oilasi, kuyov-kelin marosimlari, ramz, udum, an'ana, Surxon-Sherobod vohasi, etnomadaniy jarayon, qadriyat, ma'naviyat.

KIRISH

O'zbek xalqining asrlar davomida shakllangan urf-odat va an'analari milliy madaniyatimizning eng muhim tarkibiy qismlaridan hisoblanadi. Xususan, oilaviy turmush jarayonida kuyov-kelin bilan bog'liq marosimlar nafaqat ijtimoiy hayotda muhim ahamiyat kasb etadi, balki xalqning dunyoqarashi, qadriyatlari va ma'naviy olamini ham aks ettiradi. Mazkur marosimlar oilaning barpo etilishi, yangi hayotga qadam qo'yish, qarindosh-urug'larning birlashuvi va ijtimoiy birdamlikning mustahkamlanishida muhim vosita bo'lib xizmat qiladi. Kuyov-kelin marosimlari davomida qo'llaniladigan turli ramzlar, ishoralar, qo'shiqlar va udumlar o'zbek xalqining ma'naviy merosini, tarixiy xotirasini va milliy o'zligini ifoda etadi. Bu ramziy-ma'naviy unsurlar oilaviy hayotni bezabgina qolmay, balki yoshlarni turmushga tayyorlash, ularni jamiyatga moslashtirish va avlodlardan avlodga qadriyatlarni uzatishda alohida rol o'ynaydi.

Xususan, Surxon-Sherobod vohasi misolida kuzatilgan kuyov-kelin marosimlari o'zining boy etnografik mazmuni va o'ziga xos xususiyatlari bilan ajralib turadi. XIX asrning ikkinchi yarmi – XXI asr boshlarida mazkur marosimlar tarkibida an'anaviy va zamonaviy unsurlarning uyg'unlashuvi kuzatiladi. Bu esa milliy marosimlarning o'zgaruvchan ijtimoiy-madaniy sharoitlarga moslashuvchanligini, lekin shu bilan birga o'zining ramziy-ma'naviy mohiyatini saqlab qolishini ko'rsatadi. Shunday qilib, kuyov-kelin marosimlarining ramziy-ma'naviy ma'nolarini tadqiq etish o'zbek xalqining o'zligi, ijtimoiy munosabatlarini va ma'naviy qadriyatlarini chuqurroq anglash imkonini beradi.

Asosiy qism

O'zbek xalqida kuyov-kelin marosimlari faqatgina oilaviy hayotning boshlanishini emas, balki jamiyatdagi birdamlik va ijtimoiy birlikning ifodasini ham anglatadi. Marosimlar jarayonida oilaviy qadriyatlar, avlodlararo rishtalar va jamiyatning axloqiy me'yorlari namoyon bo'ladi. Nikoh marosimlari orqali yoshlar yangi hayotga qadam qo'yishi bilan birga, ular milliy an'analarni davom ettiruvchi va saqlovchi subyektga aylanadi.

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Kuyov-kelin marosimlari turli ramzlar va ishoralarga boydir. Masalan, kuyovni eshikka qarshi olib chiqish, kelinning boshiga ro‘mol yopish, tandir atrofida aylanish kabi urf-odatlar o‘zining chuqur ma‘nosiga ega.

- Ro‘mol yopish – kelinning poklik, hayo va oilaga sadoqat ramzi.
- Tandır aylanish – baraka, mo‘l-ko‘lchilik va oilaning mustahkamligi timsoli.
- Kuyovni qarshi olish marosimi – qarindosh-urug‘larning mehr-oqibat va hamjihatlik ruhini ifodalaydi. Ushbu ramzlar orqali marosimlar oilaning ma‘naviy poydevorini mustahkamlashda xizmat qiladi.

Nikoh marosimlarida ijro etiladigan yor-yor, kelin salom, o‘lanlar xalqning tarixiy xotirasi va estetik didini aks ettiradi. Yor-yor qo‘shiqlari kelinning ota uyidan chiqib, yangi hayot sari yo‘l olishini ramziy tarzda ifodalaydi. Kelin salom marosimi esa yangi kelinning butun qarindosh-urug‘ oldida izzat-hurmatini namoyish etishi va ijtimoiy muhitga moslashuvini ta‘minlaydi. Bu jarayonlarda qadimiy e‘tiqodlar, diniy tasavvurlar ham o‘z ifodasini topgan.

Surxon-Sherobod vohasi nikoh marosimlari boshqa hududlardan farqli jihatlariga ega. Xususan, kuyovning qalin to‘lash jarayoni, kelinning sep tayyorlashdagi urf-odatlar va marosim davomida ishlatiladigan ramziy predmetlar vohaning etnografik boyligini ko‘rsatadi. XIX asrning ikkinchi yarmi – XX asr boshlarida marosimlarda asosan mahalliy urf-odatlar ustuvor bo‘lgan bo‘lsa, XXI asrda bu marosimlarga zamonaviy elementlar, jumladan estrada musiqalari, turli texnik vositalar va global madaniy ta‘sirlar kirib keldi. Shunga qaramay, asosiy ramziy-ma‘naviy mohiyat saqlanib qolmoqda.

Globalizatsiya jarayonida o‘zbek oilalarida to‘y marosimlari zamonaviy talablarga moslashmoqda. Biroq bu yangilanish an‘anaviy ramziy unsurlarni butunlay yo‘qotmaydi, aksincha, ularni yangi sharoitga moslashtiradi. Surxon-Sherobod vohasida ham kuyov-kelin marosimlari yoshlarning estetik didi va ijtimoiy ehtiyojlariga mos ravishda o‘zgarib borayotgan bo‘lsa-da, qadriyatlarining uzluksizligi, ramziy-ma‘naviy mazmunlarning barqarorligi saqlanib qolmoqda.

Kuyov-kelin marosimlarida ishlatiladigan predmetlar — ro‘mol, sham, tandir, non-u sochiq, sep yog‘i, gullar va boshqalar — ramziy ma‘no kasb etadi. Masalan, ro‘mol yopish jarayonida kelinning pokligi, odob-axloqi va oilaga bag‘ishlanganligi ramziy tarzda ifodalanadi. Shamlar — nur, toza hayot, ruhiy poklik ramzi. Non-u sochiq — mehmonnavozlik, erkinlik, ruhiy hamda moddiy baraka istagi.

Marosimga tayyorgarlik — sovchilikdan tortib, kelin-kuyovga madaniy va axloqiy ko‘nikma berish — bu jarayon marosimlarning ramziy-ma‘naviy qismidir. Yoshlar bu marosimlar orqali:

- oilaviy majburiyat va hurmatni o‘rganadilar,
- qarindoshlarga, mehmonlarga bo‘lgan odobni bilib oladilar,
- ayol va erkak rollarining majburiyatlarini tushunadilar.

Shu tariqa, nikoh marosimlari — faqat yig‘ilish yoki tantana emas, balki ijtimoiy va ma‘naviy madaniyatni shakllantiradigan “tajriba maktab”iga o‘xshaydi.

Zamonaviy sharoitlar (transport, kommunikatsiya, axborot texnologiyalari, iqtisodiy jihatlar) nikoh marosimlaridagi ba‘zi an‘analarni o‘zgartirdi:

- Musiqa va ijro yo‘llari — an‘anaviy kuylarga qo‘shimcha ravishda estrada, shou-biznes uslublari paydo bo‘ldi.
- To‘yning ko‘lami va narxi oshmoqda — byudjet, mehmonlar soni, sovg‘a berish kabi masalalarda yangiliklar.

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- Hududiy farqlar kuchaydi — aholining turli qatlamlari, shahar-qishloq farqi, ta'lim darajasi va global madaniy oqimlar ta'siri.

O'zbek oilaviy turmushida kuyov-kelin marosimlari jamiyatning ijtimoiy-madaniy hayotini ifodalovchi muhim hodisa sifatida alohida e'tibor talab qiladi. Bu marosimlarda ko'plab ramziy unsurlar mujassam bo'lib, ular orqali xalqning hayot falsafasi, dunyoqarashi va qadriyatlari ifodalanadi. Masalan, kelinning sep bilan ota uyidan chiqishi, kuyovning esa qarindosh-urug'lari bilan birgalikda kelin tomon yo'l olishi — nafaqat ikki yoshning, balki ikki sulolaning birlashuvini bildiradi. Shu boisdan ham nikoh marosimlari nafaqat shaxsiy, balki ijtimoiy jarayon sifatida qadrlanadi.

To'y marosimlari jarayonida qo'llaniladigan udum va ramzlarning mazmunida baraka, toza hayot, sadoqat, mehr-oqibat kabi tushunchalar asosiy o'rin egallaydi. Masalan, tandir atrofida aylanish yoki kelinning non ushlashi oilaviy hayotning mustahkamligini bildirsa, kuyovni qarshi olish jarayoni esa qarindoshlik rishtalarini mustahkamlashga xizmat qiladi. Shu bilan birga, marosimlarda kuyulanadigan qo'shiqlar, ayniqsa "yor-yor" va "kelin salom" xalqning estetik didini, shuningdek, qadimiy ishonch va tasavvurlarini saqlab kelayotgan muhim unsurlardir. Bu qo'shiqlar orqali kelinning ota-ona mehridan ayrilishi, yangi hayot sari qadam qo'yishi, jamiyat oldida o'z o'rnini topishi ramziy tarzda ifodalanadi.

Surxon-Sherobod vohasidagi nikoh marosimlari o'zining o'ziga xosligi bilan alohida ajralib turadi. Vohada ayrim urf-odatlar, masalan, qalin to'lash, sep tayyorlash, kuyovning oilaviy majburiyatlarini bajarishi va kelinning hurmat ko'rsatishi jarayonlari boshqa hududlardagidan biroz farq qiladi. Shu jihatdan ularni o'rganish o'zbek xalqining umumiy etnomadaniy boyligini yanada to'liq anglash imkonini beradi. XIX asr oxiridan boshlab bu hududda marosimlarning shakli asta-sekin o'zgarib borgan. Sovet davri ta'siri, keyinchalik esa mustaqillik yillaridagi yangilanishlar marosimlarning tashkiliy jihatlariga ta'sir qilgan bo'lsa-da, ularning ramziy va ma'naviy mazmuni barqaror saqlanib qolgan.

Bugungi kunda ham to'y marosimlari yoshlarning hayotida muhim o'rin tutadi. Internet va global madaniyat ta'sirida yangi elementlar kirib kelayotgan bo'lsa-da, marosimlarning asosiy vazifasi — avlodlar o'rtasida qadriyatlarni davom ettirish, jamiyatda birdamlikni mustahkamlash va oilaviy turmushni barqarorlashtirish — o'z kuchini yo'qotmagan. Demak, kuyov-kelin marosimlarining ramziy-ma'naviy mazmunini chuqur o'rganish nafaqat folklor va etnografiya uchun, balki milliy o'zlikni anglash hamda ijtimoiy-madaniy taraqqiyot uchun ham katta ahamiyatga ega.

Xulosa

O'zbek oilaviy turmushida kuyov-kelin marosimlari xalqning ko'p asrlik an'ana va qadriyatlarini saqlash, avloddan-avlodga yetkazish hamda jamiyatdagi ijtimoiy birdamlikni ta'minlashda alohida o'rin tutadi. Ushbu marosimlarda mujassam bo'lgan ramzlar, udumlar va qo'shiqlar o'zbek xalqining ma'naviy olamiga, milliy o'zligiga va ijtimoiy-madaniy hayotiga chuqur singib ketgan.

Tadqiqot shuni ko'rsatadiki, kuyov-kelin marosimlari orqali nafaqat oilaning barpo etilishi, balki ma'naviy-axloqiy qadriyatlar mustahkamlanadi, yoshlar hayotga tayyorlanadi va jamiyatning barqarorligi ta'minlanadi. Surxon-Sherobod vohasi misolida kuzatilgan marosimlar tarixiy davrlar o'tishi bilan turlicha shaklga ega bo'lgan bo'lsa-da, ularning ramziy-ma'naviy mazmuni saqlanib qolmoqda.

Globalizatsiya davrida ham nikoh marosimlarida an'anaviy va zamonaviy unsurlar uyg'unlashib, yangi shakl kasb etmoqda. Ammo bu jarayon o'zbek xalqining milliy an'alarini yo'qotishga emas, balki ularni zamon talablari asosida qayta tiklash va davom ettirishga xizmat qilmoqda. Demak,

kuyov-kelin marosimlari o'zbek oilaviy turmushining ajralmas qismi bo'lib, ularning ramziy-ma'naviy ma'nolarini chuqur o'rganish milliy madaniyatimizni yanada teran anglashga yordam beradi.

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**UCH O'LCHOVLI GRAFIK DASTURLARDA INNOVATSION LOYIHA YECHIMLARINI
YARATISH JARAYONIDA TEXNOLOGIK YONDASHUVLAR VA ULARNING
SAMARADORLIGI**

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grafikasi va dizayn yo'nalishi 2-kurs magistranti

Annotatsiya: Mazkur maqolada uch o'lovli grafik dasturlarda innovatsion loyiha yechimlarini yaratish jarayonining texnologik xususiyatlari yoritilgan. Unda 3D modellashtirish, vizualizatsiya, renderlash va animatsiya texnologiyalarining zamonaviy imkoniyatlari hamda ular yordamida arxitektura, sanoat dizayni, muhandislik va ta'lim sohalarida qo'llanishi tahlil qilinadi. Shuningdek, loyihalash jarayonida qo'llaniladigan dasturiy vositalarning samaradorlik darajasi, ularning texnik imkoniyatlari va foydalanuvchi uchun yaratayotgan qulayliklari ilmiy asosda ko'rib chiqiladi. Tadqiqotda texnologik yondashuvlarning loyiha sifati, vaqt tejashi va resurslardan oqilona foydalanishga ta'siri asoslab beriladi. Maqola natijalari 3D grafik dasturlardan samarali foydalanish bo'yicha amaliy tavsiyalar ishlab chiqishga xizmat qiladi.

Kalit so'zlar: 3D grafik dasturlar, loyiha texnologiyalari, modellashtirish, vizualizatsiya, renderlash, animatsiya, arxitektura dizayni, muhandislik loyihasi, texnologik yondashuv, samaradorlik.

KIRISH

Hozirgi davrda axborot texnologiyalarining jadallik bilan rivojlanishi inson faoliyatining barcha jabhalariga, xususan, loyihalash va dizayn jarayonlariga sezilarli ta'sir ko'rsatmoqda. Ayniqsa, uch o'lovli grafik dasturlar orqali innovatsion loyiha yechimlarini ishlab chiqish amaliyoti nafaqat arxitektura va muhandislik sohasida, balki ta'lim, sanoat, tibbiyot va hatto san'atda ham keng qo'llanilmoqda. 3D texnologiyalar loyihalarni vizual tarzda ifodalash, ularni aniqroq modellashtirish, tezkor o'zgarishlar kiritish va yakuniy natijani oldindan ko'rish imkonini beradi.

Shu bois 3D grafik dasturlarni qo'llashda texnologik yondashuvlar muhim o'rin tutadi. Chunki loyiha samaradorligi ko'p jihatdan qo'llanilayotgan dasturiy ta'minotning imkoniyatlari, texnik yechimlarning qulayligi va foydalanuvchi tajribasiga bog'liq. Bugungi kunda Autodesk 3ds Max, Blender, SketchUp, Cinema 4D, SolidWorks kabi dasturlar turli yo'nalishlarda samarali qo'llanilib, o'zining yuqori darajadagi grafik imkoniyatlari bilan ajralib turadi. Mazkur mavzuning dolzarbligi shundaki, zamonaviy uch o'lovli grafik dasturlar nafaqat loyihalarni yanada aniq va mukammal qilishga yordam beradi, balki ishlab chiqarish xarajatlarini kamaytirish, vaqtni tejash hamda mehnat unumdorligini oshirishda ham muhim ahamiyat kasb etadi. Shu bois ushbu maqolada 3D grafik dasturlarda innovatsion loyiha yechimlarini yaratishda qo'llaniladigan texnologik yondashuvlarning samaradorligi ilmiy asosda tahlil qilinadi.

Asosiy qism

3D grafik dasturlar loyihalarni modellashtirish, vizualizatsiya va renderlash bosqichlarida turli texnologik yondashuvlarni qo'llaydi. Masalan, kichik biznes egalari mahsulotlarini stimulyatsiya qilinadigan virtual muhitga kiritishda fotogrammetriya, LiDAR yoki NeRF kabi texnologiyalar yordamida 3D modellar yaratadilar. Ushbu modellar VR / metavers doiralarda ishlatilishi uchun bo'yicha geometriya, poligonlar soni va tekstura o'lchamlari optimallashtiriladi. Bu jarayon modellarning vizual sifatini yo'qotmay turib, ularning samarali ishlashini ta'minlashga xizmat qiladi.

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Blender va 3ds Max kabi dasturlar o'rtasida solishtirma tahlillar mavjud bo'lib, ular turli loyihalar uchun qanday mos kelishini o'rganadi. Masalan, "Blender vs 3ds Max: Which 3D Software is Right for Your Project" maqolasida Blender apparat jihatdan kamroq kuchli tizimlarda ham yaxshi ishlashi, uning GPU va CPU resurslaridan samarali foydalanishi, 3ds Max esa ko'proq professional muhitda, katta senzoralar va yuqori detalli modellarda ustunligini saqlab qolishi ko'rsatiladi.

Vizual sifat va ishlash samaradorligi o'rtasidagi muvozanat masalasi ham muhim ahamiyatga ega. O'yinni real-vaqt rejimida rendering qilishda, ayniqsa mobil platformalarda, modeldagi poligonlar soni, tekstura hajmi va boshqa grafika parametrlarini cheklash zarurati tug'iladi. "Balance Between Performance and Visual Quality in 3D Game Assets" mukammal namuna bo'lib, unda turli assetlar ustida testlar o'tkazilib, vizual sifat va ishlash vaqti (renderlash tezligi, FPS) tahlil qilingan.

Shuningdek, 3D rekonstruksiya vositalarining samaradorligi ham qiziq izlanish sohasidir. Masalan, tibbiy operatsiyalarga tayyorgarlik jarayonida ishlatiladigan 3D Slicer, ProPlan CMF va Mimics dasturlarining mandibula burchagini rekonstruksiya qilishdagi aniqligi, foydalanuvchilarning harakatlarini (masalan, dastur bilan ishlash jarayonida sichqoncha kliklari soni) va rekonstruksiya natijasining yuzaki va hajm jihatdan solishtirilishi kabi omillar tahlil qilingan. Bu turdagi tahlillar loyiha jarayonida vositalarni tanlash va samaradorlikni oshirishda foydali bo'ladi.

Yana bir muhim jihat — render texnikalari. Katta 3D chiziqli to'plamlar (line sets) va shaffoflik (transparency) elementlarini o'z ichiga olgan sahnalarni render qilish samaradorligini oshirish uchun turli texnikalar solishtirilgan. Shader optimallashtirish, GPU va CPU resurslaridan foydalanish, xotira (memory) va ko'rinish sifatiga ta'sir qiluvchi texnologiyalar muhokama qilingan. Shu bilan birga, modellashtirish va rendering jarayonidagi afzalliklar va cheklovlar amaliy misollar orqali ko'rib chiqiladi. Masalan, Blender foydalanuvchilari uchun qulayligi, bepul va ochiq kodli bo'lishi, keng qo'shimchalar (addons) orqali kengaytirilib borishi, kichik loyihalar uchun samarasi; 3ds Max esa studiya muhitida, katta loyiha va vizual effektlar talab qilinadigan hollarda ustun turishi mumkin.

Uch o'lchovli grafik dasturlar yordamida innovatsion loyihalarni ishlab chiqishda samaradorlik ko'p jihatdan texnologik jarayonlarning bosqichma-bosqich tashkil etilishiga bog'liq. Avvalo, modellashtirish bosqichida aniq geometriya, to'g'ri poligon tuzilishi va optimallashtirilgan mesh yaratish jarayonning keyingi qadamlarida tezkorlik va sifatni ta'minlaydi. Masalan, arxitektura sohasida bino maketlari yoki interyer loyihalarini modellashtirishda geometriya aniq bo'lishi, poligonlar sonining muvozanatli taqsimlanishi juda muhim hisoblanadi. Shu orqali nafaqat vizual sifat, balki texnik jihatdan resurslardan oqilona foydalanish ham ta'minlanadi.

Vizualizatsiya va renderlash bosqichida esa turli texnologik yondashuvlar qo'llaniladi. Masalan, real-vaqt rendering texnologiyalari (Unreal Engine, Unity) interaktivlikni oshirib, foydalanuvchiga loyiha natijasini tezkor baholash imkonini beradi. Shu bilan birga, ray tracing texnologiyasi yorug'lik va soyalarni yanada aniqroq aks ettirishi orqali vizual sifatni oshiradi. Arxitektura va sanoat dizaynida aynan vizualizatsiyaning sifat darajasi buyurtmachining qaror qabul qilish jarayoniga bevosita ta'sir ko'rsatadi.

Animatsiya va interaktiv modellashtirish loyihalarining keng qo'llaniladigan yo'nalishlaridan biridir. Masalan, tibbiyot sohasida inson tana qismlarini 3D rekonstruksiya qilish orqali jarrohlik operatsiyalariga tayyorgarlik ko'riladi. Shuningdek, sanoat ishlab chiqarishida mexanik qismlarning harakatlanuvchi 3D modellari texnologik jarayonlarni yanada realistik tarzda sinab ko'rishga yordam beradi.

Shuningdek, dasturiy ta'minotlarning samaradorligi ham muhim rol o'ynaydi. Masalan, Blender bepul va ochiq kodli dastur sifatida kichik va o'rta loyihalarda samarali ishlatilsa, 3ds Max ko'proq

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professional studiyalar va murakkab loyiha muhitlarida afzallik beradi. Blenderning qo'shimcha plaginlari yordamida foydalanuvchi interaktiv jarayonlarni soddalashtirishi mumkin, 3ds Max esa yuqori aniqlikdagi vizual effektlar va katta ko'lamli loyihalarda ustunlikni saqlab qoladi.

Natijada, uch o'lchovli grafik dasturlarda qo'llanilayotgan texnologik yondashuvlarning samaradorligi loyiha natijalarini tezkor, sifatli va innovatsion tarzda amalga oshirish imkonini beradi. Ayniqsa, vizual sifat, vaqt va resurslarni tejash o'rtasidagi muvozanatni topa olish bugungi loyihalash amaliyotida asosiy mezonlardan biri sifatida qaralmoqda.

Uch o'lchovli grafik dasturlarning qo'llanish sohasi nafaqat texnik loyihalar, balki ijtimoiy va madaniy jarayonlarda ham tobora kengayib bormoqda. Jumladan, arxitektura sohasida 3D modellashtirish yordamida binolarni qurilishdan oldin virtual makonda sinovdan o'tkazish imkoniyati mavjud. Bu usul nafaqat loyiha vizual ko'rinishini taqdim etadi, balki konstruktiv muammolarni erta aniqlashga, qurilish xarajatlarini kamaytirishga yordam beradi. Misol uchun, "BIM (Building Information Modeling)" texnologiyasi orqali 3D grafik dasturlar va loyiha ma'lumotlari birlashtirilib, qurilish jarayonining barcha bosqichlari optimallashtiriladi.

Ta'lim sohasida esa 3D grafik dasturlarning samaradorligi o'quvchilarga murakkab jarayonlarni tushuntirishda yaqqol namoyon bo'ladi. Virtual laboratoriyalar, interaktiv maketlar va animatsiyalar yordamida talabalar real tajriba qilmasdan turib ilmiy tajribalarni kuzatish imkoniga ega bo'ladilar. Masalan, fizikadagi atom modeli yoki biologiyadagi inson tana organlarining 3D rekonstruksiya talabalarning tushunish qobiliyatini oshiradi va o'quv jarayonini samarali qiladi.

Sanoat va ishlab chiqarish sohasida ham uch o'lchovli grafik dasturlarni qo'llash samaradorlikni sezilarli darajada oshiradi. Murakkab mexanik detallarni ishlab chiqishda 3D modellashtirish va virtual sinov texnologiyalari jismoniy prototip yaratishdan oldin xatoliklarni aniqlash imkonini beradi. Bu esa ishlab chiqarish vaqtini qisqartiradi, moddiy resurslarni tejaydi va sifatni oshiradi. Shu bilan birga, ishlab chiqarish korxonalarida 3D printerlar bilan integratsiyalashgan modellar real obyektlarga aylantirilib, dizayn va texnologik jarayonlarni yanada samarali qilish imkonini beradi.

O'yin industriyasi va kino san'atida 3D grafik dasturlar o'zining eng katta qo'llanishini topgan sohalardan biridir. Realistik muhit, jonli animatsiya va vizual effektlar yordamida yaratilgan kontent foydalanuvchilarni o'ziga jalb etadi. Masalan, "ray tracing" texnologiyasining keng qo'llanilishi o'yinlarda yorug'lik va soyalarning tabiiyroq chiqishini ta'minlab, vizual tajribani yanada boyitmoqda.

Tibbiyot sohasida ham 3D modellashtirish va vizualizatsiya jarayonlari keng ko'lamda tatbiq etilmoqda. Jarrohlik amaliyotlari oldidan organlarning 3D rekonstruksiya bemor uchun xavfsizlikni oshiradi, shifokor esa operatsiya strategiyasini oldindan sinab ko'rishi mumkin. Shuningdek, protez va implantlar ishlab chiqishda 3D grafik dasturlar orqali maxsus individual modellar tayyorlanadi.

Ushbu misollar shuni ko'rsatadiki, uch o'lchovli grafik dasturlar nafaqat texnik samaradorlikni oshiradi, balki inson faoliyatining turli jabhalarida innovatsion yechimlarni taklif etib, yangi imkoniyatlar eshigini ochadi.

Xulosa

Yuqoridagi tahlillardan ko'rinib turibdiki, uch o'lchovli grafik dasturlar bugungi kunda innovatsion loyihalarni ishlab chiqishda eng muhim texnologik vositalardan biriga aylangan. Ular arxitektura, ta'lim, sanoat, o'yin industriyasi va tibbiyot kabi sohalarda samarali qo'llanilib, loyihalarning sifatini oshirish, vaqt va resurslarni tejash, jarayonlarni real va interaktiv ko'rinishda taqdim etish imkonini bermoqda. 3D grafik dasturlarning afzalliklari orasida murakkab obyektlarni aniq modellashtirish, realistik vizualizatsiya, animatsiya va virtual muhitlarda testdan o'tkazish imkoniyatlari alohida o'rin

tutadi. Shu bilan birga, bu dasturlardan foydalanishda texnik imkoniyatlar, apparat talablari, vaqt sarfi va o'quv jarayonidagi tayyorgarlik darajasi kabi ayrim cheklovlar mavjud. Biroq ushbu muammolar texnologik rivojlanish, dasturiy ta'minotlarning takomillashuvi va foydalanuvchilarning tajriba orttirishi bilan asta-sekin hal etilmoqda. Natijada, uch o'lovli grafik dasturlarda innovatsion loyiha yechimlarini yaratishda texnologik yondashuvlar nafaqat samaradorlikni oshirish, balki yangi g'oyalar va innovatsion yondashuvlarni amaliyotga tatbiq etishda ham beqiyos ahamiyat kasb etadi. Shu sababli, ushbu texnologiyalarni ilmiy, ta'limiy va ishlab chiqarish sohalarida kengroq joriy etish kelgusida dolzarb vazifalardan biri bo'lib qoladi.

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INNOVATIVE APPROACHES TO ORGANIZING QUALIFICATION AND PEDAGOGICAL PRACTICES OF TECHNOLOGICAL EDUCATION STUDENTS

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Annotation: This article explores innovative approaches to organizing qualification and pedagogical practices of students in the field of technological education. The study emphasizes the importance of integrating modern pedagogical methods, digital technologies, and creative teaching strategies in order to enhance the professional readiness of future teachers. Special attention is given to the development of practical competencies, critical thinking, and problem-solving skills through practice-based learning. The article also highlights the significance of cooperation between higher education institutions and schools in ensuring the effectiveness of pedagogical practice.

Keywords: innovative approaches, technological education, pedagogical practice, qualification practice, professional competence, higher education, practical training, teaching methodology.

In the era of rapid scientific and technological development, the preparation of highly qualified teachers in the field of technological education has become one of the main priorities of the educational system. The effectiveness of this process largely depends on how qualification and pedagogical practices are organized, as they serve as the bridge between theoretical knowledge and practical application. Traditional methods of organizing practice are no longer sufficient to meet the demands of modern education, which requires students not only to master subject knowledge but also to acquire innovative skills, critical thinking abilities, and creative problem-solving strategies.

Innovative approaches to organizing pedagogical practice provide students with opportunities to actively apply modern teaching technologies, integrate digital resources into lessons, and develop professional competencies through interactive and practice-oriented methods. These approaches also encourage the formation of research skills, independence, and responsibility, which are essential for the future professional activity of teachers. In addition, pedagogical practice organized on the basis of innovation enhances students' motivation, helps them adapt to real educational environments, and fosters a deeper understanding of pedagogical values and responsibilities.

Therefore, the study of innovative approaches to organizing qualification and pedagogical practices is of great scientific and practical significance. It allows us to determine effective strategies for preparing future teachers who can successfully operate in modern educational conditions and contribute to the development of technological education.

The issue of organizing qualification and pedagogical practices in higher education has been widely studied by both local and international researchers. Many scholars emphasize that pedagogical practice is the most crucial component in the professional preparation of future teachers, as it ensures the integration of theoretical knowledge with real teaching experience (Richards, 2017; Zeichner, 2010). According to Shulman (1986), pedagogical practice plays a vital role in shaping teachers' professional knowledge, skills, and reflective thinking abilities.

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In recent years, the focus has shifted towards the use of innovative approaches in organizing pedagogical practices. Studies by Korthagen (2010) and Darling-Hammond (2017) highlight that innovative strategies, such as project-based learning, digital technologies, and competency-based assessment, significantly improve the quality of teacher training. These approaches not only enhance students' professional readiness but also foster creativity, problem-solving skills, and adaptability to rapidly changing educational environments.

Research in the field of technological education stresses the importance of practice-oriented and interactive methods in preparing students for real professional challenges (Guzman & Nussbaum, 2009). Integration of digital technologies, simulation methods, and collaborative learning are recognized as effective tools in improving pedagogical practice outcomes (Anderson, 2016). Furthermore, the application of innovative approaches contributes to strengthening students' motivation and encourages active engagement in the learning process (Johnson & Christensen, 2019). In the Uzbek context, educational reforms emphasize the modernization of teacher training programs, focusing on innovation and competency-based approaches. National strategies highlight that pedagogical practices should be redesigned to incorporate modern teaching technologies, interactive methods, and independent learning strategies to prepare future teachers who can effectively work in contemporary educational settings.

Overall, the literature indicates that innovative approaches to organizing pedagogical practices play a decisive role in developing professional competence, creativity, and responsibility among technological education students. However, more research is required to identify the most effective models of practice organization in the context of higher education modernization.

This study employs a mixed-method approach to investigate innovative approaches to organizing qualification and pedagogical practices of students in technological education. The methodology combines qualitative and quantitative techniques in order to ensure a comprehensive analysis of the problem.

Research Design. A descriptive and analytical research design was adopted to explore the current state of pedagogical practices and to evaluate the effectiveness of innovative approaches. The research focused on examining both theoretical foundations and practical applications in higher education institutions.

Participants. The study involved senior-year students specializing in technological education at Termez State Pedagogical Institute. In addition, supervisors, methodologists, and practicing teachers were included as expert respondents to provide feedback on the organization and outcomes of pedagogical practice.

Data Collection Methods. Several instruments were used for data collection:

- **Surveys and questionnaires** to measure students' perceptions, motivation, and professional readiness before and after pedagogical practice.
- **Semi-structured interviews** with teachers and supervisors to obtain qualitative insights into the strengths and challenges of innovative practice organization.
- **Classroom observations** conducted during pedagogical practice to assess the application of innovative teaching strategies and the interaction between students and pupils.
- **Document analysis** of practice guidelines, evaluation reports, and institutional policies to determine the level of innovation integrated into practice organization.

Data Analysis. Quantitative data collected through surveys were analyzed using statistical methods (percentage, correlation, and comparative analysis), while qualitative data from interviews and

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observations were thematically coded and interpreted. The integration of both types of data allowed for triangulation and a more reliable interpretation of results.

Ethical Considerations. All participants were informed about the purpose of the research, and their consent was obtained prior to data collection. Anonymity and confidentiality were strictly maintained throughout the research process.

This methodological framework ensures that the research findings are valid, reliable, and applicable to the context of improving pedagogical practice in technological education.

The findings of the study revealed several important aspects of organizing qualification and pedagogical practices through innovative approaches.

1. Improvement of Professional Competence. Survey results showed that more than 75% of students reported an increase in their professional competence when innovative teaching strategies (such as project-based learning, interactive methods, and digital technologies) were applied during pedagogical practice. Students highlighted that these approaches helped them connect theoretical knowledge with real teaching situations, thereby strengthening their subject mastery and pedagogical confidence.

2. Motivation and Independent Learning. It was observed that innovative approaches significantly enhanced students' motivation to engage in the practice process. Interactive tasks, the use of digital resources, and independent project assignments encouraged students to take greater responsibility for their own learning. Interviews with supervisors confirmed that students exposed to innovation displayed higher levels of creativity, enthusiasm, and initiative compared to those relying on traditional practice methods.

3. Development of Practical Teaching Skills. Classroom observations indicated that students actively used modern pedagogical technologies such as multimedia presentations, interactive simulations, and group-based problem-solving activities. These methods increased pupil engagement in classrooms and improved the quality of lessons delivered by students during practice. The application of innovative tools also improved students' classroom management skills and ability to adapt to diverse learning needs.

4. Challenges and Limitations. Despite the positive outcomes, the research identified some challenges in implementing innovative approaches. Limited access to modern digital equipment, lack of sufficient methodological support, and unequal ICT skills among students were major barriers. Some students also reported difficulty in balancing innovative teaching requirements with traditional evaluation standards. These challenges suggest the need for systemic institutional support and continuous professional development for both students and supervisors.

The results are consistent with the findings of international scholars such as Darling-Hammond (2017) and Korthagen (2010), who argue that innovative, practice-oriented approaches contribute to developing reflective and competent teachers. In the context of Uzbekistan, the research confirms that integrating innovation into pedagogical practice is essential for aligning teacher education with modern educational reforms. However, to maximize the impact, higher education institutions must invest in digital infrastructure, provide methodological guidance, and encourage research-driven innovations in practice organization.

Overall, the study demonstrates that innovative approaches not only improve the quality of pedagogical practice but also play a crucial role in preparing future teachers for the challenges of the 21st-century educational environment.

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FROM THE HISTORY OF THE ACTIVITY OF RUSSIAN MEDICAL INSTITUTIONS IN THE VILLAGES OF FERGANA REGION AT THE END OF THE XIX CENTURY – THE BEGINNING OF THE XX CENTURY

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ABSTRACT

In Fergana region, in 1898, 11 paramedic clinics and in 1906, 16 rural district hospitals were established. The article describes the introduction of modern biomedicine to the villages of the Fergana region during the colonial period of the Russian Empire, the establishment and operation of paramedic stations and rural district hospitals.

Key words and expressions: colonial period, modern medicine, paramedic clinics, rural district hospitals

INTRODUCTION

In 1876, the Kokand Khanate was abolished by the Russian Empire, and the Fergana region was formed as part of the Turkestan Governor-Generalship. Along with Russian officials and soldiers, Russian doctors also arrived in the region. According to the 1867 “Regulation,” one doctor and one midwife were assigned to each district (uezd). Naturally, it was impossible for a single doctor to provide medical care to the entire district. Although paramedic clinics and rural district hospitals were established in some villages, the local population mainly relied on traditional healers.

The aim of the study is to examine the introduction of modern medicine in the villages of Fergana region. Based on this aim, the following tasks were defined:

1. To study the establishment and activity of paramedic clinics in the region.
2. To research the establishment, problems, and shortcomings of rural district hospitals.

REVIEW OF LITERATURE AND METHODS

Since the literature on the history of the healthcare system in Turkestan was created under different historical and political conditions, it is advisable to classify it chronologically into three groups:

1. Literature produced during the colonial period of the Russian Empire.
2. Soviet-era literature.
3. Post-independence literature.

During the Russian Empire’s rule, physicians such as V. Kushelevsky, A. Shishov, G. Kolosov, and others conducted research on the medical-sanitary geography of Turkestan, traditional medicine, and medical care for the population.

In the Soviet period, modern medicine was ideologically opposed to religion and folk medicine, and the history of medicine was interpreted from the perspective of communist ideology. During this period, scholars such as A. Qodirov, A.I. Pogonyants, K. Khusanbayeva, and others researched the history of healthcare.

In the years of independence, researchers like S.B. Shadmanova, M. Makhmudov, A. Badalov, and others have continued to investigate the history of healthcare in Turkestan. Although much attention has been paid to the history of healthcare in Fergana region, the subject has not yet been fully explored, and additional research is needed.

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The article is based on generally accepted historical methods: historicism, scientific objectivity, comparative-logical analysis, sequence, and impartiality.

RESULTS AND DISCUSSION

Initially, Russian medical institutions operated only in cities. Due to the absence of hospitals in villages, rural residents could only seek help in military infirmaries and hospitals. However, because of the shortage of places and the high costs of treatment, many were often turned away [1: 98].

The plague epidemic that broke out in the village of Anzob in Samarkand district in 1898 caused serious alarm among the Russian colonial authorities. This epidemic highlighted the issue of the lack of medical care in villages. As a result, on December 3, 1898, the Council of the Turkestan Governor-General decided to establish paramedic clinics in the villages of Fergana region.

By 1900, paramedic clinics were operating in the following places: Margilan district: Chimyon, Kuva, Rus village; Andijan district: Sultonobod, Bozorqo'rg'on, Butaqora; Kokand district: Konibodom, Rishton; Namangan district: Koson, Asht; Osh district: Pokrovskiy. A total of 11 paramedic clinics were active in the region. Medical advice and medicines were provided free of charge and funded from district budgets [2].

However, the allocated funds were insufficient. For example, according to the report of the Andijan district doctor on March 18, 1901, in 1900, 8070 patients applied to the district paramedic stations, of which 2387 suffered from malaria. An annual budget of 300 rubles was allocated for medicines to the three paramedic stations in Andijan district. Since the treatment of each malaria patient required 30 grains of quinine [3], 5 kilograms of quinine were needed for 2387 patients. In 1900, the price of 1 kg of quinine was 54 rubles. Thus, of the 300 rubles allocated, 270 rubles were spent only on quinine [4].

Although feldshers were not as qualified as doctors, they successfully treated malaria, skin diseases, and other widespread illnesses. In 1904, of the 102,149 patients who applied to Russian medical institutions, 35.4% were treated by feldshers [5].

The situation of the paramedic clinics was difficult. Because each clinic had to serve extremely large areas, most of the population could not benefit from them. In 1898, 1,274,042 rural residents of Fergana region were served by just 10 paramedic clinics, meaning that on average each clinic had to serve 127,404 people [6].

Most feldshers were former military medics who had not graduated from medical schools. Their insufficient medical training, lack of knowledge of the local language and traditions, the lack of supervision, and the meager annual budget of 150 rubles (barely enough for basic medicines) made it difficult to provide quality medical care through paramedic clinics [7: 41].

According to a report from the Andijan district doctor Nesmelov to the Fergana provincial doctor, paramedic clinics were often located in rented houses, which were in poor condition. For example, the roof of the Sultonobod clinic collapsed due to lack of repair, forcing feldsher Ignatyuk to move with his medicines into an abandoned prison building [8].

Since paramedic clinics could not provide sufficient medical services, the issue of establishing doctor's stations in villages was raised. On December 25, 1905, a special law was passed to establish 44 rural doctor's stations in Turkestan, including 16 in Fergana region. The distribution of these institutions was determined by provincial governors.

Distribution of district hospitals in Fergana region.[9]

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№	medical service districts	The volosts included in the medical district	Total population	Appeal in 1907
Margilan uезд				
1	Shahrixon	Shahrixon, Asaka, Qoratepa-Chaukent, Segazin, Yozyovonning shimoliy qismi, Baliqchi	142291	5177
2	Vodil	Chimyon, Auval, Aukesek-Bo'ston, Nayman, Oltiariq volostlari, Marg'ilonning janubiy qismi	95908	6150
3	Rus qishlog'i	Aravon, Ichkilik, Kuli, Marxamat, Novkat	48736	7529
4	Quva	Quva, Qo'qonqishloq, Yakkatut, Yozyovonning janubiy qismi, Marg'ilon va Fayziobodning shimoliy qismiga	108372	4091
Andijan uезд				
5	Izboskan	Izboskan, Mayli-Soy, Xaqqulobod, Norin, Kanol-Karagir	-	10436
6	Bozorqo'rg'on	Bozorqo'rg'on, Qo'qonqishloq, Naukentskaya, Maygirskaaya	-	3660
7	Qo'rg'ontepa	Qo'rg'ontepa, Yorboshi, Jalaquduq, Qorasuv, Xakent	-	2510
8	Jalolobod	Jalolobod, Aim, Yasin, Ko'gart	-	3358
Kokan uезд				
9	Rishton	Rishton, Qoraqalpoq, Nayman, Yangiqo'rg'an, Ultarma, Zadian, Buvayda, Kenagas	-	6481
10	Beshariq	Beshariq, Qaynar, Aravon, Ganjiravon, Kudash, Qipchok, Janjal, Yaypan	-	5166
11	Isfara	Isfara, Konibodom, Maxram, Laylak, Naygut-Qipchoq, So'x	-	1549
Namangan uезд				
12	Zarkent	Nanay, Bayaston, Bag'ish, Chotqol, Saruy, Pishqo'rg'on, Yangiqo'rg'on	74924	1140
13	Pop	Pop, Olmos, Varzik, Asht Bobodaxon, Chodak	83634	2619
14	Koson	Koson, Tergachi, To'raqo'rg'on, Qutlug'-Said, Qirg'izqo'rg'on, Shaxand	84323	3932
15	Chortoq	Susamir, Qirqo'g'il, Arim, Chortoq, Xonobod, Uychi, Kepi	82406	9932
Osh uезд				
16	Pokrovskiy	Qurshob, Gulchin, Oloy, Turuk, Buloqboshi, O'zgan, Manyak, Akburi, Qoshg'arqishloq	121000	2252

Due to the small number of hospitals, they had to serve very large territories. For example, the Shahrixon station served 142,291 people across 250 square versts, while the Rus village station served 48,736 people across 500 square versts [10].

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According to the report of the Fergana military governor, no suitable buildings were available for the 16 planned rural hospitals. Local communities also refused to construct new buildings because the rental payment for hospitals was too low (300 rubles). Therefore, the governor requested 10,000 rubles for the construction of each hospital from the Turkestan Governor-General [11].

As a result, although each of the 16 rural hospitals was allocated six patient beds, due to the lack of buildings they could provide only outpatient services [12]. Only on March 5, 1908, was the construction budget for these hospitals approved, with 337,176 rubles allocated from local budgets [13]. Additional funds were provided in 1911 and 1914, and gradually hospitals were built in Vodil, Shahrison, Bozorqo'rg'on, Jalolobod, Izboskan, Zarkent, Rus village, and others [14].

However, one major drawback of the new healthcare system was the elimination of paramedic clinics, which reduced access to healthcare in rural areas [15]. Moreover, because the new hospitals were located mainly in densely populated areas, nomadic and sparsely populated regions remained far from medical care [16].

CONCLUSION

Although the introduction of modern medicine to the villages of Fergana region was a positive development, medical services remained insufficient. Limited funds, hospitals and clinics serving vast areas, and the lack of qualified medical staff meant that the population largely continued to rely on traditional healers.

Paramedic clinics, while valuable, could not provide adequate care due to vast service areas, limited resources, and feldshers' insufficient knowledge. The establishment of rural hospitals improved access to medical care somewhat, but the lack of proper buildings and the large territories they served meant that the quality of care was still poor.

The plan to build an additional 19 rural hospitals in Fergana region in 1912 was delayed due to bureaucratic obstacles and was ultimately halted by the outbreak of the First World War.

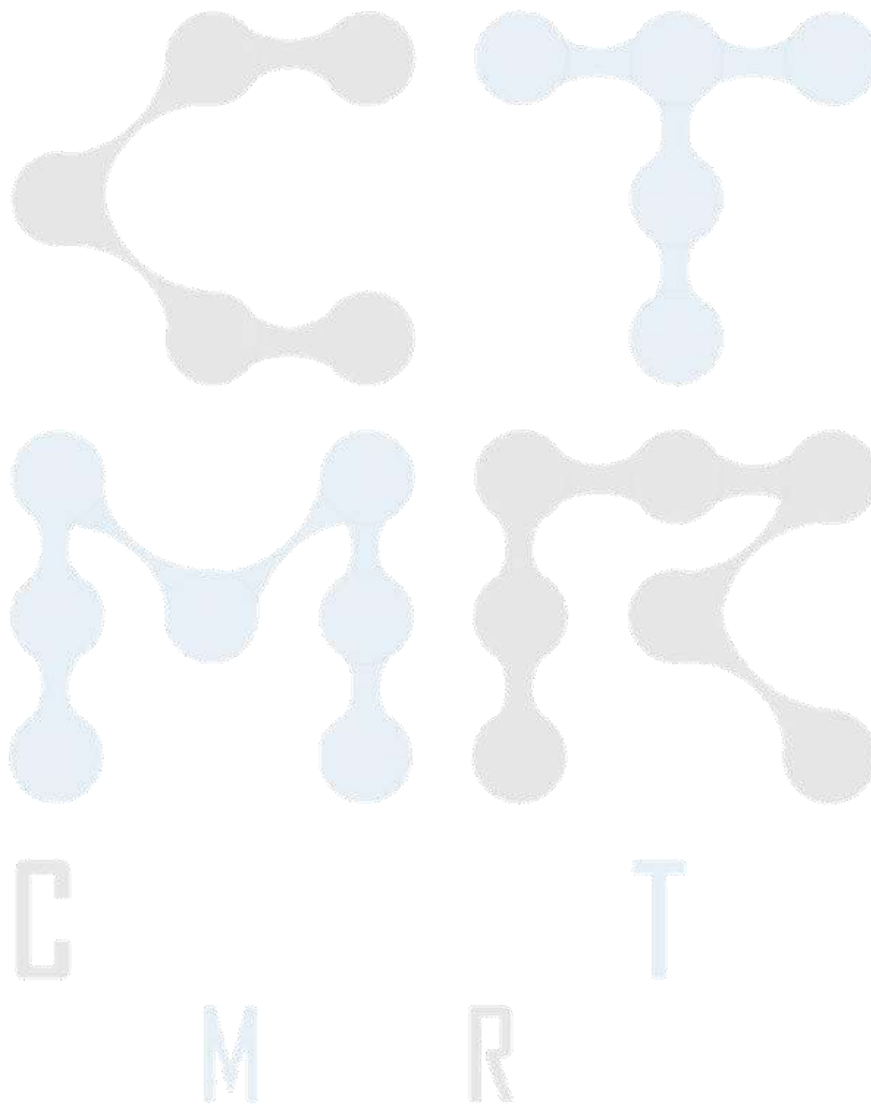
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YUQORI DARAJALI MIOPIYANING HOMILA VA TUG'RUQGA TASIRI

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Annotatsiya. Ushbu maqolada yuqori darajali miopiyaning homiladorlik va tug'ruq jarayoniga ta'siri yoritilgan. Miopiyasi og'ir bo'lgan ayollarda homiladorlik davrida ko'z to'r pardasida degenerativ o'zgarishlar, retina ajralishi xavfi oshishi mumkinligi, shuningdek, tabiiy tug'ruq va kesarcha kesish o'rtasidagi tanlovda oftalmologik ko'rsatmalar muhimligi ta'kidlanadi. Maqolada miopiya darajasining tug'ruq taktikasi tanlashdagi ahamiyati, zamonaviy ko'z diagnostikasi usullari va profilaktik choralar haqida ma'lumot beriladi.

Kalit so'zlar: Yuqori darajali miopiya, homiladorlik, tug'ruq taktikasi, retina ajralishi, kesarcha kesish, oftalmologik nazorat.

Kirish

Miyopi (yaqinni ko'ra olmaslik) ko'zning patologik jarayonlari orasida ikkinchi o'rinda turadi. Reproduktiv yoshda ayollarning 23-30% o'rtacha miyopiyadan aziyat chekadi, 7-11% esa yuqori miyopiyaga ega. Homilador ayollarda ekstragenital kasalliklar tarkibida miyopi 18-20% ni tashkil qiladi. Ushbu ko'z kasalligi nafaqat meros orqali uzatiladi, balki inson hayoti davomida ham sodir bo'lishi mumkin. Miyopi (yaqinni ko'ra olmaslik) rivojlanishi uchun turli xil patologik omillar, xususan, miya patologiyasi, yuqumli kasalliklar, ko'rish organiga stressning kuchayishi va boshqalar bo'lishi mumkin. Miyopiyaning dahshatli asoratlaridan biri bu ko'zning to'r pardasidagi distrofik o'zgarishlar bo'lib, ular ko'rish keskinligining progressiv pasayishi bilan tavsiflanadi va eng og'ir asorat retinaning ajralishi hisoblanadi. Quyidagi shikoyatlarga e'tibor qaratish lozim: ko'z oldida miltillovchi dog'lar, miltillash, ko'zning tez charchashi. Klinik rasmga ko'ra, miyopi darajalar bilan ajralib turadi: zaif, o'rta, yuqori. Ammo shuni hisobga olish kerakki, davolash taktikasini miyopi darajasi emas, balki

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retinaning periferik vitreokorioretinal distrofik o'zgarishlar (PVCD) belgilaydi. Miyopiyadagi bu asorat 40% ga etadi. Homiladorlik - bu ayolning hayotidagi eng muhim davr. Ma'lumki, bu fiziologik holat bo'lsa-da, homiladorlik paytida har bir organ, har bir tizim o'zgarishlarga uchraydi. Va ko'rish organi bundan mustasno emas. Shu munosabat bilan homilador ayollarda miyopi muammosi dolzarb bo'lib, ham akusher, ham oftalmologlarning diqqat markazida bo'ladi. Axir, homiladorlikning taktikasi va etkazib berish usulini tanlashda muhim omil bo'lgan retinaning holati. Oftalmologlarning fikriga ko'ra, ko'zning to'r pardasida distrofik o'zgarishlar sodir bo'lmagan miyopi homiladorlik uchun xavf tug'dirmaydi va tabiiy tug'ilish kanali orqali tug'ilish mumkin. Miyopiyaning oqibati bo'lgan retinal ajralish xavfi nafaqat yuqori darajada, balki zaif va o'rtacha darajada bo'lsa ham, u tug'ruqning itarish davrini o'chirib qo'yishi ko'rsatilgan. Ko'pgina tadqiqotchilar homiladorlik paytida yuzaga keladigan patologik jarayonlarni miyopiyaning klinik kechishi uchun noqulay moment ekanligini ta'kidlaydilar, chunki yurak-qon tomir tizimining buzilishi fonida ko'zlarda qon aylanishi pasayadi, siliyer tanadagi qon oqimi yomonlashadi, optik asabning shishishi, ko'zning to'r pardasida qon ketishi paydo bo'ladi. Eng xavfli lahza bu ko'rish organiga salbiy ta'sir ko'rsatadigan gemodinamikada sezilarli o'zgarishlar ro'y beradigan va bachadonning kontraktil faolligi tufayli jismoniy faollik qo'shiladigan itarish davri deb ishoniladi. Shu munosabat bilan, ko'rish organi uchun ushbu asoratlarni oldini olish uchun ko'plab mualliflar tug'ruqning itarish bosqichini to'xtatish zarur deb hisoblaydilar: akusherlik qisqichlari yoki sezaryen yordamida. Yaqin vaqtgacha miyopi uchun ushbu operatsiyalarning ulushi 18-30% edi. Bugungi kunda miyopiyada tug'ilishning taktikasi mehnatni konservativ boshqarish foydasiga o'zgardi. Miyopiyaning tuzatishning samarali usulining paydo bo'lishi, ya'ni homiladorlik davrida periferik profilaktik lazerli retinopeksiyadan foydalanish tug'ilishni tabiiy tug'ilish kanali orqali amalga oshirishga imkon berdi. Homilador ayollarda retinaning cheklangan lazerli koagulyatsiyasi retinaning ajralishi kabi dahshatli asoratning oldini olishning eng samarali va xavfsiz usuli ekanligiga ishoniladi. Ushbu muammo bo'yicha ko'plab nashrlar mavjudligiga qaramay, ushbu patologiya uchun ayrim jihatlari keyingi o'rganish uchun alohida qiziqish uyg'otadi.

Tadqiqot maqsadi: Miyopiya bo'lgan ayollarda homiladorlik va tug'ish natijalarini tahlil qilish.

Materiallar va usullar

Respublika Ixtisoslashtirilgan Ko'z Mikroxirurgiyasi Ilmiy-Amaliy Tibbiyot Markazi Termiz Filialining tug'ruq bo'limi materiallari asosida miyopi bo'lgan 100 nafar ayolda homiladorlik va tug'ishning retrospektiv tahlili o'tkazildi. Ikkita klinik

guruh tuzildi. Birinchi guruhga homiladorlik davrida periferik profilaktik lazerli retinopeksiya qilingan 48 nafar ayol kirdi. Ikkinchi guruhda turli sabablarga ko'ra ushbu operatsiyani o'tkazmagan 52 nafar ayol ishtirok etdi. Ikkala guruhdagi barcha ayollar klinik ko'rikdan o'tkazildi, ultratovush tekshiruvi, homilaning DPM va CTG va oftalmolog tomonidan dinamik kuzatuvdan o'tkazildi.

Natijalar va muhokama

Birinchi va ikkinchi klinik guruhdagi ayollar uchun bu birinchi homiladorlik edi. Guruhlar yoshi va ijtimoiy mavqei bo'yicha taqqoslangan. Bu ayollarda ekstragenital patologiya yo'q edi. Birinchi guruhdagi 48 nafar ayolning 11 nafarida (22,91%) engil miyopi, 20 nafarida (41,67%) o'rtacha miyopi, 17 nafarida (35,42%) yuqori darajada miyopi bor edi. Ikkinchi guruhdagi 52 nafar ayoldan 12 nafarida (23,08%) engil miyopi, 19 nafarida (36,54%) o'rtacha, 21 nafarida (40,38%) yuqori darajada miyopi bor edi. Ko'rinib turibdiki, engil, o'rtacha va yuqori miyopi nisbati ikkala guruhda ham taqqoslangan. Birinchi guruhdagi 48 nafar ayoldan 5 nafarida (10,42%) homiladorlik davrida erta gestoz, 8 nafarida (16,67%) o'rtacha kamqonlik, 6 nafarida (12,50%) 12-14 xaftada abort qilish xavfi, 10 nafarida (20,83%) fetoplasental etishmovchilik (FPI) bor edi. 19 (39,58%) ayollarda homiladorlik qulay bo'lgan. Ikkinchi guruhdagi 52 nafar ayoldan 7 nafarida (13,47%) erta gestoz, 11 nafarida (21,15%) FPI, 9 nafarida (17,30%) engil kamqonlik, 4 nafarida (7,69%) 32-34 xaftada erta tug'ilish xavfi bor edi. 21 (40,39%) ayolda homiladorlik asoratlanmagan. Shuni ta'kidlash kerakki, miyopi mavjudligi homiladorlikning borishiga ta'sir qilmaydi, chunki bunday asoratlar boshqa patologiyalari bo'lgan ayollarda uchraydi. Bizning ma'lumotlarga ko'ra, fiziologik davom etadigan homiladorlik miyopiyaga salbiy ta'sir ko'rsatmaydi. Bizning fikrimiz boshqa mualliflarning ma'lumotlariga mos keladi. Shu bilan birga, akusherlik patologiyasi, xususan, preeklampsi (engil, o'rtacha, og'ir), shubhasiz, ko'rish organida patologik o'zgarishlarga olib kelishi haqida ma'lumotlar mavjud. Preeklampsi, ayniqsa og'ir shaklda, arterial spazm, retinal shoxlarning trombozi, qon ketishi, shish paydo bo'lishiga olib kelganligi sababli, bularning barchasi retinal ajralish uchun zarur shart-sharoitlarni yaratadi. Homiladorlik davrida barcha ayollar 10-12 hafta, 28-30 hafta, 34-36 xaftada oftalmolog tomonidan kuzatilgan. Va miyopiyaning og'irligiga qarab, etkazib berish usuli masalasi hal qilindi. Birinchi guruhdagi barcha 48 ayolga homiladorlikning 28-30 xaftaligida setchatka dekolmasining oldini olish maqsadida periferik profilaktik lazer retinopeksiyasi o'tkazildi. Birinchi guruhdagi barcha 48 ayol tabiiy tug'ilish kanali orqali to'liq muddatli chaqaloqlarni tug'di, Apgar 8-9 ball. Homiladorlik davrida ikkinchi klinik guruhning 52 nafar ayolida ham retinada degenerativ o'zgarishlar aniqlangan, ammo bir qator sabablarga ko'ra ular lazerli retinopeksiyadan o'tmagan. Ushbu toifadagi ayollar, oftalmologning tavsiyasiga ko'ra,

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mehnatning itarish davrini o'chirish uchun ko'rsatildi. Shu maqsadda perinatal xavfni kamaytirish uchun qorin bo'shlig'i orqali tug'ilishga ustunlik berildi. Ikkinchi klinik guruhdagi barcha 52 ayol rejalashtirilgan sezaryen bo'limidan o'tdi. Ushbu toifadagi ayollarda tug'ilgan bolalarning holati Apgar shkalasi bo'yicha 8-9 ball bilan baholandi. Tug'ilgandan so'ng, birinchi va ikkinchi klinik guruhdagi ayollar oftalmologik tekshiruvdan o'tdilar. Ikkala guruhda ham ko'rishning yomonlashuvi aniqlanmadi.

Xulosa

Yuqoridagilardan kelib chiqadiki, homiladorlik paytida miyopi bo'lgan ayollar nafaqat akusher, balki oftalmolog tomonidan ham homiladorlik va tug'ilishni boshqarish taktikasini birgalikda ishlab chiqish uchun kuzatilishi kerak. Periferik vitreokorioretinal retinal distrofiya bilan og'rigan bemorlarda periferik profilaktik lazerli retinopeksiyani 28-30 xaftada, ya'ni tug'ilishdan 6-8 hafta oldin o'tkazish tavsiya etiladi. To'r pardani lazer bilan tuzatishdan foydalanish qorin bo'shlig'ida tug'ilish foizini kamaytirdi va shuning uchun sezaryen paytida asoratlar xavfini kamaytirdi.

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**VIRUSLI KON'YUKTIVIT ETIOLOGIYASI, KLINIK KO'RINISHI,
DAVOLASH VA OLDINI OLISH CHORALARI**

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Annotatsiya. "Pushti ko'z" deb ham ataladigan kon'yunktivit - kon'yunktivaning yallig'lanishi. Konyunktivitning uchta eng keng tarqalgan sababi virusli, allergik va bakterialdir va aksariyat hollarda adenovirus sabab bo'ladi. Konyunktivit qon tomirlarining kengayishi natijasida ko'zning ikkinchi darajali eritematoz ko'rinishiga olib keladi va odatda ko'z yoshi va / yoki shilliq qavatning ko'payishi bilan birga keladi. Ushbu faoliyat virusli kon'yunktivitning xavf omillari, baholash va davolashni tavsiflaydi va ta'sirlangan bemorlarga yordam ko'rsatishni yaxshilashda professional jamoaning rolini ta'kidlaydi. Ushbu maqola virusli konyunktivitlarning etiologiyasi, klinik ko'rinishi, davolash va oldini olish choralari haqida.

Kalit so'zlar: Pushti ko'z, keratokonjunktivit, sklera, Adenovirus, Shox parda, antibiotik tomchilari, virusli kon'yunktivit, qovoqlar.

Kirish

Konyunktivit qizil ko'zning eng keng tarqalgan sabablaridan biri bo'lib, barcha yoshdagi va ijtimoiy-iqtisodiy sinfdagi bemorlarga ta'sir qiladi. Virusli kon'yunktivit yuqumli kon'yunktivitning ko'pchiligi uchun javobgar bo'lib, holatlarning 75% ni tashkil qiladi. Virusli kon'yunktivitning xususiyatlariga qizarish, qon tomirlarining to'lib ketishi, ko'zdan oqindi, og'riq, fotofobi va psevdomembrana kiradi. Favqulodda vaziyatlar bo'limiga yoki umumiy amaliyot shifokoriga tashrif buyurish, diagnostika testlari, retsept bo'yicha davolanish va ish yoki maktabda yo'qolgan vaqt xarajatlari tufayli sezilarli iqtisodiy va ijtimoiy ta'sir mavjud. Virusli kon'yunktivit holatlarida antibiotiklarni buyurish har qanday sog'liqni saqlash tizimining asosiy xarajatlaridan biridir. Birlashgan Qirollikdagi yuqumli kon'yunktivit bilan og'rikan bemorlar uchun jamiyatda antibiotiklarni davolash stavkalari 80% dan 95% gacha. Virusli

kon'yunktivitning diagnostik ko'rsatkichlarining yaxshilanishi, noto'g'ri antibiotiklarni buyurishni qisqartirdi va Qo'shma Shtatlarda yiliga 430 million AQSh dollarini tejaydi. Virusli kon'yunktivitni davolashning o'ziga xos usullari hozirda klinik sinovlarda baholanmoqda.

Etiologiyasi

Konyunktiva sklera deb ataladigan ko'zning oq qismini qoplaydigan nozik yarim shaffof membranadir. Konyunktiva shox pardaning limbusidan boshlanib, sklerani ham, qovoqlarning orqa yuzasini ham qoplaydi. Skleralni qoplaydigan qismi bulbar kon'yunktiva deb ataladi va qovoqlarning orqa yuzasida joylashgan qismi palpebral kon'yunktivadir.

Virusli kon'yunktivitning eng keng tarqalgan sababi adenoviruslardir. Adenovirus Adenoviridae oilasining bir qismi bo'lib, konvertsiz, ikki ipli DNK virusidan iborat. Adenovirus keltirib chiqaradigan tez-tez bog'liq bo'lgan infeksiyalar orasida yuqori nafas yo'llarining infeksiyalari, ko'z infeksiyalari va bolalardagi diareya mavjud. Bolalar virusli infeksiyalarga ko'proq moyil bo'lib, kattalarda esa ko'proq bakterial infeksiyalar yuqadi. Virusli kon'yunktivitni virus bilan to'g'ridan-to'g'ri aloqa qilish, havo orqali yuborish va suv havzalari kabi suv omborlari orqali olish mumkin.

Virusli kon'yunktivitning aksariyat holatlari 10-14 kun davomida juda yuqumli. Qo'llarni yuvish va ko'z bilan aloqa qilmaslik boshqalarga yuqtirishning oldini olishning kalitidir.

Adenovirusli kon'yunktivit

Virusli kon'yunktivit holatlarining 90% gacha adenoviruslar sabab bo'ladi. Bolalarda HAdV 3, 4 va 7-turlari sababli faringokonjunktival isitma (PCF) isitma, faringit, periaurikulyar limfadenopatiya bilan birga o'tkir follikulyar kon'yunktivitga olib keladi. Epidemik keratokonjunktivit (EKC) adenovirus sabab bo'lgan eng og'ir ko'z infeksiyasi bo'lib, klassik ravishda 8, 19 va 37 serotiplari bilan bog'liq. Shox parda epiteliyda va oldingi stromada virus replikatsiyasidan ta'sirlanishi mumkin, bu esa yuzaki punktat keratopatiyaga va subepitelial epiteliyaga olib keladi. 2% povidon-yod bilan monoterapiya simptomlarning yo'qolishini ko'rsatdi. Povidon-yodning kortikosteroidlar bilan keyingi kombinatsiyasi 3-bosqich randomizatsiyalangan nazorat ostida tadqiqotlardan o'tkazilmoqda. Subepitelial infiltratlardan kelib chiqqan vizual simptomlar zaiflashishi mumkin va takrolimus, 1% va 2% siklosporin A ko'z tomchilaridan foydalanish samarali bo'lishi ko'rsatilgan.

Herpetik kon'yunktivit

Herpes kon'yunktiviti kattalar va bolalarda keng tarqalgan va follikulyar kon'yunktivit bilan bog'liq. Herpes simplex virusi (HSV) o'tkir kon'yunktivit holatlarining 1,3-4,8% ga sabab bo'ladi. Mahalliy antiviral vositalar bilan davolash virusning tarqalishini va keratit rivojlanishini kamaytirishga qaratilgan. Varicella-zoster ko'zning to'g'ridan-to'g'ri aloqasi yoki terining shikastlanishi yoki infektsiyalangan aerozollangan zarrachalarning inhalatsiyasi, ayniqsa trigeminal asabning birinchi va ikkinchi shoxlari ishtirokida kon'yunktivitga olib kelishi mumkin.

O'tkir gemorragik kon'yunktivit (AHC)

Bu virusli kon'yunktivitning juda yuqumli shakli bo'lib, alomatlariga begona jismni sezish, epifora, ko'z qovog'ining shishishi, kon'yunktiva kimozi va subkon'yunktiva qon ketishi kiradi. Bemorlarning kichik bir qismida isitma, charchoq, oyoq-qo'llardagi og'riqning tizimli belgilari mavjud. Yuqtirish asosan qo'ldan ko'zga va fomitlar orqali sodir bo'ladi. Picornaviruses EV70 va coxsackievirus A24 varianti (CA24v) mas'ul patogenlar hisoblanadi.

Virusli kon'yunktivitning tashxisi klinik va laboratoriya belgilariga asoslanadi. Etiologiyani to'g'ri va erta aniqlash tegishli davolash va uzoq muddatli asoratlarni oldini olishga imkon beradi.

Klinikasi

Virusli kon'yunktivit bilan og'rigan bemorlarda to'satdan paydo bo'lgan begona jism hissi, qizarish ko'zlari, qichishish, yorug'likka sezgirlik, yonish va suvli oqindi. Bakterial kon'yunktivit bo'lsa, bemorlarda yuqorida ko'rsatilgan barcha belgilar mavjud, ammo uyg'onganida shilliq-yiringli oqindi va ko'z qovoqlarining zarralari paydo bo'ladi. Virusli kon'yunktivit bilan og'rigan bemorlarda odatda yuqori nafas yo'llari infektsiyasi yoki yaqinda kasal odam bilan aloqa qilish tarixi mavjud. Ko'rish keskinligi odatda ularning asosiy ko'rish darajasida yoki yaqinida bo'ladi. Shox pardada ko'rishni susaytiradigan va yorug'likka sezgirlikni keltirib chiqaradigan subepitelial infiltratlar bo'lishi mumkin. Konyunktiva AOK qilinadi (qizil) va shish paydo bo'lishi ham mumkin. Ba'zi hollarda tarsal kon'yunktivada membrana yoki psevdomembrani ko'rish mumkin. Bu qon yoki limfa tomirlaridan mahrum bo'lgan fibringa boy eksudatlar varaqlari. Haqiqiy membranalar subepitelial fibroz va simblfaronning rivojlanishiga olib kelishi mumkin, shuningdek, olib tashlanganida ko'p qon ketishi mumkin. Palpebral kon'yunktivada follikullar, ko'zga ko'ringan markaziy tomiri bo'lmagan kichik, gumbazsimon tugunlarni ko'rish mumkin. Virusli kon'yunktivit bilan og'rigan bemorlarning aksariyatida follikullar mavjud bo'ladi,

ammo papillalarning mavjudligi virusli etiologiyani istisno qilmaydi. Preaurikulyar limfa tugunlarini palpatsiya qilish teginish uchun sezgir bo'lgan reaktiv limfa tugunini aniqlashi mumkin va virusli kon'yunktivitni bakterialdan ajratishga yordam beradi. HSV bilan yuz yoki ko'z qovoqlarida pufakchalar paydo bo'lishi mumkin va ko'rish ta'sir qilishi mumkin. Shox pardaning shikastlanishi mumkin. Herpes zoster bilan vesikulalarning chiziqli dermatomal naqshlari mavjud. Konyunktiva ko'pincha qizil rangga ega, shilliq yiringli oqindi.

Davolash

Virusli kon'yunktivitni davolash simptomatik bartaraf etishga va o'z-o'zini cheklaydigan virusli infektsiyani yo'q qilishga qaratilgan. Konyunktivitni bartaraf etish 3 haftagacha davom etishi mumkin. Davolash kuniga to'rt marta yoki kuniga o'n martagacha konservantsiz ko'z yoshlari bilan moylash uchun sun'iy ko'z yoshlarini qo'llashni o'z ichiga oladi. Periokulyar hududga ho'l latta bilan sovuq kompresslar simptomatik yengillikni ta'minlaydi. INFEKTSION boshqa ko'zlarga yoki boshqa odamlarga tarqalishining oldini olish uchun bemordan tez-tez yuvib turish, sochiq yoki choyshabni almashish va ko'zlariga tegmaslik bilan yaxshi qo'l gigienasiga rioya qilish kerak. Odamning ko'zlari qizargan va yirtilgan holda virusni yuqtirishi mumkin.

Agar membrana yoki psevdomembrana mavjud bo'lsa, bemorning qulayligini yaxshilash va har qanday chandiqlik paydo bo'lishining oldini olish uchun uni yoriq chiroqda tozalash mumkin. Ushbu membranalarni zargar forseps yoki topikal anestezi bilan namlangan paxta sumkasi bilan tozalash mumkin. Topikal steroidlar simptomlarni bartaraf etishga yordam beradi. Biroq, ular virusning tarqalishini uzoqroq davom ettirishi mumkin. Bemorlarga ular o'ta yuqumli ekanligi va simptomlari yo'qolguncha ish yoki maktabdan voz kechishlari kerakligi haqida xabar berish kerak. Ukolni qo'llashda ular infektsiya borligini ko'rsatadigan vizual alomatlarisiz virusni to'kishlari mumkin. Steroidlar subepitelial infiltratlar yoki kuchli kon'yunktiva in'ektsiyalari tufayli ko'rish qobiliyati pasaygan bemorlar uchun ajratilishi kerak, bu esa kutilgan noqulaylikni keltirib chiqaradi.

Virusli konyuktivi profilaktikasi

Virusli kon'yunktivitning aksariyati adenoviruslardan kelib chiqadi va tez-tez qo'l yuvish, dezinfektsiyalash va kon'yunktivitli bemorlarni izolyatsiya qilish jamiyatning keyingi tarqalishini kamaytirishi mumkin. Virusli kon'yunktivitni davolashning yagona usuli yo'q. Semptomlarni sun'iy ko'z yoshlar, sovuq kompresslar va antigistaminlar bilan bartaraf etish samarali bo'lishi mumkin. Antibiotik tomchilari bakterial qarshilikni oshirishi mumkin va noqulaylik va chandiqlarni kamaytirish

uchun membranalarni yoki psevdomembrani olib tashlashni talab qiladi. Topikal kortikosteroidlarni qo'llash fotofobi va ko'rishning pasayishi bilan bog'liq membrana shakllanishi va subepitelial infiltratsiya mavjud bo'lgan tanlangan hollarda ko'rsatiladi.

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Annotatsiya. Ushbu maqolada bronza davrida O'rta Osiyo janubida (shu jumladan, Surxon vohasida) ishlab chiqaruvchi xo'jaliklar va ixtisoslashgan hunarmandchilik sohalarining rivojlanishi, savdo-sotiq va madaniy aloqalarning tobora kengayib borishi, shuningdek kulolchilik, bronzaga ishlov berish va kasb-hunarning boshqa sohalari haqida ma'lumot berilgan.

Kalit so'zlar: Sopollitepa, Jarqo'ton, bronzadan yasalgan xanjarlar, o'q uchlari va nayza paykonlari, pichoqlar, boltalar, jez ignalar, bronza buyum-halqalar, bilakuzuklar, jez oynalar, munchoqlar, kulolchilik charxi, patriarxal urug'.

Yozma manbalarda yoritilmagan bronza davri tarixi va madaniyatini faqat arxeologiya materiallari asosida tiklash mumkin. Ular moddiy va ma'naviy madaniyat, iqtisodiy munosabatlar va ijtimoiy aloqalar tarixini o'rganishda muhim manba bo'lib xizmat qiladi. Tarixiy rekonstruksiya jarayonida quyidagilarni ochib berish muhim:

1. Turar joylarning topografiyasi va me'morchilik tarxi, alohida uy-joylardagi xonalarning funksiyasi.
2. Tabiiy sharoit (paleogeografiya, paleoekologiya), moddiy ishlab chiqarish imkoniyatlari, hayot sharoiti, inson turmush tarzi, antropogen landshaftning rivojlanishi.
3. Jamoalarning iqtisodiy tuzilishi, xo'jalik shakllari, xonaki va ixtisoslashgan hunarmandchilik darajasi, paleodemografiya, oila va jamiyat. Bronza davri Sopollitepa aholisi A.A.Asqarovning fikriga ko'ra, ko'p xonali uy-joylarda yashagan va urug' jamoalariga birlashgan 8 ta katta oilalar a'zolaridan iborat bo'lgan. Ular tomorqa yerlari, chorva, ishlab chiqarish qurollari, ro'zg'or buyumlari va qishloq xo'jalik mahsulotlari zahiralarga ega bo'lib, mustaqil xo'jalik yuritgan va katta ijtimoiy tuzilish (manzilgoh) doirasida hayot kechirgan¹. Huddi shunday holat bronza davri Dashtli vohasi misolida, ya'ni katta patriarxal oilalarga mansub ko'p xonali turarjoylar Shimoliy Afg'onistonda aniqlangan, biroq bu yerda dehqonchilik jamoalari uy-joylari qatorida saroy va ibodatxonalar kabi katta inshootlar qoldiqlari topilgan².

Keyin bunday imoratlar Janubiy O'zbekistondagi Jarqo'ton shahar xarobasida ham aniqlangan³.

Er. av. III ming yillikning ikkinchi yarmidan boshlab, O'rta Osiyo metallurgiyasi texnologiyasiga bronza texnologiyasi kirib keladi va bronza davri boshlanadi. Shu bilan birga III ming yillik boshi II ming yillikdan boshlab Yaqin Sharqdan O'rta Osiyoga BMAK tarqaydi. Turkmanistonda Oltintepa ustki qatlami Namozgoh IV yodgorliklari Murg'ob quyi oqimidagi Gonur, To'g'oloq, Taip va boshqa vohalardagi katta kichik shaharlari, O'zbekistonda Ko'zali, Bo'ston, Sopolli, Janubiy Turkmanistonda Kongur IV va Boir shu davrga oid. Bu davrda sopol ishlab chiqarish texnologiyasi tubdan o'zgaradi. Bularning 90% dan ko'pi maxsus kulolchilik charxida yasalgan bo'lib, juda nafis yuqa jarangdor loydan ishlangan. Kulolchilik mahsulotini bo'yoq bilan bo'yash mutlaqo yo'qoladi. Ayrim sopol siniqlarida turli nishonlar, hayvonlar, qushlar yo daraxtni sxematik tasvirini uchratishimiz mumkin. Sopollitepa va Jarqo'ton yodgorliklarining kulolchilik ustaxonalari

¹ Аскаров А. Девнеземледельческая культура эпохи бронзы... С. 142-143.

² Сарианиди В.И. Древние земледельцы Афганистана... С. 132-135.

³ Сарианиди В.И. Древние земледельцы Афганистана... С. 134-135.

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tadqiqotlaridan olingan ma'lumotlariga ko'ra kulolchilik mahsulotlari katta-kichik ikki qavatdan iborat bo'lgan xumdonlarda pishirilgan. Xumdonlarning quyi qismida olov yoqilib unda maxsus teshik panjara bilan ajratilgan ustki qismida bevosita kulolchilik mahsuloti terib pishirilgan. Sopollitepa xumdonida esa xumdonni quyi qismi panjara bilan ajratilmagan bo'lsada xumdonning quyi tor bo'lib, ustki gumbazi kengroq bo'lgan va idish xumdonning ostki va ustki zinasiga terilgan. Bronza davri o'troq madaniyat idishlarining deyarli hammasi juda nozik ishlangan bo'lib, qizil angob bilan bo'yalgan va aksariyat holatda bo'g'zi tor idishlar tashqari tarafdin, gardishi keng og'zi ochiq idishlar ichki tarafdin bezatilgan. Idishlarning 4-5 % i qo'lda yasalgan, loyi tarkibiga shamot va dresva qo'shilgan qozon va tovoqlardan iborat. Bularning bir qismi ham angob berilgan bo'lib, tashqi tomondan sayqallangan. Dasturxon, taom, suzish, suyuqlik ichish bolalarda xizmat qiladigan idishlarning formasi turli-tuman kosa, vaza qadah, choynak, tovoq, tog'aracha, piyola. Bundan tashqari xumcha, ko'za, turli xurma va xurmachalar ishlatilgan. Asqarov, Sarianidi, Shirinov va boshqa mutaxassislar BMAK kulolchiligi mahsulotlari ichida turli tipdagi mahsulotlarni ajratadilar: oyoqlik vazalar, turli konussimon vazalar, konussimon tog'aralar, konussimon kosalar, oyoqli va oyoqsiz qadahlar, konussimon va bikonik qadahlar, sharsimon, qovunsimon xurmachalar, dastali va dastasiz, jo'mrakli va jo'mraksiz choynaklar, turli xum va xumchalar, 4-5 tipdagi ko'zalar, naysimon jo'mrakli kosa va xurmachalar, turli-tuman miska yoki tog'orachalar, bankasimon idishlar, patnoslar, yalpoq tavalalar, bundan tashqari kam uchraydigan shakldagi idishlar guruhiga gultuvak, ssilindrsimon, butilkasimon idishlar ifodalangan. Bundan tashqari keng konussimon podstavkalar ular qozon xumlarni erga o'rnatishga xizmat qilgan. Yana bir uchraydigan kulolchilik mahsulotlaridan biri sopol qovurlar, ya'ni bu jihatdan o'ndan ko'p turli tipdagi kulolchilik idishlari ichida ularning bir necha o'ndan ortiq variantlarini, turlarini ajratish mumkin. Bu mahsulot janubi Kaspiy mintaqasi Gorgan viloyatiga xos bo'lib, savdo-sotiq, ayirboshlash natijasida BMAK hududlari, qishloqlari va ilk shaharlariga tarqagan.

Bronzaning kashf etilishi ibtidoiy jamoa xo'jaligida ro'y bergan buyuk madaniy ixtiro edi. Yangi metall harbiy qurollarning turini ko'paytirdi, ularning hili va jangovarligini oshirdi. Bronzadan yasalgan uy-ro'zg'or buyumlari ham paydo bo'ldi, ammo bronza mehnat qurollari ishlab chiqarish uchun nodir va kamyob metall bo'lib qolaveradi. U mehnat qurollari yasashda tosh xomashyosini uzil-kesil siqib chiqara olmadi, chunki dastlab bronzadan munchoqlar, uzuklar, to'g'nag'ichlar yasalgan. Ular asosan zeb-ziynat buyumlari edi.

Bu davrda bronzadan asosan turli bezaklar, uy-ro'zg'or va xo'jalik buyumlari, g'arbiy qurol-aslahalar va mehnat qurollari yasaydigan maxsus temirchilik, chilangarlik va zargarlik ustaxonalari vujudga keldi. Hunarmandchilikning ixtisoslashuvi bilan mintaqalararo ayirboshlash kuchaydi. Kishilik jamiyati tarixida birinchi marta muntazam mol ayirboshlash imkoniyati bevosita dehqonchilik va chorvachilikning bir-biridan ajralishi va hunarmandchilikning paydo bo'lishi bilan izohlanadi.

Sopollitepadagi qabrlarda o'liklar sopol idishlar, qurol-yarog'lar va zeb-ziynat buyumlari bilan birga ko'milgan. Erkaklar qabrlaridan 26 ta metall qurol, ayollar qabrlaridan 104 ta bronza buyum-halqalar, bilakuzuklar, jez oynalar va munchoqlar topildi. Sopol idishlar kulolchilik charxida yasalgan, asosan naqshsiz va to'g'ri simmetriyali buyumlardan iboratdir.

Yodgorliklarning madaniy qatlamidan va qablardan topilgan topilgan idishlar 14 xilga bo'linadi: vazasimon idishlar, tovoqlar, kosalar, tuvaklar, xumlar, xumchalar, choynak va piyolasimon idishlar, toshdan, yog'ochdan va bronzadan ishlangan idishlar. Xilma-xil kulolchilik buyumlari uy-ro'zg'orida chorvachilik va dehqonchilik mahsulotlarini saqlash uchun ishlatilgan.

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Moddiy manbalar Sopollitepada metallchilik yuksak darajada rivojlanganidan dalolat beradi. Bronzadan xanjarlar, o'q uchlari va nayza paykonlari, pichoqlar, boltalar, jez ignalar, idishlar ishlangan. Bronza metallurgiyasi hunarmandchilik ustahonalarini vujudga keltirdi.

Sopollitepa moddiy manbalari uy hunari yuksak darajada rivojlanganligidan dalolat beradi. Odamlar loydan, suyakdan, toshdan, yog'ochdan va charmdan xilma-xil buyumlar yasaganlar. Bronza davrida kiyimlar matolardan tikilgan. Sopollitepa matolari jun va zig'ir tolasidan to'qilgan bo'lishi mumkin. To'qimachilikka oid sopol va toshdan ishlangan urchuqlar topilgan.

Patriarxal urug'ning rivojlanishi, ishlab chiqaruvchi kuchlarning o'sishi bilan katta jamoa oilalarining boylik orttirishlari uchun qulay vaziyat yaratilgan. Qabrlardan topilgan buyumlar dastlabki mulkiy tengsizlikdan darak beradi. Sopollitepadagi 39 ta qabrdan sopol idishlardan tashqari metall qurolar va zeb-ziynat buyumlari, ayrim qabrlardan 5-35 ta sopol idish topildi.

Katta patriarxal oilalarga mansub bronza tamg'alar topilgan. Buyumlarda burgut, ilon, tuya va boshqa hayvon rasmlari bor. Olimlar fikricha, ular urug'larning totemlari bo'lgan.

Jarqotondan tosh, metall va suyakdan yasalgan ikki mingdan ortiq mehnat qurollari va nusxalari (votivnye kopii) topilgan bo'lib, ularning aksariyati dehqonchilik bilan bog'liq mehnat qurollaridir⁴. Ibtidoiy jamiyat tarixida eng dolzarb masalalardan biri bu metall buyumlar va metallga ishlov berishning shakllanishidir. Metallurgiya va metallga ishlov berish iqtisodiy hayotning eng muhim sohalaridan biri hisoblanib, texnologik taraqqiyot darajasini belgilaydi. Aynan metallurgiyaning shakllanishi xo'jalik hayot hamda ijtimoiy munosabatlar rivojida muhim ahamiyat kasb etgan⁵. Metaldan ishlangan mehnat qurollarining paydo bo'lishi qadimgi ijtimoiy-iqtisodiy taraqqiyotni ham tezlashtirgan. Umuman olganda, O'rta Osiyo hududida metall konlari (mis, qalay, qo'rg'oshin va boshqalar) bir tekis joylashmagan, shunga ko'ra konchilik va metallurgiya sohaları rivoji mintaqahududlarida turli darajada rivojlangan. Masalan, mis konlari Markaziy Qizilqum va Farg'onada, Markaziy Qozog'iston, Zarafshon daryosi yuqori va o'rta oqimlari hududlarida va boshqa joylarda aniqlangan⁶. Shuni ham ta'kidlash joizki, mis konlari dunyoning ko'pgina mintaqalarida tarqalgan bo'lsa-da, qalay konlari kamyob sanaladi. Keng rivojlangan bronza sanoatiga qaramasdan, Yaqin Sharqda ham qalay konlari deyarli yo'q bo'lgan va qalayning mintaqada yoyilishi borasidagi masala qizg'in muhokamalarga sabab bo'lmoqda⁷. Ko'plab tadqiqotchilar metal, ayniqsa qalay uchun xomashyo bazasi aynan O'rta Osiyo bo'lgan deya hisoblaydilar. O'zbekiston hududida (Qarnob, Lapas va CHangali) va Tojikiston hududida (Mushiston va Takfon) bronza davriga oid qalay konlari o'rganilgan bo'lib, ular mintaqada konchilik rivojiga ham turtki bo'lgan. Lekin, K.Kaniut fikricha "qalay masalasi" borasida xulosalar chiqarishga hali erta, bu bo'yicha kelajak tadqiqotlari aniq xulosalar chiqarishga imkon beradi⁸. Tadqiqotchilar Evrosiyo bronza davri madaniyatlari, ulardan aniqlangan metall buyumlarning tahlili asosida O'rta Osiyo orqali o'tgan "Bronza yo'li" hamda uning

⁴ Аскарлов А., Ширинов Т. Ранняя городская культура эпохи бронзы юга Средней Азии. – Самарканд – 1993.

⁵ Кузьмина Е.Е. Металлические изделия энеолита и бронзового века в Средней Азии. – М.: Наука. 1966. – С. 5.; Аванесова Н.А. Эпоха бронзы Средней Азии. – Самарканд, 1989. – С. 5.

⁶ Ҳасанов А.С., Асқарова Н.М. Қадимги давр маъданчилиги. – Тошкент: Мухаррир. 2011. – Б.33.

⁷ 3 Kaniuth K. The metallurgy of the late Bronze Age Sapalli culture (Southern Uzbekistan) and its implications for the "tin question" // Iranica Antiqua, Vol. XLII, 2007. – P. 23-40; Бороффа Н., Парцингер Г. Ислонгача бўлган даврда Тожикистон ва Ўзбекистонда қалай қазиб чиқариш // Қозоғистон, Тожикистон, Туркманистон ва Ўзбекистонда археологик тадқиқот ишлари. – Берлин. 2010. – Б. 55-57; Garner J. Bronze Age tin mines in Central Asia // Archaeometallurgy in Europe III. – Bochum, 2015. – P. 135-143.

⁸ Kaniuth K. The metallurgy of the late Bronze Age Sapalli culture (Southern Uzbekistan) and its implications for the "tin question" // Iranica Antiqua, Vol. XLII, 2007. – P. 35.

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mintaqa ijtimoiy-iqtisodiy, siyosiy hayotida tutgan o'rni borasida ham qayd etganlar⁹. Shuni alohida qayd etish joizki, mis, qalay va qo'rg'oshin kabi metallar qo'shilmasi asosida bronza metallini yaratilishi ijtimoiy-iqtisodiy hayotda katta siljishlarga sabab bo'ldi. Mis va bronza qurollardan xo'jalikda keng foydalanilishiga qaramay ular tosh qurollarni to'liq siqib chiqara olmagan. Janubiy O'zbekiston bronza davri metallurgiyasi borasidagi tadqiqotlar¹⁰ tahlili asosida masalani yoritish mumkin. Bronza metalli tarkibini kimyoviy jihatdan tahlil qilish orqali uning bir necha tiplari farqlanadi. Sopollida topilgan 41 % bronza buyumlar qalay tarkibli bronzadan tayyorlanganligi qayd etilgan¹¹.

Jarqo'ton qabristonida 730 dan ortiq bronza davriga oid go'rlar qazib ochildi. Topilgan buyumlar orasida bronza idishlar, xanjarlar, pichoqlar, zeb-ziynat buyumlari, sopol idishlar va chaqmoqtoshdan ishlangan nayza paykonlar bor. Ayollar qabrlaridan lojuvard, serdolik va feruza toshdan ishlangan munchoq va marjonlar topildi.

Qabristondan kulolchilik charxida yasalgan juda ko'p sopol buyumlar chiqdi. Odamlar idishlardan juda keng foydalanganlar va sopol esa moddiy madaniyatning muhim qismi bo'lgan.

Sopollitepa va Jarqo'tondan topilgan metall buyumlar qiyosiy jadvali¹²

	Qalay Bronza (Sn>3%)	Mishyak (arsenik) bronza (As>3%)	Qo'rg'oshin bronza (Pb>3%)	Tarkibida kam miqdorda qalay bo'lgan mis (Sn 1- 2,99%)	Tarkibida kam miqdorda arsenik bo'lgan mis (As 1- 2,99%)	Mis (Sn, As, Pb<1%)	Umumiy
Sopollitepa	31	29	16	4	13	2	95
Jarqo'ton	6	12	3	1	27	6	55
Umumiy	37 (25%)	41 (27%)	19 (13%)	5 (3%)	40 (27%)	8 (5%)	150 (100%)

Sopollitepada tadqiq etish jarayonida o'rganilgan moddiy manbalar metallsozlik yuksak darajada rivojlanganidan dalolat beradi. Bronzadan xanjarlar, o'q uchlari va nayza paykonlari, pichoqlar,

⁹ Radivojevic M., Kuzmanovic-Cvetkovic J., Rehren Th., Jovanovich M. Why are tin bronzes in the 5th millennium BC Balkans // *Archaeotechnology: studying technology from prehistory to the Middle Ages*. Belgrade, 2014. – P. 235-256.

¹⁰ Рузанов В.Д. Технический прогресс в металлообработке у древнеземледельческих племен эпохи бронзы юга Средней Азии // *Технологический и культурный прогресс в раннеземледельческую эпоху*. – Ашхабад: Ўлим, 1987. – С. 43.

Рузанов В.Д. К вопросу о истоках оловянистых бронз в металлообрабатывающих производствах племен юга Средней Азии в эпоху бронзы // *ИМКУ*. – Самарканд, 1999. Вып. 30. – С. 37-40.

¹¹ Рузанов В.Д. Технический прогресс в металлообработке у древнеземледельческих племен эпохи бронзы юга Средней Азии // *Технологический и культурный прогресс в раннеземледельческую эпоху*. – Ашхабад: Ўлим, 1987. – С. 43.

¹² Kaniuth K. The metallurgy of the late Bronze Age Sapalli culture (Southern Uzbekistan) and its implications for the "tin question" // *Iranica Antiqua*, Vol. XLII, 2007. – P. 30.

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boltalar, jez ignalar ishlangan¹³. Har bir patriarxal jamoa yashash qismida metall eritish ustaxonalari mavjud bo'lgan. Masalan, Jarqo'tondan aniqlangan ibodatxonani qazish jarayonida, uning xo'jalik-xizmat qismidan maxsus chilangarlik ustaxonasi ochilgan. Supa ustida qurilgan 5 ta o'choq topilgan. Bu o'choqlar bronza hom ashyosini eritish pechlarida deya e'tirof etilgan¹⁴. Jarqo'tondan bronza ishlab chiqarish bilan bog'liq hunarmandlar massivi ochilgan. Yodgorlikda olib borilgan arxeologik tadqiqotlar davomida yuzlab bronzadan ishlangan mehnat va harbiy qurollar, zebi-ziynat buyumlari, urug' jamoa totemlari aks ettirilgan muhrlar, jamoa oqsoqollari va sardorlarining ijtimoiy nufuzidan dalolat beruvchi tamg'a va tumorlar topilgan¹⁵.

Janubiy O'zbekiston bronza davri yodgorliklarining turli bosqichlaridan jami 30 ta xumdon aniqlangan bo'lib, topilgan barcha xumdonlarni 3 tipga ajratish mumkin:

1. Bir kamerali, yarim yer osti
2. Bir kamerali, ikki maydonli yer usti xumdonlar
3. a) ikki kamerali, ikki yarusli, kichik hajmli
- b) ikki kamerali, ikki yarusli, katta hajmli¹⁶.

Sopol buyumlar kulolchilik charxida ishlangan, ularning turli xil shakllari – oyoqli vazalar, qadahlar, konussimon idishlar, xumlar, qozonlar va boshqa shu kabilar aniqlangan. Aksariyat sopol buyumlarining sirtida xochsimon, ovalsimon naqshlar uchrashini hisobga olmaganda sopol buyumlar sirtida naqshlar deyarli kuzatilmaydi. Miloddan avvalgi II mingyillikning boshlaridan keng maydonchali va termostat texnologiyasi ancha rivojlangan ikki yarusli xumdonlardan foydalanila boshlangan. Tillabuloq yodgorligida xumdonlarda issiqlik haroratini bir me'yorda saqlab turishni ta'minlovchi sopol tig'ning topilishi bronza davri kulollarining termostat texnologiyasidan samarali foydalaniligidan darak beradi¹⁷.

Xulosa o'rnida aytish kerakki, Janubiy O'zbekistonda bronza davri mehnat qurollari hamda qurol yarog'larning paydo bo'lishi va keng tarqalishi, shu bilan birgalikda boshqa qator belgilar: patriarxal munosabatlarning qaror topishi, chorvador qabilalarning ajralib chiqishi, qadimgi sivilizatsiyaning shakllanishi, mulkiy tengsizlikning paydo bo'lishi, qabilalar o'rtasida madaniy-iqtisodiy aloqalarning kuchayishi bilan belgilanadi. Shuningdek, ko'rib chiqilayotgan davrda kulolchilik yangi bosqichga ko'tarildi. Yuqori sifatli sopol buyumlar, tayyorlanadigan sopol buyumlarining miqdoriy ko'rstakichlarini oshishida sopol xumdonlarning ahamiyati katta bo'lgan.

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¹³ Кабиров Ж., Сагдуллаев А. Ўрта Осиё археологияси. – Тошкент: Ўқитувчи. 1990. – Б.128.

¹⁴ Аскарлов А. Энг қадимий шаҳар. – Тошкент, 2001. – Б. 17.

¹⁵ Аскарлов А. Энг қадимий шаҳар... Б. 9.

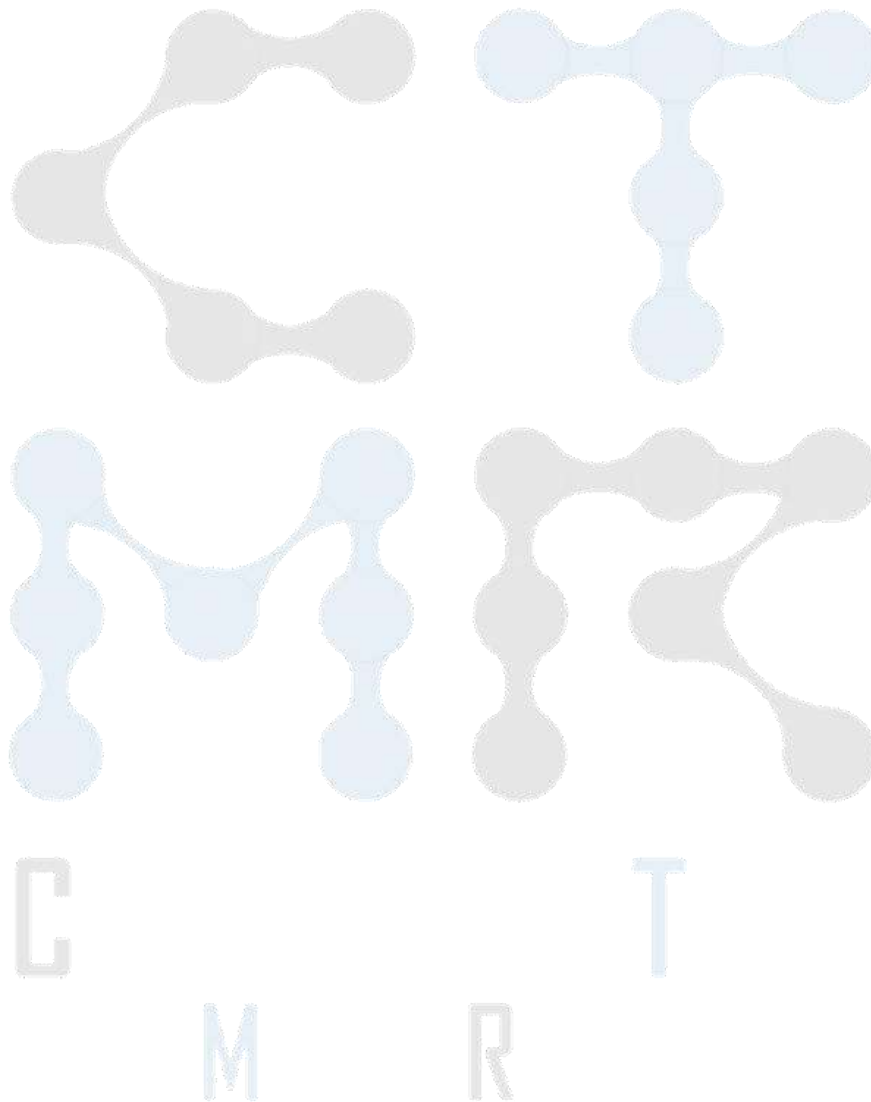
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CHET TILI FANINI O'QITISHDA KOMPYUTER TEXNOLOGIYALARINI QO'LLASH

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Annotatsiya. Ushbu maqolada chet tillarini o'qitishda kompyuter texnologiyalarining o'rni va roli yoritilgan. Yangi pedagogik texnologiyalar, multimedia vositalari, interaktiv dasturlar va internet resurslaridan foydalanishning afzalliklari haqida so'z yuritiladi. Shuningdek, axborot-kommunikatsiya texnologiyalarining o'quvchilarning til o'rganishga bo'lgan motivatsiyasi, mustaqil ta'lim olish qobiliyati va nutq kompetensiyasini rivojlantirishdagi ahamiyati tahlil qilinadi.

Kalit so'zlar: zamonaviy ta'lim, kompyuter, texnologiya, taraqqiyot, o'qituvchi, talaba, raqamli vosita, metod, chet tili.

Abstract. This article discusses the place and role of computer technologies in teaching foreign languages. The advantages of using new pedagogical technologies, multimedia tools, interactive programs and Internet resources are discussed. The importance of information and communication technologies in developing students' motivation for language learning, independent learning skills and speech competence is also analyzed.

Keywords: modern education, computer, technology, development, teacher, student, digital tool, method, foreign language.

Аннотация. В статье рассматриваются место и роль компьютерных технологий в обучении иностранным языкам. Обсуждаются преимущества использования новых педагогических технологий, мультимедийных средств, интерактивных программ и интернет-ресурсов. Также анализируется значение информационно-коммуникационных технологий в развитии мотивации к изучению языка, навыков самостоятельного обучения и речевой компетентности студентов.

Ключевые слова: современное образование, компьютер, технологии, развитие, преподаватель, студент, цифровое средство, метод, иностранный язык.

KIRISH

Zamonaviy ta'lim tizimida chet tillarini o'rganish jarayoni yangi bosqichga ko'tarilmoqda. Globallashuv sharoitida xorijiy tillarni o'rganishga bo'lgan ehtiyoj ortib bormoqda. Bunday sharoitda o'qituvchilarning asosiy vazifalaridan biri bu — o'quv jarayoniga ilg'or pedagogik va axborot-kommunikatsiya texnologiyalarini joriy etish orqali ta'lim sifatini oshirishdir. Zamonaviy ta'lim tizimi texnologik taraqqiyot bilan chambarchas bog'liq holda rivojlanmoqda. Xususan, chet tilini o'qitishda kompyuter texnologiyalarining joriy etilishi o'quv jarayonini interaktiv, qiziqarli va samarali qilishga xizmat qilmoqda. Raqamli vositalar orqali til o'rganish faqatgina grammatikani o'zlashtirish emas, balki tinglab tushunish, og'zaki va yozma nutqni rivojlantirish imkonini beradi. Ushbu maqolada chet tili ta'limida kompyuter texnologiyalarini qo'llash usullari, afzalliklari va samaradorligi tahlil qilinadi.

Uslublar

Tadqiqot metodlari sifatida quyidagilar tanlandi:

Adabiyotlarni tahlil qilish: zamonaviy ilmiy maqolalar, darsliklar va amaliy tajriba asosida chet tili ta'limida texnologiyalarning o'rni o'rganildi.

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Amaliy kuzatuv: o'rta maktab va oliy ta'lim muassasalarida chet tili darslarida texnologiyalarni qo'llash holatlari kuzatildi. So'rovnoma va intervyular: chet tilini o'rgatuvchi o'qituvchilar va talabalar orasida so'rov o'tkazildi, ularning fikr-mulohazalari tahlil qilindi.

Natijalar

Tadqiqot davomida quyidagi natijalarga erishildi:

Kompyuter texnologiyalaridan foydalanilgan darslarda o'quvchilarning motivatsiyasi 45% ga oshgan.

O'qituvchilar tomonidan eng ko'p qo'llaniladigan texnologiyalar: Quizlet, Duolingo, Google Classroom, Kahoot, Zoom, YouTube videodarslar.

Talabalar texnologiyalar yordamida mustaqil ta'lim olish imkoniyatiga ega bo'lishgan, bu esa ularning til ko'nikmalarini mustahkamlashga xizmat qilgan.

Kompyuter texnologiyalarining o'quv jarayonidagi o'rni

Kompyuter texnologiyalari til o'rganishning barcha bosqichlarida samarali qo'llanilishi mumkin: lug'at boyligini oshirish, talaffuzni to'g'rilash, yozma va og'zaki nutqni rivojlantirish, grammatika bilimlarini mustahkamlashda ularning imkoniyatlari beqiyosdir.

Quyidagi texnologiyalar alohida ahamiyatga ega:

Multimedia vositalari: audio va video materiallar orqali tinglab tushunish va talaffuzni yaxshilash.

Interaktiv platformalar: Quizlet, Duolingo, Kahoot, Google Classroom, Moodle kabi tizimlar orqali topshiriq va testlar bajarish.

Virtual sinflar va onlayn konferensiyalar: Zoom, Microsoft Teams, Google Meet kabi platformalar yordamida interaktiv darslar o'tkazish.

2. AKT asosida yaratilgan interaktiv metodlar

AKT asosida quyidagi metodlardan foydalanish samaradorlikni oshiradi:

Blended Learning (Aralash o'qitish): an'anaviy ta'lim va onlayn o'qitishning uyg'unlashuvi.

WebQuest: o'quvchilarning mustaqil internet orqali ma'lumot izlab, topshiriq bajarish metodikasi.

Gamification (O'yinlashtirish): o'rganish jarayonini qiziqarli qilish uchun o'yin elementlaridan foydalanish.

Munozara

Olingan natijalar shuni ko'rsatadiki, chet tilini o'rganishda kompyuter texnologiyalari muhim vosita bo'lib xizmat qiladi. Ular yordamida dars jarayoni nafaqat interaktiv, balki individual yondashuv asosida tashkil etiladi. Ayniqsa, pandemiya davrida masofaviy ta'lim sharoitida texnologiyalar o'qitishning yagona samarali usuliga aylangan edi.

Shunga qaramay, ayrim muammolar ham mavjud: texnik vositalarning yetishmasligi, ayrim o'qituvchilarning raqamli savodxonlik darajasi pastligi, internet tezligi va barqarorligi kabi omillar ta'lim sifatiga salbiy ta'sir ko'rsatadi.

O'quvchilarning motivatsiyasini oshirish kompyuter texnologiyalaridan foydalanish o'quvchilarda quyidagi natijalarni beradi:

Yangi bilimlarni mustaqil o'zlashtirishga intilish ortadi.

Mustaqil ish olib borish ko'nikmalari rivojlanadi.

Chet tili so'z boyligi va grammatika bilimlari mustahkamlanadi.

Og'zaki va yozma nutq faollashadi.

Xulosa

Chet tillarini o'qitishda kompyuter texnologiyalaridan foydalanish nafaqat o'qituvchining ishini yengillashtiradi, balki o'quvchilarning fanga bo'lgan qiziqishini ham orttiradi. Texnologiyalar

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yordamida yaratilgan interaktiv, ko'rgazmali va mustaqil ta'lim olishga yo'naltirilgan muhit chet tilini o'rganish jarayonini yanada samarali qiladi. Shu bois, zamonaviy ta'limda AKT vositalaridan oqilona va tizimli foydalanish har bir pedagogning muhim vazifasidir. Chet tilini o'qitishda kompyuter texnologiyalarini qo'llash zamonaviy ta'limning ajralmas qismiga aylangan. Ular orqali ta'lim oluvchilarning til kompetensiyalari rivojlanib, mustaqil o'rganish ko'nikmalari shakllanadi. Biroq bu borada o'qituvchilarning doimiy malaka oshirishi va texnik ta'minotning yaxshilanishi muhim ahamiyat kasb etadi.

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FIGHTING THE INVISIBLE ENEMY: THE URGENT NEED TO TACKLE ANTIMICROBIAL RESISTANCE

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ANNOTATION

The theme “*Fighting the Invisible Enemy: The Urgent Need to Tackle Antimicrobial Resistance (AMR)*” emphasizes the silent yet escalating threat that AMR poses to global health, food security, and sustainable development. The term “*Invisible Enemy*” reflects the nature of drug-resistant microbes—organisms too small to be seen, yet powerful enough to undermine decades of medical progress. Unlike visible threats such as war or natural disasters, AMR spreads silently through misuse and overuse of antibiotics in humans, animals, and agriculture, making it a complex and elusive challenge.

This theme captures the **urgent call to action**. According to the World Health Organization (WHO), AMR could cause up to **10 million deaths annually by 2050** if no significant interventions are made. Everyday medical procedures—like caesarean sections, chemotherapy, or joint replacements—could become extremely risky due to the possibility of untreatable infections.

Moreover, the theme encourages **global cooperation and shared responsibility**. Tackling AMR requires a **One Health approach**, linking human health, animal health, and environmental protection. It calls on governments to strengthen regulations, healthcare systems to implement better infection prevention and control, pharmaceutical industries to invest in the development of new drugs, and individuals to use antibiotics wisely.

It also highlights the need for **public awareness**. Many people are unaware that taking antibiotics unnecessarily—for viral infections like the common cold—contributes to resistance. Education is crucial to help individuals understand that antimicrobial resistance is not just a future problem, but a current crisis.

In essence, this theme is both a warning and a call to action. The battle against AMR is not just a medical issue—it's a societal one, and the fight begins with awareness, responsibility, innovation, and global solidarity.

Key Words:

- **Antimicrobial Resistance (AMR)**
- **Superbugs**
- **Invisible Enemy**
- **Drug Resistance**

- **Global Health Crisis**
- **Infection Control**
- **Overuse of Antibiotics**
- **Misuse of Medication**
- **One Health Approach**
- **Public Awareness**
- **Antibiotic Stewardship**
- **Healthcare Systems**
- **Microorganisms**
- **Mutation**
- **Resistance Genes**
- **Preventive Measures**
- **Research and Innovation**
- **Surveillance and Monitoring**
- **Pharmaceutical Responsibility**
- **Post-Antibiotic Era**

Antimicrobial Resistance: More than Residues

The emergence of drug resistance has been observed following the introduction of each new class of antibiotics, and the threat is compounded by a slow drug development pipeline and limited investment in the discovery and development of new antibiotic agents. The problem is rarely one of exceeding the MRL but rather spreading of antimicrobial resistance throughout the food chain resulting in a potentially untreatable pathogen in humans and animals. Recently, the World Health Organization called antimicrobial resistance (AMR) “an increasingly serious threat to global public health that requires action across all government sectors and society”

Antimicrobial use in animals can, and has, contributed to the emergence of antimicrobial resistance in bacteria that may be transferred to humans, thereby reducing the effectiveness of antimicrobial drugs for treating human disease. It is quite clear that interventions that restrict antibiotic use in food-producing animals are associated with a reduction in the presence of antibiotic-resistant bacteria in these animals. The bacterial capability to face antimicrobial compounds has enabled bacteria to survive over time. Commonly, AMR traits are included in mobilizable genetic elements enabling the homogeneous diffusion of the AMR traits pool between the ecosystems of diverse sectors, such as human medicine, veterinary medicine, and the environment, but the public are unaware of the importance of agricultural antimicrobial use as a factor in antimicrobial resistance even among experts in medicine and public health.

For medical students, understanding AMR is not just an academic requirement—it is a critical part of preparing for real-world clinical practice. This article aims to provide an overview of the key drivers of antimicrobial resistance, the mechanisms by which resistance develops, the impact on patient care, and the role of healthcare professionals in combating this crisis. By equipping future physicians with this knowledge, we take one step closer to turning the tide against this invisible but formidable threat.

2. AMR- definition and history

The issue of AMR presents a substantial risk to the overall well-being of the global population and is increasingly becoming a matter of great apprehension on a worldwide scale. AMR pertains to the capacity of microorganisms, encompassing bacteria, viruses, fungi, and parasites, to withstand the therapeutic impact of previously efficacious drugs in combating them. This phenomenon undermines the efficacy of antibiotics, antivirals, and other pharmaceuticals, resulting in heightened morbidity, mortality, and healthcare expenditures. Addressing AMR has emerged as a pivotal global health imperative, necessitating prompt and synchronized endeavors from governmental bodies, healthcare practitioners, scholars, and the general populace . AMR occurs when microorganisms like bacteria, viruses, fungi, and parasites resist antimicrobial drugs, making standard treatments ineffective and increasing the risk of infection . The evolution of AMR is a natural phenomenon; however, human influences have dramatically accelerated and exacerbated its progression over recent decades.

Microbes are under selective pressure to become resistant and acquire adaptive mutations or genes when antimicrobial agents are misused or overused in healthcare, veterinary, and agricultural settings. This then enables their survival and persistence in environments saturated with antibiotics and antiseptics that would previously have readily destroyed them. Bacteria and other microbes have a remarkable ability to rapidly adapt, mutate, and share adaptive genetic elements via horizontal gene transfer mechanisms allowing them to develop diverse resistance mechanisms. Microorganisms that develop AMR may make human and animal diseases challenging to cure. Resistance prolongs sickness, increases spread risk, lengthens hospital stays, requires more costly therapies, and raises fatality rates. This escalating cycle of resistance development is not only a contemporary concern but has roots deeply embedded in the history of antimicrobial use.

The history of AMR traces back to the discovery of penicillin in 1928 by Alexander Fleming and the subsequent mass production and utilization of antibiotics in the 1940 s. However, resistant organisms emerged almost immediately thereafter. The first cases of penicillin-resistant *Staphylococcus aureus* were reported in 1942, along with tetracycline resistance by 1953 . The widespread agricultural use of antibiotics in the 1950–60 s also accelerated resistance. The MRSA was reported in 1961, followed by

resistance to multiple antibiotic classes. The 1980 s saw a global epidemic of MDR tuberculosis. In the 1990 s, gram-negative pathogens such as *Escherichia coli* and *Klebsiella pneumonia* developed ESBL resistance. The rise of MDR diminished the number of available effective antibiotics and resulted in the withdrawal of pharmaceutical companies from antibiotic research. This perfect storm of increasing resistance and lack of new drug development continues to strain healthcare systems today. We have now entered a dangerous post-antibiotic era where common infections and minor injuries can once again become lethal. If solutions are not urgently implemented, it is expected that millions of people may die annually from AMR infections.

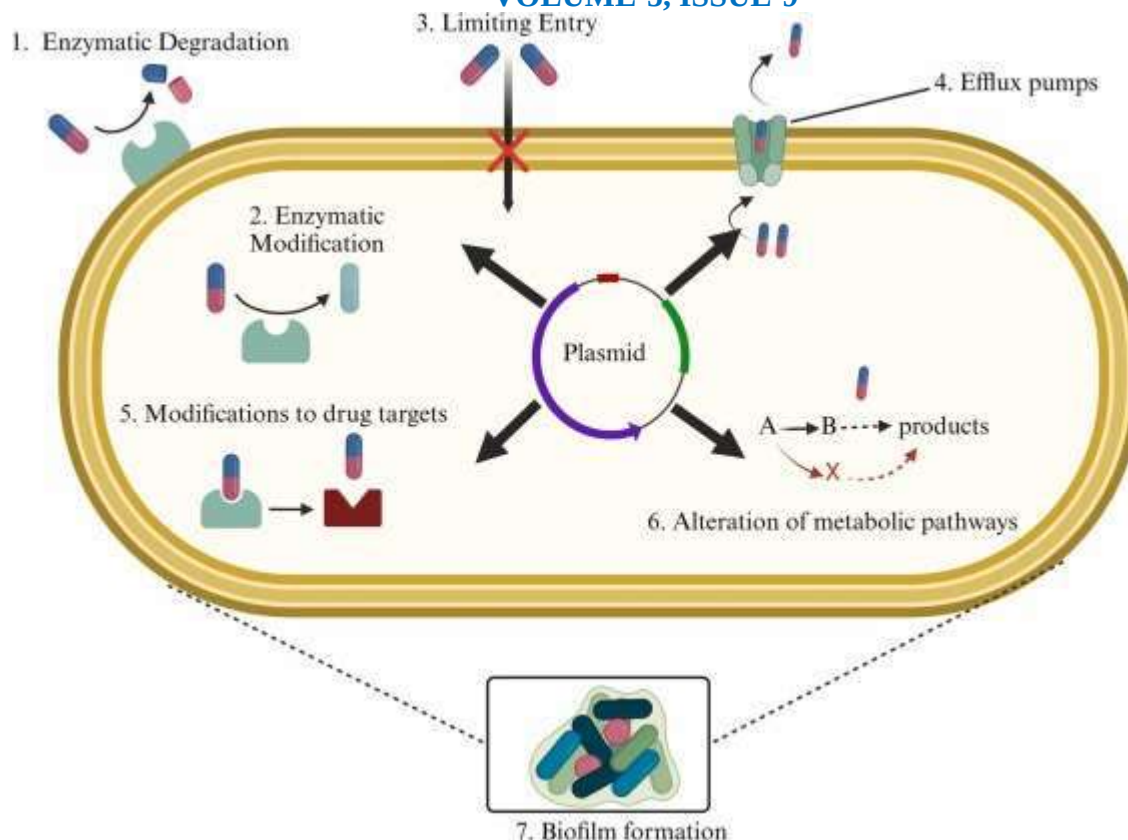
Mechanisms of AMR and microbes involved

Natural selection, antibiotic overuse and misuse, insufficient access to safe water and sanitation, and substandard and counterfeit drugs are a few causes of AMR . Antibiotic overuse and misuse include but are not limited to incomplete treatment, inappropriate prescription, and self-medication. Bacteria that survive a partial antibiotic course may acquire resistance. Additionally, prescribing medicines for viral infections, self-prescribing, or utilizing leftover antibiotics without medical supervision can contribute to AMR. Insufficient sanitation and poor hygiene practices contribute to the proliferation of infectious diseases, resulting in heightened reliance on antibiotics and subsequent development of resistance. Finally, low-quality medications may not have enough active substances or the correct dose, resulting in insufficient therapy and the development of resistance. Microorganisms have developed various and ingenious strategies to withstand the antibacterial effects of previously effective medications in treating illnesses. These systems enable microorganisms to endure attacks from antibiotics and other antimicrobial chemicals that often hinder their development or cause their complete demise. Bacteria and other parasites demonstrate remarkable adaptive mechanisms by making structural modifications and employing strategic metabolic pathways, enabling them to disregard or neutralize antimicrobial substances that pose a threat.

Typical resistance mechanisms involve enzymatic modification or degradation of antibiotics, limiting the entry of antibiotics into cells to prevent their build-up, alterations to metabolic pathways, modifying binding sites like ribosomes to reduce drug effectiveness, and increasing the activity of efflux pumps that remove antibiotics from cells before they can reach adequate levels. Bacteria may also create biofilms, surface-bound communities with varying nutrition levels and limited antibiotic penetration. These resistant mechanisms are summarized in Fig. 1. These biofilms provide further protection for the bacteria. In addition, bacteria are proficient in obtaining resistance genes from nearby cells or even distinct species through horizontal

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gene transfer facilitated by plasmids and other mobile genetic components. These acquired genes frequently include several intricate resistance mechanisms inside a single unit, enabling the fast spread of MDR throughout microbial populations. The capacity for efficient horizontal transfer of genetic information grants microorganisms a wide array of resistance strategies that may be adapted as necessary to ensure survival against ongoing advancements and utilization of antimicrobial treatments by the medical field. Several microorganisms have developed AMR through different mechanisms in the past few decades. Methicillin-resistant *Staphylococcus aureus* is resistant to numerous antibiotics, including methicillin, through mutations in *mecA* and *mecC* genes and horizontal gene transfer. Carbapenem-resistant Enterobacteriaceae, such as *Klebsiella pneumoniae* and *Escherichia coli*, have gained resistance to carbapenem drugs by acquiring carbapenemase genes. These genes are often carried on plasmids, facilitating their transmission across bacteria. The ESBL-producing *E. coli* is resistant to a broad spectrum of antibiotics, including penicillins and cephalosporins, by obtaining ESBL genes, commonly through plasmids. Mutations in the DNA of MDR *Mycobacterium tuberculosis* have rendered them resistant to many anti-tuberculosis medications. *Acinetobacter baumannii* has developed resistance to several antibiotics due to a combination of mutations and the acquisition of resistance genes. Multidrug-resistant *Neisseria gonorrhoeae* defies front-line antibiotics for treating the sexually transmitted illness of gonorrhea. Fluconazole-resistant *Candida* fungi, which cause opportunistic oral and genital infections, have burdened high-risk groups. Last but not least, viral infections like HIV and influenza also routinely develop resistance mutations to available antiviral medications. The alarming surge of these MDR microbial strains underscores the ability of pathogenic bacteria, viruses, fungi, and protozoa to rapidly circumvent chemical agents aimed at destroying them.



The impact of AMR on human and animal populations

AMR has arisen as a multifaceted issue that impacts the health of both humans and animals. The excessive and improper utilization of antibiotics in various domains, such as healthcare facilities, agricultural practices, and veterinary medicine, has expedited the emergence of drug-resistant strains of microorganisms. The excessive dependence on antibiotics has resulted in the emergence of antibiotic-resistant bacteria, commonly known as superbugs, which pose significant challenges in treatment efficacy and can lead to severe infections. Furthermore, the inadequate progress in developing novel antimicrobial medications exacerbates the issue, as the rate at which resistance develops surpasses the rate at which effective therapies are being identified.

AMR has emerged as one of the most significant threats to human health in the 21st century. Previously treatable infections are becoming increasingly intractable, posing substantial clinical challenges. The loss of effective first-line antimicrobials has driven growing reliance on second and third-line therapies, which are often more expensive, more toxic, and require longer treatment durations. Prolonged illnesses drain individual and healthcare system resources due to extended hospitalizations. Lengthier recoveries also impact economic productivity, giving more excellent time off work. AMR infections similarly necessitate increased outpatient clinic visits, laboratory testing, and isolation precautions. The mortality attributed directly to AMR pathogens claims over a million lives annually. The absence of effective

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antibiotics, routine procedures like surgery, organ transplantations, chemotherapy, and neonatal care could become exponentially more dangerous due to the limited capacity to control infections. Some pathogens described as “ESKAPE” bacteria, including resistant forms of Enterococcus faecium, Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter baumannii, Pseudomonas aeruginosa, and Enterobacter spp., represent the most troublesome MDR threats facing hospitals today. Common scratch-borne infections or minor injuries could be fatal in a post-antibiotic era.

AMR threatens human health and food production by enabling animal-to-human transfer of resistant zoonotic pathogens. Overuse of antibiotics in livestock to treat illness and promote livestock growth has precipitated reservoirs of resistance. This facilitates enhanced transmission risks of MDR bacteria like Salmonella and Campylobacter via the food chain or animal handlers. Resistant bacterial strains spread readily between species. Wildlife similarly develops AMR from indirect environmental exposures driving additional pathogen transmission. Resistant microbes extend into the broader environment through fertilizers made from manure, contaminating waterways and produce that reaches consumer tables. They additionally exchange AMR genes with normal environmental and human commensal microflora. Restricted treatment options for animal infections resulting from resistance promote outbreak escalation among cattle, poultry, and sheep, necessitating culling and generating significant economic losses while threatening food supplies. Approximations indicate AMR could impose a \$3–4 billion financial burden through livestock alone in the coming decades. Detrimental resistance impacts across agriculture and economic systems also spur disruptive ripple effects for national security and trade. Hence, a proper One Health approach encompassing human, animal, and environmental health surveillance and interventions remain necessary to fully address AMR’s substantial existing and prospective adverse impacts on animals that, in turn, heighten human exposure risks further.

Challenges in addressing AMR

Tackling the emergence of AMR presents complex challenges with no facile resolutions. Efforts to reduce humanity’s vast utilization of antimicrobials are obstructed by their widespread integration into medical care and food animal production economics. Lacking rapid point-of-care diagnostics, physicians often depend on empiric antibiotic prescribing to safeguard against bacterial infections, while modern farming systems predicate the regular administration of antimicrobials to livestock for infection prevention and growth promotion. Implementation of antimicrobial stewardship programs in healthcare and updated animal husbandry policies lag considerably despite awareness of resistance risks associated with

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antibiotic overuse. Compounding these issues, the antibiotic drug development pipeline cannot keep pace with the continuous evolution of MDR pathogens. Pharmaceutical companies increasingly abandon costly antimicrobial research with limited profit incentives. And while policy expansions financing antibiotic development mark progress, near-term solutions seem unlikely considering phase trial durations.

Further frustrating containment efforts, international coordination on AMR surveillance and stewardship guidelines remains piecemeal despite organizations like the WHO, CDC, and UN recognizing its borderless risks. Variable access to quality diagnostics and antibiotic oversight across countries enables local emergence and global spread of novel resistance factors. Patches of weak stewardship may continually undermine and negate localized progress. Ultimately, the unique ‘tragedy of the commons’ nature of antibiotic resistance demands equitable, cooperative global action and shared responsibility. However, geopolitical complexities continue obstructing consensus on binding international policies and funding channels needed to strengthen antimicrobial stewardship and innovation worldwide

AMR transcends geographical boundaries and has a global impact on populations. In recent times, formerly manageable infections have evolved into significant health concerns. The absence of efficacious antimicrobial agents renders routine medical procedures, such as surgeries, chemotherapy, and organ transplants, more precarious. In addition to the adverse impact on human health, AMR also presents substantial economic challenges for healthcare systems, governments, and societies as a whole. The financial burden associated with managing resistant infections is significantly elevated as a result of extended hospitalizations, escalated healthcare consultations, and the necessity for costly medications as a last line of defense.

Priorities to public health action

Promoting public awareness and providing education are essential components to address AMR. It is imperative to provide the general population with comprehensive education regarding the proper utilization of antibiotics, the adverse outcomes associated with their excessive usage, and the significance of adhering to prescribed treatment regimens [127]. Healthcare professionals must possess current knowledge regarding antimicrobial stewardship, infection prevention, and control practices. Antibiotic stewardship in hospital settings encompasses the establishment of guidelines, provision of education to healthcare providers, and implementation of protocols to ensure the judicious utilization of antibiotics. Conversely, in outpatient settings, antibiotic stewardship centers on patient education, diagnostic testing, and promoting antibiotic usage solely when deemed necessary. By establishing a culture that promotes responsible utilization of antimicrobials, it is possible to mitigate the

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selection pressure exerted on microorganisms and consequently decelerate the progression of antimicrobial resistance. The details of various alternative strategies for addressing antimicrobial resistance are illustrated in.



REDUCING ANTIMICROBIAL RESISTANCE

Conclusion

Antimicrobial resistance (AMR) is no longer a distant threat—it's a rapidly growing global crisis with profound implications for public health, food security, and economic stability. Driven by the misuse and overuse of antibiotics in humans, animals, and agriculture, AMR is rendering once-effective treatments powerless, leading to prolonged illnesses, higher medical costs, and increased mortality rates. Compounding the issue is the lack of new antibiotics being developed, as pharmaceutical incentives remain limited and scientific challenges persist.

Tackling this invisible enemy demands a multifaceted response. This includes implementing robust antibiotic stewardship programs, strengthening infection prevention and control measures in healthcare and community settings, and enhancing surveillance systems to track resistance patterns. Public education is also critical to change behaviors around antibiotic use, while governments and international bodies must invest in research and incentivize the development of new antimicrobials and alternative therapies.

Ultimately, the fight against AMR is not just a medical or scientific challenge—it is a societal one. If ignored, antimicrobial resistance threatens to push the world into a post-

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antibiotic era where even minor infections could become deadly. Collective action, informed policies, and sustained commitment are urgently needed to protect global health now and for future generations.

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LASER IRRADIATION OF WET-BLUE LEATHER SEMI-PRODUCTS

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Abstract. The study used a physical method, namely laser modification, in addition to chemical treatments, to produce Wet-Blue leather semi-finished products. Laser treatment accelerates the formation of reactive radicals by opening various bonds in the skin tissue, and during subsequent treatment, these reactive radicals and chromium-containing complex compounds enter into a chemical reaction. It was confirmed that the Wet-Blue sheepskin leather semi-finished product has improved physical and mechanical properties when treated with laser light before tanning. The tensile strength was found to be 25.0% higher than that of the Wet-Blue sheepskin leather semi-finished product produced using traditional technology.

Keywords: collagen, dermis, laser irradiation, chromium, tanning, Wet-Blue, hydrothermal destruction, tensile strength, elongation at break.

ENTER.

Tanning is a key process in the leather manufacturing process, which is the treatment of the collagen fiber structure of the leather, mainly with a tanner (a type of cross-linked protein), which makes it more hygienically durable and durable [1].

Wet-Blue refers to the intermediate stage of the chromium salt tanning process, in which the hides are only chrome-tanned, wet, and blue in color. [2]

Chromium salts are the only tanning agent that produces the most desirable properties of leather [3]. Pankova and others.[4] developed a technology for plasma-chemical finishing of natural leather using silver nanoparticles and low-pressure HF plasma. An induction high-frequency plasmatron was developed for processing nanoparticles in an inductive discharge. The use of this technology has been found to significantly increase the quality of leather texture of natural leather, in particular, to significantly improve their physical and mechanical properties.

In the work [5], the high efficiency of the chrome tanning process of leather using ultrasound is shown. The tanning technology is described, and the new process allows to reduce the time required for tanning and obtain a higher quality material from it.

One of the new promising directions in skin tissue modification is its treatment with laser light. The advantage of this method is that it radically changes the structure of its fibers and increases their activity towards chemicals[6].

The main parameters of laser rays affecting the natural skin are its wavelength, power and density. In the first pulse of the laser, the water molecule in the skin structure evaporates, the temperature rises in the layer near the surface, and an area of reduced internal air pressure is formed, which makes it possible to use the energy of the second pulse more fully for laser ablation [7].

Methodological part.

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Sample preparation. An average sample is obtained by conducting chemical tests and physico-mechanical experiments on a small amount of substances and materials. Samples are taken based on state standards.

1. For chemical analysis.
2. For physico-mechanical experiments.

For each test, a sample is taken from the right and left side of the skin. For physical-mechanical experiments, the skin samples cut out are numbered and the upper, lower, and marginal parts are indicated by arrows.

The sample taken for chemical testing is weighed and ground to an “error of no more than 0.01 g.” The sample obtained is tested according to GOST-938-75 [8].

Hydrothermal destruction was determined according to GOST 938.25 [2].

Tensile strength limit, stress at the formation of cracks in the surface layer of leather, elongation at break, elongation and conditional tensile modulus at a stress of 9.8 MPa GOST 938.11. determined according to [2].

Laser irradiation. In this work, a sample of Wet-Blue semi-finished leather was treated with laser in a double-pulse mode. A 1064 nm yttrium aluminum garnet LS-2134D laser was used, generating in a double-pulse mode (pulses separated by a time interval of 3 μ s, pulse duration 10 ns)[3].

Conclusion and discussion.

Taking into account the above studies, we set ourselves the task of applying new generation laser technology to our research, which gives complex properties to the Wet-Blue leather semi-finished product. Laser technology has not been widely used in the production of leather products. Laser radiation has a coherent monochromatic collimation, which is its peculiarity. The interaction of laser radiation with skin tissues is based on its physical properties [2].

Therefore, the main task is to select the optimal parameters of laser irradiation that will give new intensive properties to the Wet-Blue leather semi-product. In this case, the semi-product of sheep Wet-Blue leather processed by standard technology was treated with laser beams with an energy interval of 20–30 J for 20–40 seconds, and its hydrothermal destruction was determined. These parameters showed that laser modification led to morphological changes in the dermis structure.

Hydrothermal destruction of semi-finished leather samples of laser-modified Wet-Blue in different modes is presented in Figure 1. Hydrothermal destruction of semi-finished sheep Wet-Blue leather was achieved at a temperature of 95°C in the control sample and 97°C in the experimental samples.

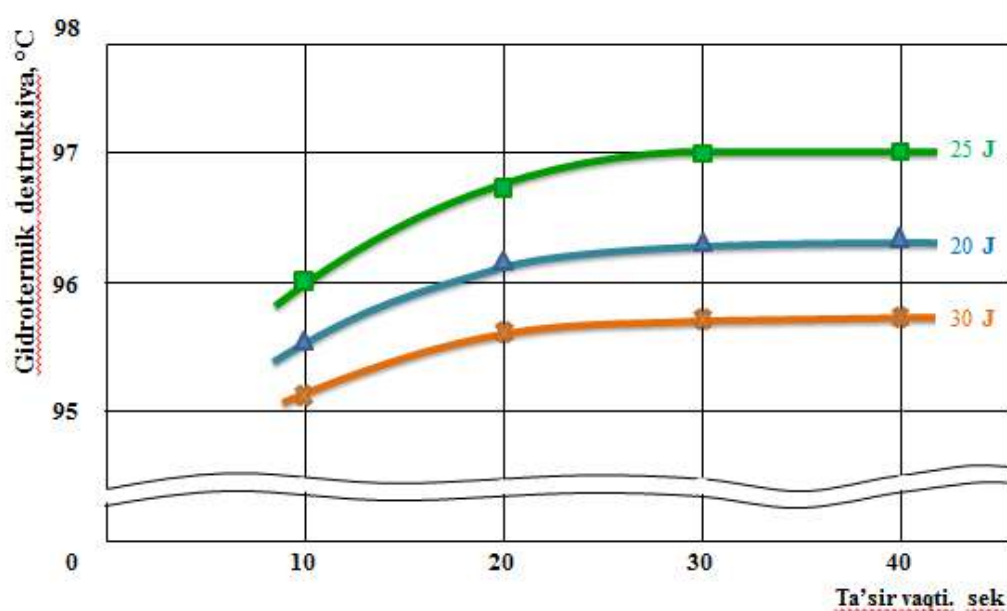


Figure 1 - Changes in hydrothermal destruction of laser-modified Wet-Blue sheepskin semi-finished product after tanning process.

Laser treatment of semi-finished sheep Wet-Blue leather samples allowed to obtain high values of hydrothermal destruction. It was found that the destruction temperature of the modified semi-finished Wet-Blue leather samples was 2.1% higher than the control sample. Based on the data obtained, we can conclude that the laser modification of the Wet-Blue leather semi-finished product caused the reaction of the non-reactive lysing compounds with the fabrics.

Naturally, one of the indicators for assessing the quality of Wet-Blue leather semi-finished products is their strength and elongation at break, as the leather produced must be strong and elastic. Therefore, the elongation at break and tensile strength of the control and experimental samples of tanned Wet-Blue leather semi-finished products were determined using a YG026T tensile machine by cutting standard samples, and the results are presented in Table 1.

Table 1

Physical and mechanical properties of laser-modified Wet-Blue sheepskin semi-finished products

Indicators	Control sample	Laser modified samples		
		$E=20J$, $T=30\text{ cek.}$	$E=25J$, $T=30\text{ cek.}$	$E=30J$, $T=30\text{ cek.}$
Hydrothermal destruction, °C	95,0	95,7	97,0	96,3
Tensile strength limit, MPa	12,0	13,5	15,0	14,0
Elongation in tension, %	23,0	25,0	31,0	28,0

It was found that the tensile strength and elongation at stress in the control sample modified by laser irradiation with 25 J energy for 30 seconds increased by 25.0% and 34.78%, respectively, compared to the Wet-Blue leather semi-finished product produced by the traditional technology.

The morphological structures of the experimental and control samples of Wet-Blue leather semi-finished products were studied using a digital optical trinocular microscope (KXL-2001) at 200x magnification (Figure 2). This study made it possible to identify certain features of the effect of laser

irradiation on the morphological structure of leather tissues.

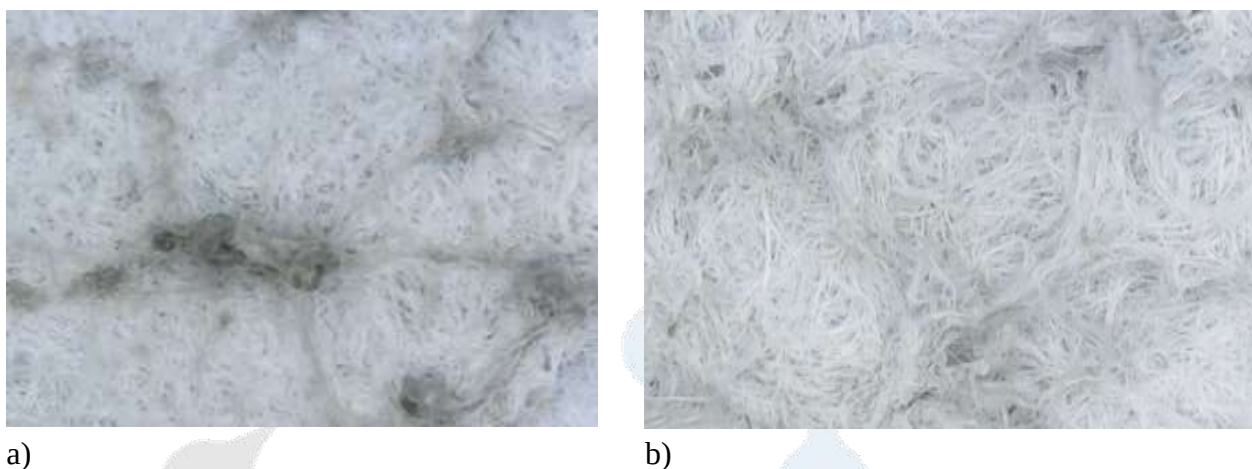


Figure 2. Morphological structure of the Wet-Blue leather semi-finished product: (a) control sample; (b) experimental sample after laser irradiation (200× magnification, digital optical trinocular microscope KXL-2001)

Conclusion. Based on the above results, it can be concluded that when the Wet-Blue leather semi-finished product is treated with laser irradiation, it acquires improved physico-mechanical properties. Furthermore, changes occur in the structural elements of the leather tissue, accompanied by structural softening, surface relief modification, variations in the thickness of individual collagen fibers, and their separation into bundles.

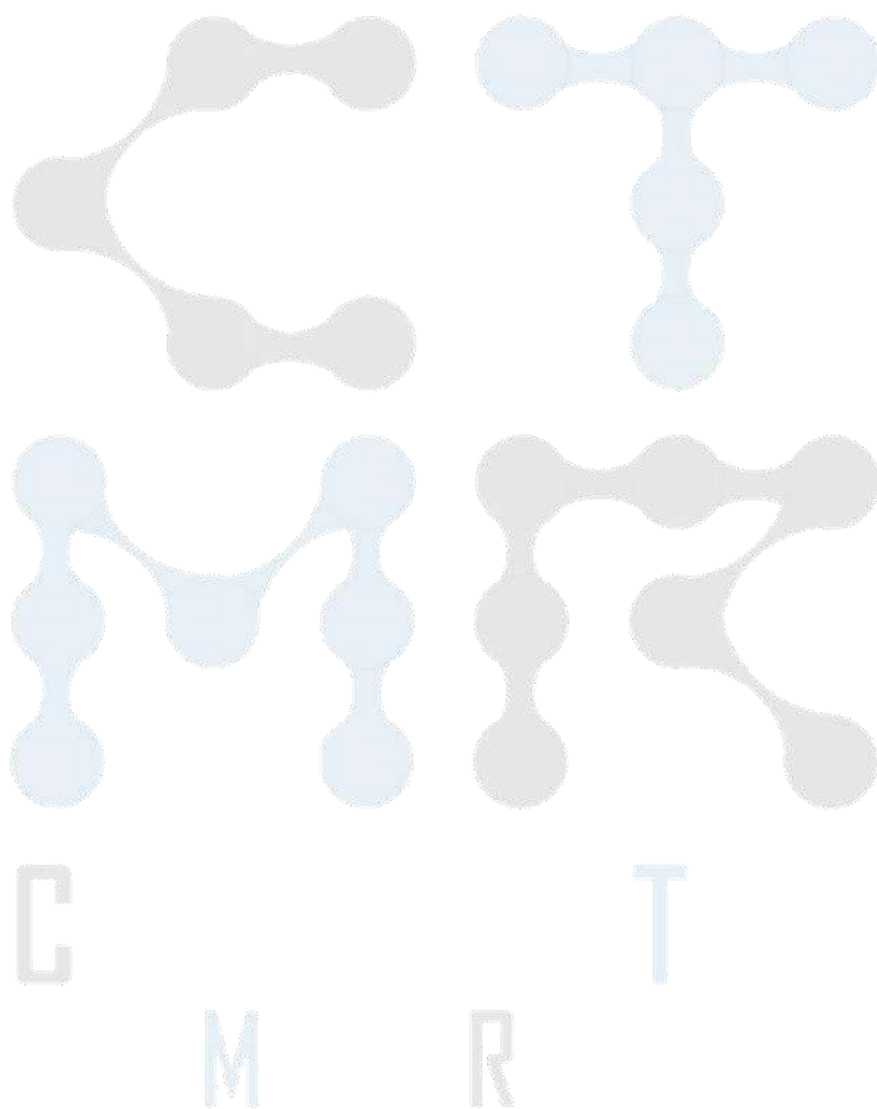
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LIBRARIES AND THE DEVELOPMENT OF THE SCIENTIFIC AND EDUCATIONAL ENVIRONMENT DURING THE SOMONID PERIOD

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Annotation. This article analyzes the development of library activities, the scientific and educational environment, and book culture during the Samanid period in the 9th–10th centuries in the regions of Transoxiana and Khorasan. It highlights the role of Bukhara and Samarkand as centers of science, where libraries served as essential sources for scholars, poets, and thinkers, based on historical evidence. Furthermore, the processes of book reproduction, collection, and preservation, as well as the role of libraries in socio-cultural life during the Samanid era, are examined. The findings show that libraries of the Samanid period not only contributed to scientific and educational progress but also laid an important foundation for the Eastern Renaissance

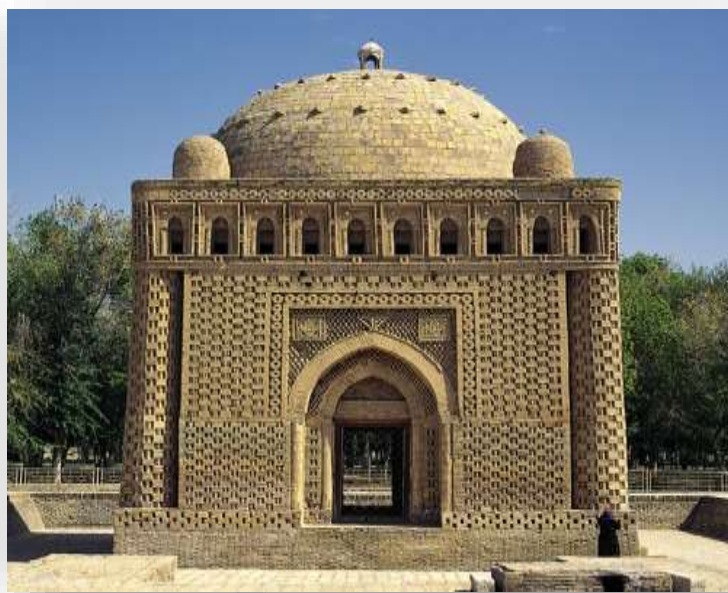
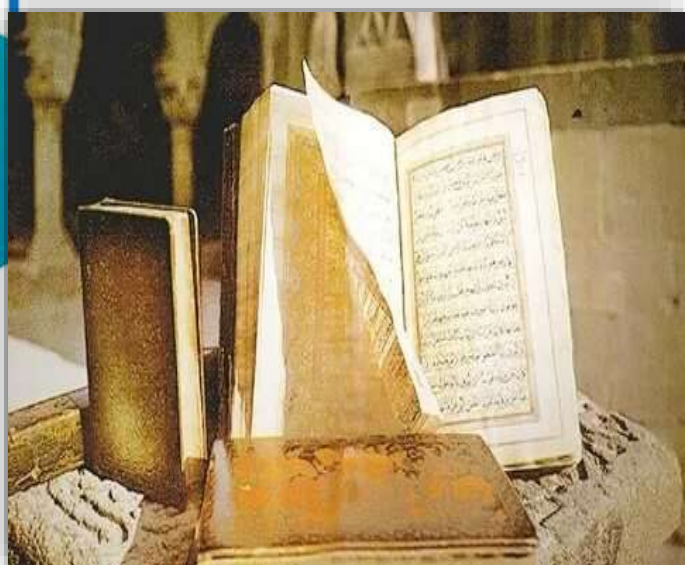
Keywords. Samanids, libraries, scientific and educational environment, book culture, Bukhara, Eastern Renaissance, thinkers, Transoxiana.

Main part: The Samanid era is one of the most significant periods in the history of Central Asia. This dynasty, which ruled in the territories of Transoxiana and Khorasan in the 9th–10th centuries, laid the foundation for the rise of science and culture, which was called the Eastern Renaissance. In particular, Bukhara, as the capital, became not only a political, but also a scientific and educational center. During the Samanid era, the activities of libraries played an important role in strengthening the foundations of the development of science. Respect for books and knowledge, the culture of collecting, organizing and preserving works developed. This process was of great importance not only for local scientists, but also for the intellectuals of the entire Islamic East.

The Samanid rulers continued the most advanced traditions of their time in patronizing scholars, writers, poets and scientists. Especially during the reign of Emir Nasr ibn Ahmad and his son Nuh ibn Mansur, the city of Bukhara became a major scientific center. Madrasahs, mosques and libraries were established here, where many works were collected. At that time, book copying, although based on manual labor, was highly developed. The copied works were often kept in state libraries and private collections. Libraries were enriched not only with religious works, but also with books on philosophy, medicine, mathematics, literature and history.

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The palace libraries established in Bukhara were considered one of the richest sources of their time. Scientists had the opportunity to conduct scientific research here, compare their written works, and exchange ideas with other scientists. This situation revitalized the scientific environment and created the basis for the emergence of new ideas. In particular, the direct influence of libraries was felt in the activities of such scholars as Abu Abdullah Rudaki, Abu Ali ibn Sina, Abu Nasr al-Farabi. Historical sources indicate that Ibn Sina used the Bukhara palace library in his youth and read many of the works there. This fact shows how rich and scientifically significant the libraries of the Samanid era were.

Libraries during the Samanid era served as the mainstay of scientific and educational life in society. During this period, libraries were not only a place to store books, but also a center for scientific communication. The books collected in the libraries were open for free use by scientists, which accelerated the process of knowledge exchange. As a result, the Transoxiana region became one of the most advanced scientific centers of the Muslim East. Therefore, the libraries of the Samanid era are considered the foundation of the Eastern Renaissance.

Libraries also existed not only within the palace and madrasah, but also in the personal collections of some wealthy and intelligent people. This indicates the widespread general interest in books and science. In particular, some officials and merchants also had their own personal libraries, which were accessible to many students and young people thirsting for knowledge. The tradition of collecting books and passing them on to future generations was firmly established during the Samanid era.

Along with libraries, book copying workshops also played a significant role in the development of the scientific environment. The copied manuscripts were enriched with various decorations and elegant inscriptions. This process gave books not only scientific but also artistic value. Thus, libraries during the Samanid era played an important role not only in spiritual and educational development, but also in the development of art and literature.

The influence of the Samanid era libraries has been felt for many years. In subsequent centuries, the scientific environment created during this period and the collected works served as the

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basis for scientific centers of other states. Libraries in Khorezm, Ghazni, and Baghdad in particular continued the scholarly traditions that had developed during the Samanid period. This process was a decisive factor in the formation of a high period known as the Eastern Renaissance.

Conclusion: In conclusion, the libraries of the Samanid era played an invaluable role in the development of science, culture and enlightenment. They not only ensured the scientific progress of their time, but also left an indelible mark in history as an integral part of the cultural heritage of the entire Muslim East. Even today, by studying the activities of libraries and the scientific environment of the Samanid era, we can understand the values of our scientific heritage more deeply. This is of great importance in attracting the younger generation to science and enlightenment more broadly.

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СОВЕРШЕНСТВОВАНИЕ ПРОЦЕССА ПОДГОТОВКИ ПРЕПОДАВАТЕЛЕЙ НА
ОСНОВЕ КОЛЛАБОРАТИВНОГО ОБУЧЕНИЯ

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Аннотация: В статье рассматриваются перспективы и методы совершенствования процесса подготовки преподавателей на основе коллаборативного обучения. Анализируются преимущества совместной групповой работы, такие как развитие коммуникативных и организационных навыков, обмен педагогическим опытом и повышение мотивации к обучению. Представлены основные подходы и рекомендации по внедрению коллаборативных методов в образовательный процесс подготовки педагогов, включая проектную деятельность, кейс-анализ и использование цифровых технологий. Сделан вывод о высокой эффективности коллаборативного обучения как инструмента формирования компетенций современного преподавателя и необходимости системного применения данного подхода в педагогическом образовании.

Ключевые слова: образовательный стандарт, интеллектуальный потенциал, компетентностный подход, Коллаборативное обучение, педагогическое управление.

Annotation: The article explores the prospects and methods for improving the process of teacher training based on collaborative learning. It analyzes the advantages of group work, such as the development of communication and organizational skills, the exchange of pedagogical experience, and increased motivation for learning. The article presents key approaches and recommendations for implementing collaborative methods in the educational process of teacher preparation, including project-based activities, case analysis, and the use of digital technologies. It concludes that collaborative learning is a highly effective tool for developing the competencies of modern educators and emphasizes the need for the systematic application of this approach in teacher education.

Keywords: educational standard, intellectual potential, competence-based approach, collaborative learning, pedagogical management.

Введение. Современные требования к преподавателям значительно выросли: им необходимо не только обладать глубокими профессиональными знаниями, но и уметь эффективно взаимодействовать с коллегами и обучающимися, использовать новые образовательные технологии и адаптироваться к быстро меняющимся условиям. В этой связи коллаборативное обучение (совместное обучение в группе) становится важным инструментом для повышения качества подготовки педагогов. Коллаборативное обучение — это образовательный подход, при котором обучающиеся работают вместе в малых группах, чтобы достичь общих целей, обмениваться знаниями и навыками, развивать критическое мышление, коммуникативные и организационные навыки.

Сегодня, когда современные технологии внедрены во все сферы деятельности человека, особенно значимо их влияние на систему высшего образования, так как именно она является главным поставщиком высококвалифицированных рабочих кадров для современного производства. Качество подготовки рабочих напрямую связано с уровнем подготовки педагога профессионального обучения.

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Подготовка современного педагога является сложной научно-практической проблемой, которая обусловлена интегрированной структурой его деятельности. Деятельность современного преподавателя – это сплав труда инженерного и педагогического.

По сути, современный преподаватель – это специалист с высшим образованием, осуществляющий педагогическую, учебно-производственную и организационно-методическую деятельность по профессиональной подготовке студентов.

К проблемам совершенствования процесса подготовки преподавателей можно отнести следующее: высокая моральная ответственность; в отдельных случаях сложные условия труда; необходимость постоянно совершенствовать педагогическое мастерство, кроме того, это сложность самого процесса обучения в вузе – необходимо наряду с педагогическими дисциплинами, усвоить практически такой же объем инженерных дисциплин.

Таким образом, сегодня требуется педагог, умело сочетающий профессионально-технические и педагогические качества. То есть педагог высшей школы — это монопрофессия, представляющая собой органический сплав технического и педагогического образования и соответствующая объективным потребностям современной системы высшего образования.

Несомненно, что оба компонента деятельности педагога высшей школы важны и значимы, без выделения каких-либо приоритетов. Но если формирование педагогической компетентности не требует от высшего учебного заведения больших капиталовложений, то для технологической компетентности необходимо современное оборудование по различным отраслям производства, информационно-коммуникационное оснащение, т.е. необходимо создание мощной учебно-материальной базы. Создание такого арсенала возможно только в технических вузах, в которых такая база формируется изначально.

Всякая деятельность требует определенных умений и навыков. В процессе деятельности они вырабатываются. Умения и навыки - необходимое внутреннее условие успеха всякой деятельности. Они дают возможность человеку владеть своими силами, целесообразно ими пользоваться, экономить их, ускорять процесс достижения цели, повышать продуктивность своей деятельности. Владея средствами, техникой и технологией деятельности, человек становится мастером своего дела, получает возможность творческого его выполнения. Следовательно, профессиональное мастерство наставника учебной группы, компонентами которого являются высокая производственная квалификация, психолого-педагогические знания, следует постоянно совершенствовать. На современном этапе одного лишь профессионального опыта уже недостаточно; необходимы образованность, культура, основательная педагогическая подготовка, любовь к детям, к своей профессии, владение искусством воспитания [1].

В современных условиях Узбекистана возрастают требования к интеллекту и мировоззрению человека, его научному и культурному уровню, профессиональному мастерству и творческим способностям, следовательно, возникает проблема сформировать у каждого члена общества потребность в постоянном повышении своего образовательного уровня (мотивацию учения). Наличие такой потребности - необходимый признак гармонично развитой личности. Решая важную задачу - научить молодых людей учиться самостоятельно – необходимо сделать акцент на развитие индивидуальных особенностей каждого, в том числе и индивидуальных особенностей мотивации. На основе государственных образовательных стандартов реформируется содержание образования, включающее его гуманизацию, обучение и

воспитание кадров на основе принципов национальной независимости, опоры на богатый духовный и интеллектуальный потенциал.

Нас призывают к перестройке, к поиску нового, к творчеству. Что это значит?

Прежде всего, необходимо найти такие формы работы с учащимися, которые позволили бы активизировать учебный процесс, перевести его на качественно новый уровень и наконец, надо научиться, интересно проводить занятие.

Основой совершенствования образования является компетентностный подход к подготовке специалистов, заключающийся в развитии у студентов общих и профессиональных компетенций, определяющих успешную адаптацию в обществе и готовность к осуществлению профессиональной деятельности. Будущий специалист должен обладать такими общими компетенциями, как способность принимать решения в стандартных и нестандартных ситуациях и нести за них ответственность, осуществлять поиск и использование информации, необходимой для эффективного выполнения профессиональных задач, использовать информационно-коммуникационные технологии, работать в коллективе и команде, ориентироваться в условиях смены технологий в профессиональной деятельности, заниматься самообразованием и т.д. Теоретический анализ передового педагогического опыта показывает, что наиболее характерным направлением повышения эффективности вузовского обучения является создание таких психолого-педагогических условий, в которых студент может занять активную личностную позицию и в наиболее полной мере раскрыться как субъект учебной деятельности [2].

Процесс формирования профессиональных интересов на занятии имеет психологические особенности, учитывая которые мастер сумеет повысить эффективность своей деятельности. Коллаборативное обучение, совместное обучение (collaborative learning) — интерактивный процесс, в котором обучение построено на взаимодействии между обучающимися, либо между обучающимися и преподавателем для достижения конкретной цели. Участники процесса получают знания через активный совместный поиск информации, ее обсуждение, осмысление и применение в формате групповых проектов, совместных разработок, креативных сессий, мозговых штурмов и т. п.



Рисунок 1. Элементы коллаборативного обучения

В процессе производственного обучения в учебных механических мастерских на каждом уроке необходимо:

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-указывать необходимую значимость данной темы в осваиваемой профессии, например: при обучении токарей, фрезеровщиков, научить оставлять наименьший припуск при отрезке заготовки — значит, повысить производительность труда при дальнейшей обработке и помочь экономному расходованию металла;

-доказывать взаимосвязь содержания учебно-производственной деятельности и эффективности осваиваемой профессии (например при точении: а) постоянно располагать детали и инструмент в зоне правой руки- значит, сокращать пути движения руки; б) правильная наладка контроля (при этом важна его своевременность); в) захват детали так, чтобы ее можно было бы не переверачивая сразу закрепить в патрон- сокращает число вспомогательных движений; г) правильный зажим в патроне предупреждает перекос детали и сокращает время на исправление дефекта и т. д.;

-раскрывать возможности развития профессиональных способностей (например, при обработке фасонных поверхностей какой инструмент необходимо использовать, чтоб сократить количество проходов).

Рекомендуется в вводно-подготовительном периоде и в период обучения в учебных мастерских ставить перед учащимися не одну, а несколько целей:

-конечную цель учебно-производственной деятельности (изготовить деталь в соответствии с требованиями на чертеже);

-содержательную цель (повысить эффективность своего труда или улучшить качество своей работы);

-развивающую цель (применить требуемые в данной работе профессиональные способности);

-поэтапные цели (результаты этапов предстоящей деятельности, планирования, самоконтроля, выполнения основных и вспомогательных операций, коррекции).

Образовательная функция обучения, определяющая конечную цель, в настоящее время включает и подготовку учащихся к техническому творчеству. А это предполагает такую организацию процесса обучения, при которой формирование знаний, умений, и навыков и обучение техническому творчеству выступает как единый процесс обучающей деятельности педагога и учебно-познавательной деятельности учащегося. С этой целью необходимо использовать специальную систему производственно-технических задач, связанных с конструированием и изготовлением приспособлений, самостоятельной разработкой технологических процессов, самостоятельной работой с использованием патентной информации, справочной литературы и т.д.

Законы альтернативной практики направлены на активную деятельность педагога. По этим законам педагог во время учебного процесса должен стараться достичь положительного запланированного результата. А для этого необходимо максимально точно и грамотно ставить учебные цели.

Традиционными категориями, используемыми для анализа образовательных процессов, являются:

-цели; содержание; формы; методы; средства обучения.

Именно они выступают в качестве предмета деятельности педагога, организующего учебно-воспитательный процесс по определенному предмету, дисциплине или специальности.

Современные технологии обучения направляют преподавателей на творческие поиски. «Без развитого педагогического мышления, охватывающего и оценивающего идею, замысел, логику передового опыта, учитель обречен, бродить вслепую, либо хватаясь то за одно, то за

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другое модное средство, либо пытаюсь механически объединить разные средства и приёмы» [3]. При этом строгое определение целей обучения (чему и для чего?) должно способствовать отбору и строительству содержания (что?), организации учебного процесса (как?) методов и средств обучения (при помощи чего?), а также учитывать необходимый уровень квалификации преподавателей (кто?), методы оценки достигнутых результатов обучения (так ли это?). Приведенные критерии в их комплексном применении определяют сущность учебного процесса и его технологию. Опираясь на концепцию деятельностного подхода к процессу обучения, представляется следующая логика его организации. Вначале анализируется характер содержания учебного материала, цели его изучения (уровни усвоения), а также другие условия педагогической задачи. Затем определяются адекватные методы обучения и схемы управления познавательной деятельностью обучающихся. Полученная таким путем подсистема методов и средств обучения облекается в организационную форму обучения – ее технологию. Основная функция педагогических технологий – реализация целей учебного процесса и развития личности. Отсюда вытекают принципы целостности технологий, предусматривающие закономерности развития системы: инвариативность её структуры при гармоничном взаимодействии всех её составных элементов. Чтобы выявить специфику педагогических технологий в аспекте проектирования педагогической системы высших учебных заведений, в которых представлены взаимодействия педагога и обучаемых необходимо, иметь в виду, что проектирование не сводится к различению обучающих систем или отдельных компонентов этих систем.

Проектирование выполняет методологическую функцию. Оно выступает как средство исследования закономерностей психического развития обучающихся, особенностей формирования учебной деятельности и способов педагогического управления [4].

Проектирование технологии обучения при преподавании специальных дисциплин рассмотрим, как постановку педагогической задачи и разработку дидактического процесса, обеспечивающего ее решение.

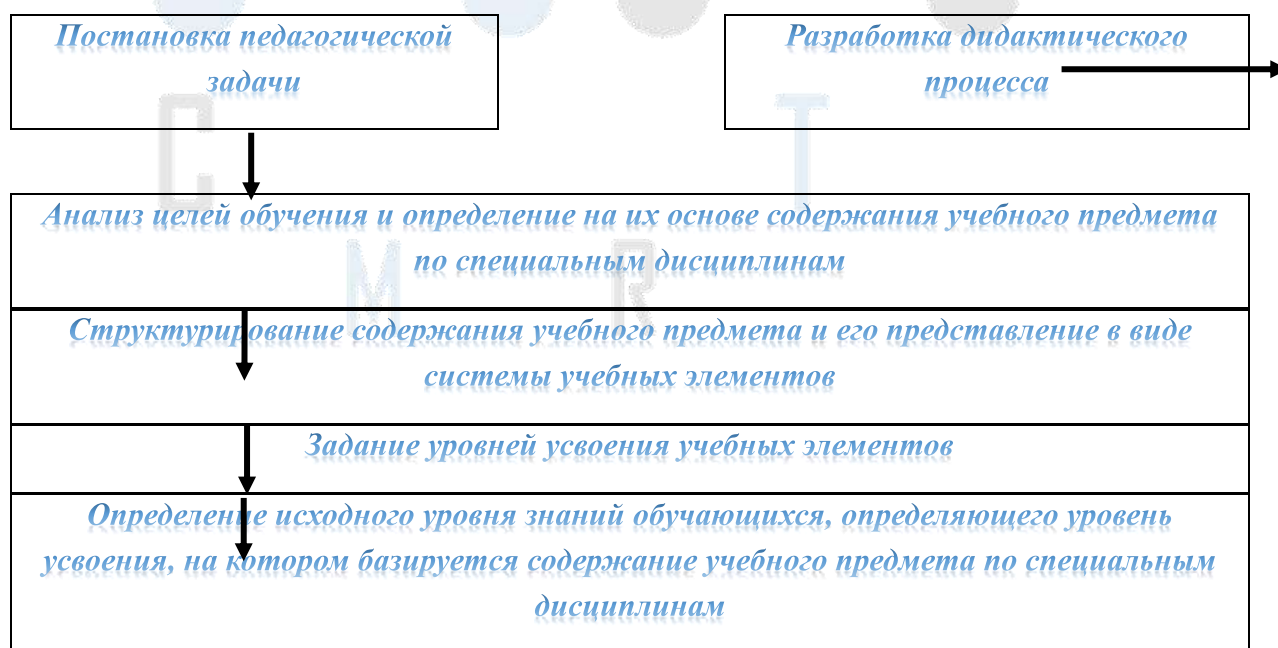


Рисунок 2. Проектирование занятия на основе коллаборативного обучения при преподавании специальных дисциплин.

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Заключение. Коллаборативное обучение является эффективным инструментом совершенствования подготовки преподавателей. Оно способствует развитию ключевых педагогических компетенций, которые сложно или невозможно сформировать при традиционных методах обучения. Для успешного внедрения необходимо системное стратегическое планирование, подготовка кадров и использование современных технологий.

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Annotatsiya. Ushbu maqolada bronza davrida O'rta Osiyo janubida (shu jumladan, Surxon vohasida) ishlab chiqaruvchi xo'jaliklar va ixtisoslashgan hunarmandchilik sohalarining rivojlanishi, savdo-sotiq va madaniy aloqalarning tobora kengayib borishi, shuningdek kulolchilik, bronzaga ishlov berish va kasb-hunarning boshqa sohalari haqida ma'lumot berilgan.

Kalit so'zlar: Sopollitepa, Jarqo'ton, bronzadan yasalgan xanjarlar, o'q uchlari va nayza paykonlari, pichoqlar, boltalar, jez ignalar, bronza buyum-halqalar, bilakuzuklar, jez oynalar, munchoqlar, kulolchilik charxi, patriarxal urug'.

Yozma manbalarda yoritilmagan bronza davri tarixi va madaniyatini faqat arxeologiya materiallari asosida tiklash mumkin. Ular moddiy va ma'naviy madaniyat, iqtisodiy munosabatlar va ijtimoiy aloqalar tarixini o'rganishda muhim manba bo'lib xizmat qiladi. Tarixiy rekonstruksiya jarayonida quyidagilarni ochib berish muhim:

1. Turar joylarning topografiyasi va me'morchilik tarxi, alohida uy-joylardagi xonalarning funksiyasi.
2. Tabiiy sharoit (paleogeografiya, paleoekologiya), moddiy ishlab chiqarish imkoniyatlari, hayot sharoiti, inson turmush tarzi, antropogen landshaftning rivojlanishi.
3. Jamoalarning iqtisodiy tuzilishi, xo'jalik shakllari, xonaki va ixtisoslashgan hunarmandchilik darajasi, paleodemografiya, oila va jamiyat. Bronza davri Sopollitepa aholisi A.A.Asqarovning fikriga ko'ra, ko'p xonali uy-joylarda yashagan va urug' jamoalariga birlashgan 8 ta katta oilalar a'zolaridan iborat bo'lgan. Ular tomorqa yerlari, chorva, ishlab chiqarish qurollari, ro'zg'or buyumlari va qishloq xo'jalik mahsulotlari zahiralarga ega bo'lib, mustaqil xo'jalik yuritgan va katta ijtimoiy tuzilish (manzilgoh) doirasida hayot kechirgan¹. Huddi shunday holat bronza davri Dashtli vohasi misolida, ya'ni katta patriarxal oilalarga mansub ko'p xonali turarjoylar Shimoliy Afg'onistonda aniqlangan, biroq bu yerda dehqonchilik jamoalari uy-joylari qatorida saroy va ibodatxonalar kabi katta inshootlar qoldiqlari topilgan².

Keyin bunday imoratlar Janubiy O'zbekistondagi Jarqo'ton shahar xarobasida ham aniqlangan³.

Er. av. III ming yillikning ikkinchi yarmidan boshlab, O'rta Osiyo metallurgiyasi texnologiyasiga bronza texnologiyasi kirib keladi va bronza davri boshlanadi. Shu bilan birga III ming yillik boshi II ming yillikdan boshlab Yaqin Sharqdan O'rta Osiyoga BMAK tarqaydi. Turkmanistonda Oltintepa ustki qatlami Namozgoh IV yodgorliklari Murg'ob quyi oqimidagi Gonur, To'g'oloq, Taip va boshqa vohalardagi katta kichik shaharlari, O'zbekistonda Ko'zali, Bo'ston, Sopolli, Janubiy Turkmanistonda Kongur IV va Boir shu davrga oid. Bu davrda sopol ishlab chiqarish texnologiyasi tubdan o'zgaradi. Bularning 90% dan ko'pi maxsus kulolchilik charxida yasalgan bo'lib, juda nafis yuqa jarangdor loydan ishlangan. Kulolchilik mahsulotini bo'yoq bilan bo'yash mutlaqo yo'qoladi. Ayrim sopol siniqlarida turli nishonlar, hayvonlar, qushlar yo daraxtni sxematik tasvirini uchratishimiz mumkin. Sopollitepa va Jarqo'ton yodgorliklarining kulolchilik ustaxonalari

¹ Аскаров А. Девнеземледельческая культура эпохи бронзы... С. 142-143.

² Сарианиди В.И. Древние земледельцы Афганистана... С. 132-135.

³ Сарианиди В.И. Древние земледельцы Афганистана... С. 134-135.

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tadqiqotlaridan olingan ma'lumotlariga ko'ra kulolchilik mahsulotlari katta-kichik ikki qavatdan iborat bo'lgan xumdonlarda pishirilgan. Xumdonlarning quyi qismida olov yoqilib unda maxsus teshik panjara bilan ajratilgan ustki qismida bevosita kulolchilik mahsuloti terib pishirilgan. Sopollitepa xumdonida esa xumdonni quyi qismi panjara bilan ajratilmagan bo'lsada xumdonning quyi tor bo'lib, ustki gumbazi kengroq bo'lgan va idish xumdonning ostki va ustki zinasiga terilgan. Bronza davri o'troq madaniyat idishlarining deyarli hammasi juda nozik ishlangan bo'lib, qizil angob bilan bo'yalgan va aksariyat holatda bo'g'zi tor idishlar tashqari tarafdan, gardishi keng og'zi ochiq idishlar ichki tarafdan bezatilgan. Idishlarning 4-5 % i qo'lda yasalgan, loyi tarkibiga shamot va dresva qo'shilgan qozon va tovoqlardan iborat. Bularning bir qismi ham angob berilgan bo'lib, tashqi tomondan sayqallangan. Dasturxon, taom, suzish, suyuqlik ichish bolalarda xizmat qiladigan idishlarning formasi turli-tuman kosa, vaza qadah, choynak, tovoq, tog'aracha, piyola. Bundan tashqari xumcha, ko'za, turli xurma va xurmachalar ishlatilgan. Asqarov, Sarianidi, Shirinov va boshqa mutaxassislar BMAK kulolchiligi mahsulotlari ichida turli tipdagi mahsulotlarni ajratadilar: oyoqlik vazalar, turli konussimon vazalar, konussimon tog'aralar, konussimon kosalar, oyoqli va oyoqsiz qadahlar, konussimon va bikonik qadahlar, sharsimon, qovunsimon xurmachalar, dastali va dastasiz, jo'mrakli va jo'mraksiz choynaklar, turli xum va xumchalar, 4-5 tipdagi ko'zalar, naysimon jo'mrakli kosa va xurmachalar, turli-tuman miska yoki tog'orachalar, bankasimon idishlar, patnoslar, yalpoq tavalalar, bundan tashqari kam uchraydigan shakldagi idishlar guruhiga gultuvak, ssilindrsimon, butilkasimon idishlar ifodalangan. Bundan tashqari keng konussimon podstavkalar ular qozon xumlarni erga o'rnatishga xizmat qilgan. Yana bir uchraydigan kulolchilik mahsulotlaridan biri sopol qovurlar, ya'ni bu jihatdan o'ndan ko'p turli tipdagi kulolchilik idishlari ichida ularning bir necha o'ndan ortiq variantlarini, turlarini ajratish mumkin. Bu mahsulot janubi Kaspiy mintaqasi Gorgan viloyatiga xos bo'lib, savdo-sotiq, ayirboshlash natijasida BMAK hududlari, qishloqlari va ilk shaharlariga tarqagan.

Bronzaning kashf etilishi ibtidoiy jamoa xo'jaligida ro'y bergan buyuk madaniy ixtiro edi. Yangi metall harbiy qurollarning turini ko'paytirdi, ularning hili va jangovarligini oshirdi. Bronzadan yasalgan uy-ro'zg'or buyumlari ham paydo bo'ldi, ammo bronza mehnat qurollari ishlab chiqarish uchun nodir va kamyob metall bo'lib qolaveradi. U mehnat qurollari yasashda tosh xomashyosini uzil-kesil siqib chiqara olmadi, chunki dastlab bronzadan munchoqlar, uzuklar, to'g'nag'ichlar yasalgan. Ular asosan zeb-ziynat buyumlari edi.

Bu davrda bronzadan asosan turli bezaklar, uy-ro'zg'or va xo'jalik buyumlari, g'arbiy qurol- aslahalar va mehnat qurollari yasaydigan maxsus temirchilik, chilangarlik va zargarlik ustaxonalari vujudga keldi. Hunarmandchilikning ixtisoslashuvi bilan mintaqalararo ayirboshlash kuchaydi. Kishilik jamiyati tarixida birinchi marta muntazam mol ayirboshlash imkoniyati bevosita dehqonchilik va chorvachilikning bir-biridan ajralishi va hunarmandchilikning paydo bo'lishi bilan izohlanadi.

Sopollitepadagi qabrlarda o'liklar sopol idishlar, qurol-yarog'lar va zeb-ziynat buyumlari bilan birga ko'milgan. Erkaklar qabrlaridan 26 ta metall qurol, ayollar qabrlaridan 104 ta bronza buyum-halqalar, bilakuzuklar, jez oynalar va munchoqlar topildi. Sopol idishlar kulolchilik charxida yasalgan, asosan naqshsiz va to'g'ri simmetriyali buyumlardan iboratdir.

Yodgorliklarning madaniy qatlamidan va qabrlardan topilgan topilgan idishlar 14 xilga bo'linadi: vazasimon idishlar, tovoqlar, kosalar, tuvaklar, xumlar, xumchalar, choynak va piyolasimon idishlar, toshdan, yog'ochdan va bronzadan ishlangan idishlar. Xilma-xil kulolchilik buyumlari uy-ro'zg'orida chorvachilik va dehqonchilik mahsulotlarini saqlash uchun ishlatilgan.

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Moddiy manbalar Sopollitepada metallchilik yuksak darajada rivojlanganidan dalolat beradi. Bronzadan xanjarlar, o'q uchlari va nayza paykonlari, pichoqlar, boltalar, jez ignalar, idishlar ishlangan. Bronza metallurgiyasi hunarmandchilik ustahonalarini vujudga keltirdi.

Sopollitepa moddiy manbalari uy hunari yuksak darajada rivojlanganligidan dalolat beradi. Odamlar loydan, suyakdan, toshdan, yog'ochdan va charmdan xilma-xil buyumlar yasaganlar. Bronza davrida kiyimlar matolardan tikilgan. Sopollitepa matolari jun va zig'ir tolasidan to'qilgan bo'lishi mumkin. To'qimachilikka oid sopol va toshdan ishlangan urchuqlar topilgan.

Patriarxal urug'ning rivojlanishi, ishlab chiqaruvchi kuchlarning o'sishi bilan katta jamoa oilalarining boylik orttirishlari uchun qulay vaziyat yaratilgan. Qabrlardan topilgan buyumlar dastlabki mulkiy tengsizlikdan darak beradi. Sopollitepadagi 39 ta qabrdan sopol idishlardan tashqari metall qurolar va zeb-ziynat buyumlari, ayrim qabrlardan 5-35 ta sopol idish topildi.

Katta patriarxal oilalarga mansub bronza tamg'alar topilgan. Buyumlarda burgut, ilon, tuya va boshqa hayvon rasmlari bor. Olimlar fikricha, ular urug'larning totemlari bo'lgan.

Jarqo'tondan tosh, metall va suyakdan yasalgan ikki mingdan ortiq mehnat qurollari va nusxalari (votivnye kopii) topilgan bo'lib, ularning aksariyati dehqonchilik bilan bog'liq mehnat qurollaridir⁴. Ibtidoiy jamiyat tarixida eng dolzarb masalalardan biri bu metall buyumlar va metallga ishlov berishning shakllanishidir. Metallurgiya va metallga ishlov berish iqtisodiy hayotning eng muhim sohalaridan biri hisoblanib, texnologik taraqqiyot darajasini belgilaydi. Aynan metallurgiyaning shakllanishi xo'jalik hayot hamda ijtimoiy munosabatlar rivojida muhim ahamiyat kasb etgan⁵. Metaldan ishlangan mehnat qurollarining paydo bo'lishi qadimgi ijtimoiy-iqtisodiy taraqqiyotni ham tezlashtirgan. Umuman olganda, O'rta Osiyo hududida metall konlari (mis, qalay, qo'rg'oshin va boshqalar) bir tekis joylashmagan, shunga ko'ra konchilik va metallurgiya sohaları rivoji mintaqahududlarida turli darajada rivojlangan. Masalan, mis konlari Markaziy Qizilqum va Farg'onada, Markaziy Qozog'iston, Zarafshon daryosi yuqori va o'rta oqimlari hududlarida va boshqa joylarda aniqlangan⁶. Shuni ham ta'kidlash joizki, mis konlari dunyoning ko'pgina mintaqalarida tarqalgan bo'lsa-da, qalay konlari kamyob sanaladi. Keng rivojlangan bronza sanoatiga qaramasdan, Yaqin Sharqda ham qalay konlari deyarli yo'q bo'lgan va qalayning mintaqada yoyilishi borasidagi masala qizg'in muhokamalarga sabab bo'lmoqda⁷. Ko'plab tadqiqotchilar metal, ayniqsa qalay uchun xomashyo bazasi aynan O'rta Osiyo bo'lgan deya hisoblaydilar. O'zbekiston hududida (Qarnob, Lapas va CHangali) va Tojikiston hududida (Mushiston va Takfon) bronza davriga oid qalay konlari o'rganilgan bo'lib, ular mintaqada konchilik rivojiga ham turtki bo'lgan. Lekin, K.Kaniut fikricha "qalay masalasi" borasida xulosalar chiqarishga hali erta, bu bo'yicha kelajak tadqiqotlari aniq xulosalar chiqarishga imkon beradi⁸. Tadqiqotchilar Evrosiyo bronza davri madaniyatlari, ulardan aniqlangan metall buyumlarning tahlili asosida O'rta Osiyo orqali o'tgan "Bronza yo'li" hamda uning

⁴ Асқаров А., Ширинов Т. Ранняя городская культура эпохи бронзы юга Средней Азии. – Самарканд – 1993.

⁵ Кузьмина Е.Е. Металлические изделия энеолита и бронзового века в Средней Азии. – М.: Наука. 1966. – С. 5.; Аванесова Н.А. Эпоха бронзы Средней Азии. – Самарканд, 1989. – С. 5.

⁶ Ҳасанов А.С., Асқарова Н.М. Қадимги давр маъданчилиги. – Тошкент: Мухаррир. 2011. – Б.33.

⁷ 3 Kaniuth K. The metallurgy of the late Bronze Age Sapalli culture (Southern Uzbekistan) and its implications for the "tin question" // Iranica Antiqua, Vol. XLII, 2007. – P. 23-40; Бороффа Н., Парцингер Г. Исломгача бўлган даврда Тожикистон ва Ўзбекистонда қалай қазиб чиқариш // Қозоғистон, Тожикистон, Туркманистон ва Ўзбекистонда археологик тадқиқот ишлари. – Берлин. 2010. – Б. 55-57; Garner J. Bronze Age tin mines in Central Asia // Archaeometallurgy in Europe III. – Bochum, 2015. – P. 135-143.

⁸ Kaniuth K. The metallurgy of the late Bronze Age Sapalli culture (Southern Uzbekistan) and its implications for the "tin question" // Iranica Antiqua, Vol. XLII, 2007. – P. 35.

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mintaqa ijtimoiy-iqtisodiy, siyosiy hayotida tutgan o'rni borasida ham qayd etganlar⁹. Shuni alohida qayd etish joizki, mis, qalay va qo'rg'oshin kabi metallar qo'shilmasi asosida bronza metallini yaratilishi ijtimoiy-iqtisodiy hayotda katta siljishlarga sabab bo'ldi. Mis va bronza qurollardan xo'jalikda keng foydalanilishiga qaramay ular tosh qurollarni to'liq siqib chiqara olmagan. Janubiy O'zbekiston bronza davri metallurgiyasi borasidagi tadqiqotlar¹⁰ tahlili asosida masalani yoritish mumkin. Bronza metalli tarkibini kimyoviy jihatdan tahlil qilish orqali uning bir necha tiplari farqlanadi. Sopollida topilgan 41 % bronza buyumlar qalay tarkibli bronzadan tayyorlanganligi qayd etilgan¹¹.

Jarqo'ton qabristonida 730 dan ortiq bronza davriga oid go'rlar qazib ochildi. Topilgan buyumlar orasida bronza idishlar, xanjarlar, pichoqlar, zeb-ziynat buyumlari, sopol idishlar va chaqmoqtoshdan ishlangan nayza paykonlar bor. Ayollar qabrlaridan lojuvard, serdolik va feruza toshdan ishlangan munchoq va marjonlar topildi.

Qabristondan kulolchilik charxida yasalgan juda ko'p sopol buyumlar chiqdi. Odamlar idishlardan juda keng foydalanganlar va sopol esa moddiy madaniyatning muhim qismi bo'lgan.

Sopollitepa va Jarqo'tondan topilgan metall buyumlar qiyosiy jadvali¹²

	Qalay Bronza (Sn>3%)	Mishyak (arsenik) bronza (As>3%)	Qo'rg'oshin bronza (Pb>3%)	Tarkibida kam miqdorda qalay bo'lgan mis (Sn 1- 2,99%)	Tarkibida kam miqdorda arsenik bo'lgan mis (As 1- 2,99%)	Mis (Sn, As, Pb<1%)	Umumiy
Sopollitepa	31	29	16	4	13	2	95
Jarqo'ton	6	12	3	1	27	6	55
Umumiy	37 (25%)	41 (27%)	19 (13%)	5 (3%)	40 (27%)	8 (5%)	150 (100%)

Sopollitepada tadqiq etish jarayonida o'rganilgan moddiy manbalar metallsozlik yuksak darajada rivojlanganidan dalolat beradi. Bronzadan xanjarlar, o'q uchlari va nayza paykonlari, pichoqlar,

⁹ Radivojevic M., Kuzmanovic-Cvetkovic J., Rehren Th., Jovanovich M. Why are tin bronzes in the 5th millennium BC Balkans // *Archaeotechnology: studying technology from prehistory to the Middle Ages*. Belgrade, 2014. – P. 235-256.

¹⁰ Рузанов В.Д. Технический прогресс в металлообработке у древнеземледельческих племен эпохи бронзы юга Средней Азии // *Технологический и культурный прогресс в раннеземледельческую эпоху*. – Ашхабад: Ўлим, 1987. – С. 43.

Рузанов В.Д. К вопросу о истоках оловянистых бронз в металлообрабатывающих производствах племен юга Средней Азии в эпоху бронзы // *ИМКУ*. – Самарқанд, 1999. Вып. 30. – С. 37-40.

¹¹ Рузанов В.Д. Технический прогресс в металлообработке у древнеземледельческих племен эпохи бронзы юга Средней Азии // *Технологический и культурный прогресс в раннеземледельческую эпоху*. – Ашхабад: Ўлим, 1987. – С. 43.

¹² Kaniuth K. The metallurgy of the late Bronze Age Sapalli culture (Southern Uzbekistan) and its implications for the "tin question" // *Iranica Antiqua*, Vol. XLII, 2007. – P. 30.

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boltalar, jez ignalar ishlangan¹³. Har bir patriarxal jamoa yashash qismida metall eritish ustaxonalari mavjud bo'lgan. Masalan, Jarqo'tondan aniqlangan ibodatxonani qazish jarayonida, uning xo'jalik-xizmat qismidan maxsus chilangarlik ustaxonasi ochilgan. Supa ustida qurilgan 5 ta o'choq topilgan. Bu o'choqlar bronza hom ashyosini eritish pechlarida deya e'tirof etilgan¹⁴. Jarqo'tondan bronza ishlab chiqarish bilan bog'liq hunarmandlar massivi ochilgan. Yodgorlikda olib borilgan arxeologik tadqiqotlar davomida yuzlab bronzadan ishlangan mehnat va harbiy qurollar, zebi-ziynat buyumlari, urug' jamoa totemlari aks ettirilgan muhrlar, jamoa oqsoqollari va sardorlarining ijtimoiy nufuzidan dalolat beruvchi tamg'a va tumorlar topilgan¹⁵.

Janubiy O'zbekiston bronza davri yodgorliklarining turli bosqichlaridan jami 30 ta xumdon aniqlangan bo'lib, topilgan barcha xumdonlarni 3 tipga ajratish mumkin:

1. Bir kamerali, yarim yer osti
2. Bir kamerali, ikki maydonli yer usti xumdonlar
3. a) ikki kamerali, ikki yarusli, kichik hajmli
b) ikki kamerali, ikki yarusli, katta hajmli¹⁶.

Sopol buyumlar kulolchilik charxida ishlangan, ularning turli xil shakllari – oyoqli vazalar, qadahlar, konussimon idishlar, xumlar, qozonlar va boshqa shu kabilar aniqlangan. Aksariyat sopol buyumlarining sirtida xochsimon, ovalsimon naqshlar uchrashini hisobga olmaganda sopol buyumlar sirtida naqshlar deyarli kuzatilmaydi. Miloddan avvalgi II mingyillikning boshlaridan keng maydonchali va termostat texnologiyasi ancha rivojlangan ikki yarusli xumdonlardan foydalanila boshlangan. Tillabuloq yodgorligida xumdonlarda issiqlik haroratini bir me'yorda saqlab turishni ta'minlovchi sopol tig'ning topilishi bronza davri kulollarining termostat texnologiyasidan samarali foydalanganligidan darak beradi¹⁷.

Xulosa o'rnida aytish kerakki, Janubiy O'zbekistonda bronza davri mehnat qurollari hamda qurol yarog'larning paydo bo'lishi va keng tarqalishi, shu bilan birgalikda boshqa qator belgilar: patriarxal munosabatlarning qaror topishi, chorvador qabilalarning ajralib chiqishi, qadimgi sivilizatsiyaning shakllanishi, mulkiy tengsizlikning paydo bo'lishi, qabilalar o'rtasida madaniy-iqtisodiy aloqalarning kuchayishi bilan belgilanadi. Shuningdek, ko'rib chiqilayotgan davrda kulolchilik yangi bosqichga ko'tarildi. Yuqori sifatli sopol buyumlar, tayyorlanadigan sopol buyumlarining miqdoriy ko'rstakichlarini oshishida sopol xumdonlarning ahamiyati katta bo'lgan.

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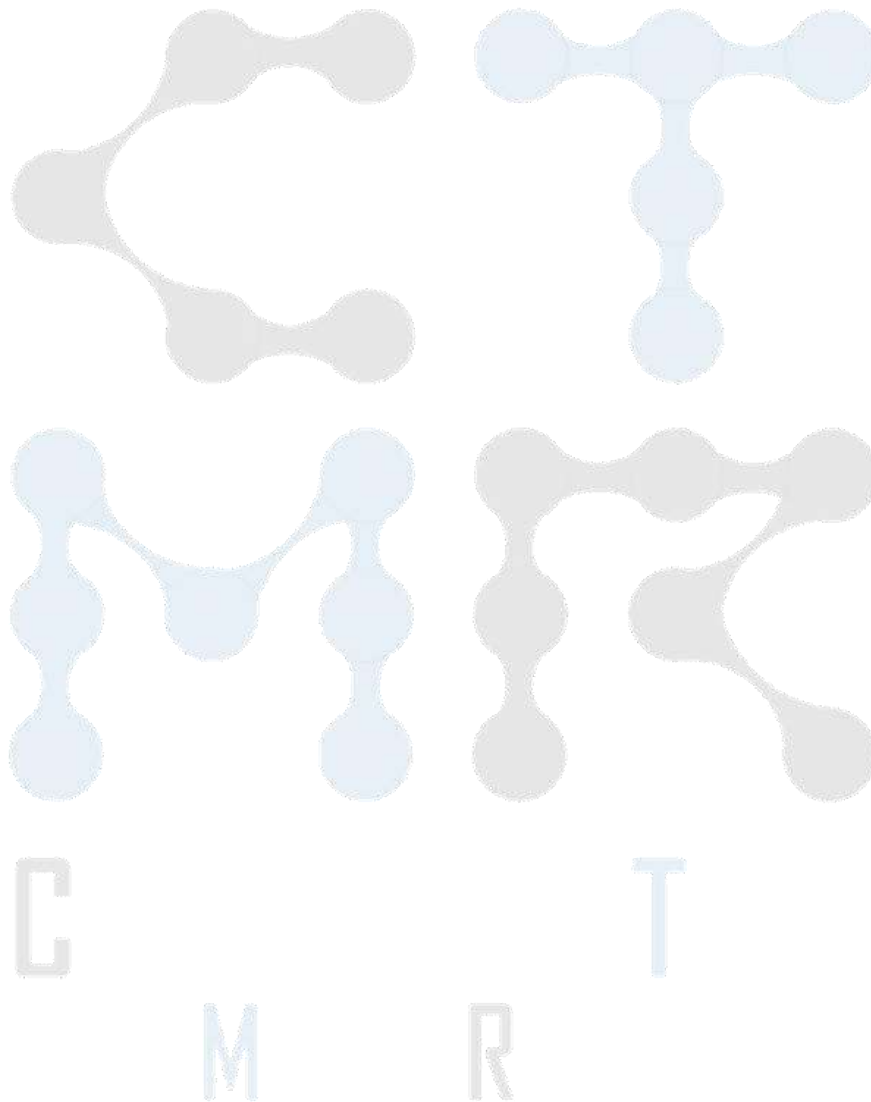
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THE USE OF EEG AND MRI TO EXPLORE ALTERATIONS IN COGNITIVE
NETWORKS IN EPILEPSY.

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INTRODUCTION

The combined application of electroencephalography (EEG) and functional magnetic resonance imaging (fMRI) has emerged as a key method for investigating the impact of epilepsy on cognitive networks. EEG-fMRI uniquely integrates the high temporal sensitivity of EEG with the spatial precision of fMRI, enabling researchers to capture both the timing and the localization of epileptiform discharges. This multimodal approach allows the mapping of how seizure activity influences neural circuits responsible for attention, working memory, language, and executive functioning.

Research demonstrates that epilepsy is increasingly understood as a disorder of brain networks rather than isolated cortical regions. EEG-fMRI studies have shown that interictal epileptiform discharges can cause transient disturbances in large-scale networks, such as the default mode network (DMN), fronto-parietal control systems, and hippocampal-prefrontal pathways. These alterations may explain the frequent cognitive comorbidities in patients, including memory deficits, impaired concentration, and slowed information processing. Importantly, the method also distinguishes between maladaptive network disruptions and compensatory mechanisms that support cognitive resilience in chronic epilepsy.

In clinical practice, EEG-fMRI contributes to presurgical evaluation by linking epileptic foci to functional brain networks, thereby balancing seizure control with preservation of cognitive functions. It also offers insights into disease progression, helping clinicians monitor how recurrent seizures affect long-term neural connectivity. Furthermore, EEG-fMRI provides a platform for the development of targeted interventions, including neurostimulation and cognitive rehabilitation strategies, by clarifying the network dynamics underlying cognitive decline.

The use of EEG-fMRI represents a transformative advance in epilepsy research and management, bridging the gap between seizure localization and the broader understanding of cognitive network dysfunction. Its continued integration into clinical and experimental frameworks promises not only more precise diagnostic outcomes but also the potential for personalized, network-based therapeutic approaches.

Key words:

- ☐ Electroencephalography (EEG)
- ☐ Magnetic Resonance Imaging (MRI)
- ☐ Functional MRI (fMRI)
- ☐ Epilepsy
- ☐ Cognitive networks
- ☐ Network alterations
- ☐ Interictal epileptiform discharges
- ☐ Brain connectivity
- ☐ Cognitive comorbidity

Epileptic Activity Can Dynamically Affect Cognition

Different hypotheses have tried to explain these deficits. A disruptive role of interictal epileptic discharges (IEDs) during ongoing physiological activity has been shown even if these discharges do not result in clinical signs of a seizure; the occurrence of IEDs can therefore be related to transient cognitive impairment. Previous studies based on intracranial EEG have investigated how epileptic activity can alter normal cognitive processing through large-scale network disruption however, due to the low spatial sampling of electrophysiological recordings, it is often challenging to map these networks without prior assumptions on the relevant brain regions to be recorded. Although intracranial EEG has high temporal and spatial resolutions, it has a low spatial sampling, thus preventing this tool to be used alone to investigate large-scale networks.

Interactions Between Epileptic Activity and Cognitive Networks

Cognition engages large-scale brain networks. Resting-state fMRI (rsfMRI) investigates synchronous activity between regions in the absence of an explicit task and can be subdivided into Intrinsic Connectivity Networks (ICNs). The spatial organization of ICNs has been consistent with relevant cognitive tasks, however with subtle variations. As such, previous studies have implied that cognitive networks remain dynamically active even during periods of rest. The effect of interictal activity could explain part of the nature of cognitive dysfunction in patients with epilepsy. So far, studies have mostly focused on the cognitive disturbances associated with the occurrence of IEDs. However, the interactions between detailed spatio-temporal aspects of epileptic activity and changes in ICNs and task-related cognitive networks have not been greatly explored. Therefore, the current review will discuss the current applications of EEG-fMRI in relation to cognition in both human and animal studies.

EEG-fMRI in the Study of Cognition in Humans

Previous studies have commented on the relationship between cognition and ICNs extracted from traditional resting state fMRI, especially in relation to patients with epilepsy. ICNs can be ascribed to specific functions, such as self-awareness, attention, cognitive control, or perceptions such as visual, auditory, or motor. There is some spatial overlap between these networks in both patients and healthy controls; however the abnormal modulation of activity between these networks can be indicative of a patient's clinical syndrome.

Over the last 5 years there has been a substantial increase in the use of EEG-fMRI, especially for pre-surgical evaluations for patients with epilepsy. However, the effects of IEDs on cognitive networks were not often explored until recently. Following pioneering work relating IED-correlated decreases in Default Mode Network activity in temporal lobe epilepsy and generalized epilepsy, recent works have shown the possible impact of interictal activity on several ICNs in focal epilepsy in adults, focal epilepsy in children, children with idiopathic focal epilepsy [Benign Epilepsy with Centro-temporal Spikes (BECTS)], epileptic encephalopathy, as well as generalized epilepsies, including Childhood Absence Epilepsy (CAE), and even reflex epilepsies. The majority of recent EEG-fMRI studies who evaluate the interaction between interictal discharges, ICNs, and their relationship to neuropsychological outcome have been in BECTS patients; these studies found a negative correlation between cognitive functioning and Functional Connectivity (FC).

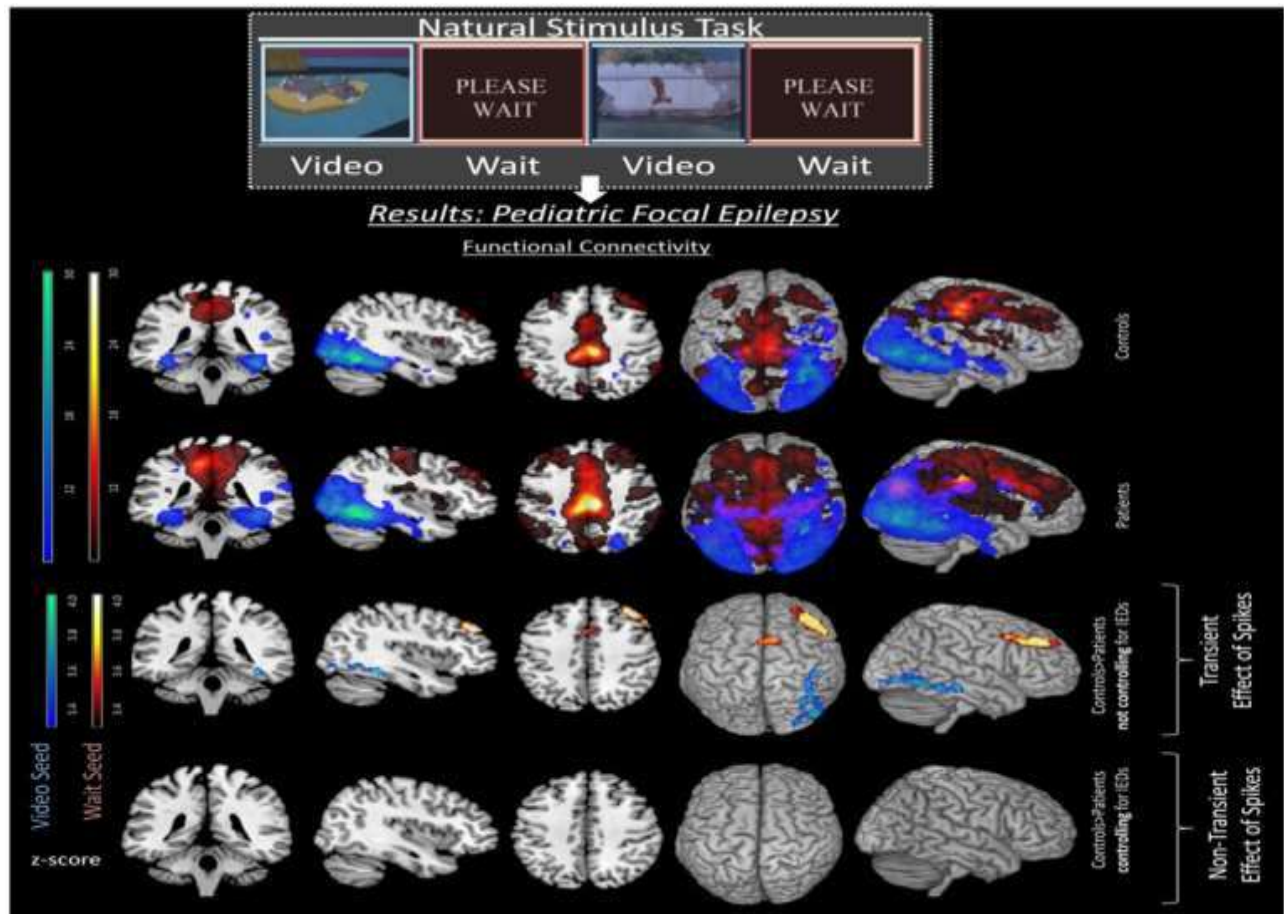
Transient Effects of IEDs On Epileptic and Cognitive Networks

Regarding cognition, Shamshiri et al. found connectivity differences in cognitive networks (related to attention) in a group of children with focal epilepsy compared to controls. However, no evidence remained for non-transient differences in network connectivity between patients and controls, after

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accounting for IED effects. These results were also consistent with a MEG study in children with focal epilepsy patients by Ibrahim et al., but are inconsistent with those studies mentioned above, possibly due to differences between adult and pediatric populations and their respective variability in plasticity and disease duration. Instead, for BECTS patients, several studies reported decreases in functional connectivity regardless of the presence of IEDs. These patients showed decreased FC in the inferior frontal gyrus, anterior cingulate cortex, and the striatum, which have previously been related to cognitive control. This is particularly interesting as patients with BECTS often display behavioral difficulties and language delays.



Transient effects of IEDs in pediatric focal epilepsy patients. Image with permission Shamshiri et al. illustrating the effects of spikes on FC networks of a resting state task. Differences between controls (top row) and patients (second row) can be seen in the third row. These differences are including both transient and long-term effects of spikes as spikes are not controlled for in the analysis. However, once the transient effects of spikes are accounted for, the group differences disappear (fourth row), emphasizing the effect of IEDs on ICNs.

Perspectives

The study of IED-related effects on cognitive networks may be difficult in many patients, given the lack of frequent IEDs to model. Other approaches to model pathologic activity using EEG topographies or other EEG features such as decomposition using Independent Component Analysis may offer alternative markers of epileptic activity to correlate with cognitive network alterations.

Simultaneous intracranial EEG and fMRI would allow to better map fMRI network alterations correlated to intracranial pathological EEG activity. Such recordings focused on the mapping of

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epileptic network and the coupling between neuronal activity and hemodynamic changes, which is related to the fundamental assumptions underlying fMRI studies. These fMRI studies take advantage of the relationship between neuronal activity (mainly post-synaptic potentials) and deoxyhemoglobin concentration to show the focal changes related to the epileptogenic zone, and reveal distant BOLD modulations related to the interictal epileptic network. Simultaneous recordings of intracranial EEG and scalp EEG could also uncover new non-invasive markers of epileptic activity that are currently undetectable on scalp EEG but could nevertheless affect cognitive processing. Such markers could be used to refine EEG-fMRI analysis.

The possibility to inform fMRI analysis using EEG-derived brain activity offers several perspectives to study the spatio-temporal aspects of cognitive networks, at rest or engaged in specific tasks, in a more selective way than using fMRI, EEG or MEG alone. The characteristics of task-related EEG evoked responses (amplitude, latency) can be included in the fMRI analysis to model and map the network involved in such responses, such as attention and error monitoring and therefore also study interactions with epileptic activity. EEG measures of arousal (e.g., drowsiness or sleep) could also be valuable to study alterations of cognitive networks. Changes in arousal have a significant effect on fMRI connectivity patterns than can even be used to monitor drowsiness during scanning. This could be particularly relevant when studying patients with epilepsy vs. controls when drowsiness could show group differences, notably related to drug-induced sedation, sleep deprivation or scanner related anxiety. Antiepileptic drugs affect fMRI brain networks in healthy controls and the effect other drugs, such as donepezil and memantine in the field of dementia, have also been documented. This contribution of medication is hard to disentangle from the effect of disease, notably due to the high variability of drug regimes in patient groups and the difficulty to recruit drug naïve patients. EEG markers of medication, such as beta activity or increased drowsiness could be used to try to model this effect in the analysis.

Conclusion

Overall, the temporal and spatial effects of epileptic activity and medication can all influence changes in ICNs and cognitive functioning. Although there has been an increase in interest regarding EEG-fMRI and the effects of epileptic activity on ICNs, as reflected by the number of results from our search, there is still much to learn about how to use this information to understand the long-term impact of interictal activity and cognition and improve the decision making regarding the therapy of patients with epilepsy. Globally, there are differences between focal/non-focal epilepsies, especially in regards to which ICNs or task-related networks are more sensitive to IEDs and how the epileptogenic network influenced the findings. Nevertheless all groups show a widespread influence of interictal activity but also some IED-independent alterations.

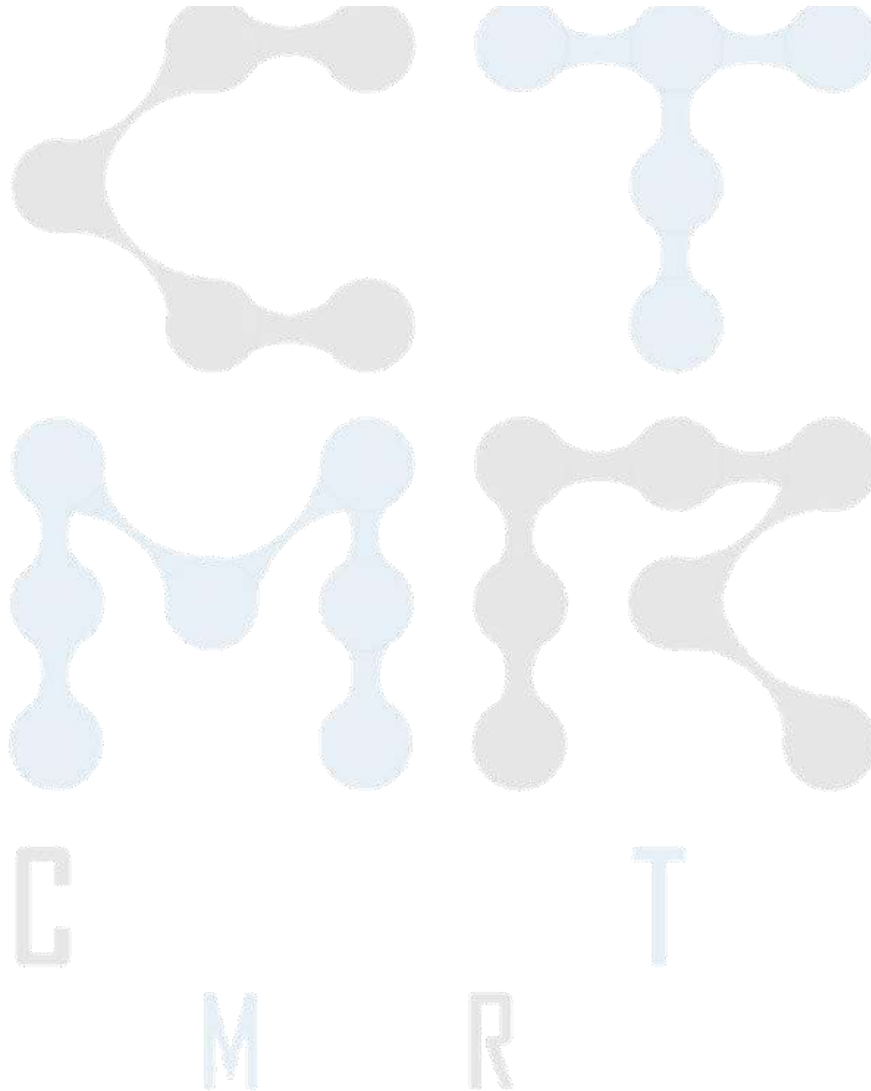
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**СРАВНИТЕЛЬНЫЙ АНАЛИЗ ТЕРМИНОЛОГИЧЕСКИХ
ЗАИМСТВОВАНИЙ В РУССКОМ И УЗБЕКСКОМ ЯЗЫКАХ**

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**COMPARATIVE ANALYSIS OF TERMINOLOGICAL LOANS IN RUSSIAN
AND UZBEK LANGUAGES**

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Аннотация

В данной статье рассмотрены способы перехода терминов, выполняющих строго **информационную и системообразующую** функцию, в общеупотребительную единицу на примере слов в русском и узбекском языках

Annotation

This article examines the ways in which terms that perform strictly informational and system-forming functions transition into common usage? Using words in the Russian and Uzbek languages as examples

Ключевые слова

Лексикология, исследование, область, деятельность, словесный, объект, экспрессивный, контекст, проблема, обиход, устойчивый

Keywords

Lexicology, research, field, activity, verbal, object, expressive, context, problem, usage, stable

Бурное развитие науки и техники, различных отраслей промышленности, сельскохозяйственного производства, культуры и быта привело к тому, что "в настоящее время каждые 30 секунд в мире рождается открытие или изобретение", огромное число новинок осваивается в производстве. Все это требует своего словесного выражения, происходит постоянное пополнение словаря новообразованиями. В работах по терминологии представлен широкий круг проблем, связанных с лексикологической, грамматической, словообразовательной характеристикой терминологии, с ее стандартизацией. В трудах по развитию, обогащению и совершенствованию современного русского литературного языка видное место отводится терминологии. Вместе с тем еще нет специальных исследований о взаимодействии медицинской терминологии и

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общелитературного языка, об использовании терминов медицины общим языком.¹ **Термин** — это слово или устойчивое словосочетание, которое обозначает специальное понятие в определённой области знаний, техники, науки, искусства или профессиональной деятельности. Согласно классическому определению В. П. Даниленко, термин — это слово или словосочетание, обозначающее строгое понятие, принятое в определённой научной или профессиональной области. О. С. Ахманова подчёркивает, что термин характеризуется **точностью, однозначностью и стилистической нейтральностью**. Терминология — это система понятий данной науки, закреплённых в соответствующем словесном выражении. Теоретически рассуждая, научный термин должен явиться завершающим этапом по отношению к научному исследованию соответствующих реальных объектов² Главной функцией термина является **точная номинация** (наименование) объектов, процессов или явлений, специфичных для данной области. Основные признаки термина:

Системность – термин существует в составе определённой терминологической системы (например, медицинской, юридической, химической).

Однозначность (в пределах системы) – в рамках одной отрасли знаний термин должен иметь только одно значение.

Точность – термин выражает строгое, научно закреплённое понятие.

Лаконичность – термин обычно краток, избегает излишних описательных элементов.

Нейтральность – термину не свойственна эмоционально-оценочная окраска.

Международный характер – многие термины заимствуются и употребляются в разных языках (особенно в науке и технике).

Нормированность – термин должен быть кодифицирован и закреплён в словарях, стандартах или научной литературе.

Стабильность – в отличие от общеупотребительных слов, термин не меняет значение быстро и подчиняется нормам науки.

В отличие от общеязыковых слов, которые могут быть многозначными, экспрессивными и использоваться в широком контексте, термин выполняет строго **информационную и системообразующую** функцию.

Однако в условиях активной популяризации научных знаний, медицины, фармацевтики, данные признаки начинают размываться, что приводит к переходу термина в иной статус — обиходно-общеупотребительной единицы

¹ Смирнов А.Г. Автореферат диссертации по ВАК РФ 10.02.01 на тему «Функционирование терминов медицинской науки в современном русском языке». 1985

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Термин русск./узб	В обиходе	В медицине	В науке
«почка» «куртак»		это орган человека	в ботанике - это зачаток листа или цветка <i>гулнинг</i> <i>куртаги</i>
«кора» «пўстлоқ»	это кора дерева <i>дарахт пўстлоғи</i> <i>ёнғоқ пўстлоғи</i>	кора головного мозга <i>мия пўстлоғи</i>	
«корень» «илдиз»	корень дерева <i>дарахт илдизи</i>	корень зуба <i>тиши илдизи</i>	в математике — квадратный корень <i>сон илдизи</i>
«семя» «уруғ»	семя растения <i>ўсимлик уруғи</i>	среда, в которой живут сперматозоиды <i>эркак уруғи</i>	
«чашка» «коса»	предмет кухонной утвари <i>ошхона буюми</i>	орган - коленная чашка <i>кўз косаси</i>	
«лопатка» «курак»	предмет для копания земли <i>бел курак</i>	кость пояса верхних конечностей <i>одам кураги</i>	
«раковина» «чиганоқ»	название предметов вогнутой напоминающих видом раковину	вместилищ, овально- формы, своим	в медицине — в зоологии - твёрдый защитный покров некоторых беспозвоноч- ных животных, обычно в виде овальной

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створчатой
коробки.

«связка» «бойлам»	Несколько однородных предметов, связанных вместе, например "Связка ключей" <i>калитлар бойлами</i>	Сухожилие, соединяющее отдельные части скелета, отдельные органы тела. <i>тицца бойлами</i>
«борозда» «эгат»	Канавка на поверхности почвы, проведённая плугом или иным взрыхляющим почву орудием <i>ариқ эгати</i>	Борозда (нейроанатомия) — углубление (жёлоб) на поверхности полушарий конечного мозга, разделяющее извилины и доли <i>мия эгати</i>
«барабан» «ноғора»	Бараба́н (слово вероятно тюркского происхождения) — группа ударных музыкальных инструментов, звучащим элементом которых служит кожаная или пластиковая . <i>чолғу асбоби</i>	Среднее ухо <i>қулоқ ногора пардаси</i>
«корона» «тож»	головной убор, символизирующий власть монарха. <i>шоҳнинг тожи</i>	Коронка зуба; В эпоху пандемии COVID-19 слово «корона» означал болезнь <i>тишининг коронкаси</i>

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«пузырь»	Наполненная каким-либо	Полый орган, в
«пуфак»	газом область круглой	котором
	формы	накапливается
	<i>бирор бир газ билан</i>	жидкость
	<i>тўлдирилган соха</i>	<i>ўт пуфаги, сийдик</i>
		<i>пуфаги</i>
«вирус»	видео, которое	неклеточный вид
	распространяется	инфекционный вредоносны
	пользователями	агент, который х программ,
	Интернета	может способных
		воспроизводиться внедряться в
		только внутри код других
		клеток программ

Терминология рассматривается как совокупность слов и словосочетаний, употребляющихся для выражения специальных понятий и для названия типичных объектов данной области знания. Являясь обозначением определенного научного понятия, термин возникает и функционирует не в языке в целом, а внутри отдельных подязыков, наиболее представительной частью которых, является терминология, формирующая единое межкультурное пространство и обеспечивающая «выход» за пределы конкретных языков. Представляя особую функционально-коммуникативную область конкретного языка, терминология является важнейшим каналом интеллектуальной коммуникации, располагая мощным потенциалом специальных терминообразующих средств, которые призваны обеспечивать оптимальность профессионально-научной деятельности. В формировании новых понятий, в том числе и интернационального характера, участвуют все языки. Однако, как свидетельствуют многочисленные наблюдения, в силу определенных исторических, социально-культурных и языковых факторов большинство новых содержаний, смыслов общечеловеческого характера получает материализованное воплощение прежде всего с помощью языков, выполняющих функции «строительного материала». Классические – греческий и латинский – языки являются основным этимологическим источником интернационализмов уже не только в языках общеевропейского ареала³. Термин — это лексическая

³ А.Х.Азаматова (Алматы, Казахстан) Перспективы упорядочения лингвистической терминосистемы). Studia Slavica Savariensia 2013. 1-2. 41-52 DOI: 10.17668/SSS.2013.1-2.41

единица с чёткими дифференцирующими признаками, но в современной языковой практике его статус может быть неустойчивым

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ВОЗМОЖНОСТИ ИСПОЛЬЗОВАНИЯ ЭЛЕКТРОПРОВОДЯЩЕЙ ПРЯЖИ В СТРУКТУРЕ ТРИКОТАЖНЫХ ПОЛОТЕН

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Annotation Modern technological evolution fosters the integration of traditional materials with electronic components, and the textile industry is becoming an important part of this trend. Particular attention is drawn to the integration of conductive yarns into knitted fabrics, which opens up new horizons for the development of smart textiles. This article aims to provide a comprehensive review of existing research, technologies, yarn compositions, and application areas, along with an assessment of the challenges and future prospects in this field.

Аннотация Современная технологическая эволюция способствует интеграции традиционных материалов с электроникой, и текстильная отрасль становится важной частью этого процесса. Особое внимание привлекает интеграция электропроводящей пряжи в трикотажные полотна, что открывает новые горизонты для разработки интеллектуального текстиля. Данная статья стремится к всестороннему обобщению существующих исследований, технологий, композиций пряжи и областей применения, с оценкой вызовов и перспектив этой области.

1. ВВЕДЕНИЕ

С каждым годом растёт количество исследований в области электронного текстиля. Одним из ключевых направлений является создание гибких текстильных структур с возможностью проведения электрического тока для реализации функций мониторинга, управления и передачи данных. Современные вызовы в таких областях, как телемедицина, индустрия 4.0, военное дело и спорт, требуют разработки комфортных и многофункциональных изделий на основе проводящих трикотажных полотен.

Первые исследования в этой области начались с тканых структур с вшитыми металлическими нитями, однако в последние годы преимущество сместилось в сторону трикотажа благодаря его способности к деформации, соответствию анатомическим формам и лёгкости интеграции электроники [1, 2].

Согласно обзору Scataglini и др. (2020), наибольший интерес вызывают технологии интеграции сенсоров и схем в повседневную одежду, при этом трикотаж используется в 63% случаев в готовых коммерческих изделиях благодаря своим уникальным свойствам [14].

Текстильная промышленность находится в процессе перехода к цифровизации и функционализации, и одним из перспективных направлений является разработка "умных" текстильных систем. В частности, интеграция электропроводящих элементов в трикотажные структуры позволяет создавать изделия, сочетающие комфорт, гибкость и электронные функции. Такие материалы находят применение в медицине, спорте, безопасности, авиации и других сферах [1, 2].

Трикотажные полотна обладают рядом преимуществ перед тканями: повышенная растяжимость, высокая воздухопроницаемость, плотное прилегание к телу и возможность создания трёхмерных конструкций. Эти свойства делают их идеальной основой для носимой электроники и текстильных сенсоров [3].

2. Классификация и свойства электропроводящей пряжи

Электропроводящая пряжа является ключевым элементом для формирования функционального текстиля. Её классификация зависит от типа проводящего материала, структуры пряжи, метода изготовления и области применения. Различные типы пряжи обладают своими преимуществами и ограничениями в зависимости от требуемых параметров проводимости, гибкости, устойчивости к внешним воздействиям и стоимости. В данной главе представлена углублённая классификация с анализом эксплуатационных характеристик и примерами использования в современных разработках.

2.1 Металлизированная пряжа

Металлизированная пряжа содержит металлические волокна или покрытия, чаще всего из меди, серебра, алюминия или нержавеющей стали. Пряжа может быть полностью металлической или состоять из текстильного сердечника с нанесённым металлическим слоем (например, серебряным напылением). Такая пряжа обеспечивает высокую электропроводность и часто используется в антистатической и экранирующей одежде, а также в нагревательных элементах.

Пример: продукция Shieldex® и Bekinox®, где текстильная основа (нейлон, полиэстер) покрыта чистым серебром, демонстрирует проводимость порядка 10 Ом/м и применяется в медицинском и защитном текстиле. Недостатками остаются чувствительность к влаге, окисление и пониженная эластичность [4, 5].

2.2 Пряжа с углеродными волокнами

Пряжа на основе углеродных волокон отличается малой плотностью, высокой гибкостью и термостойкостью. Она может быть как в виде моноплетей, так и в виде плетёных или смешанных структур. Углеродные волокна устойчивы к внешним воздействиям, что делает их идеальными для использования в нагревательных текстильных элементах, спортивной одежде и носимой электронике.

Исследования Liang и соавт. (2018) показали, что углеродные волокна в структуре трикотажа сохраняют стабильную проводимость даже при многократных изгибах и растяжениях. Однако при высокой влажности возможно снижение стабильности сигнала [6].

2.3 Полимерно-композитная пряжа

Современное направление в разработке электропроводящих нитей связано с использованием полимерных композитов, где токопроводящий компонент (графен, углеродные нанотрубки, металлические наночастицы) внедряется в структуру полимера или наносится на его поверхность. Примеры включают покрытие хлопковой или полиэфирной пряжи композитами на основе PEDOT:PSS, полипиррола или ионов серебра.

Такие пряжи сочетают проводимость и гибкость, а также пригодны для масштабного производства. Работы Zhu et al. (2018) и Khat tab et al. (2019) показали, что после 30 циклов стирки проводимость уменьшалась не более чем на 15%, что подтверждает перспективность композитных решений для бытовой одежды [7, 8].

2.4 Гибридные и интеллектуальные пряжи

Отдельную категорию составляют гибридные пряжи, объединяющие несколько типов волокон: например, сочетание полиамида, углеродных и металлизированных волокон в единой структуре. Также появляются интеллектуальные пряжи со встроенными функциональными слоями — памятью формы, термооткликом, электролюминесценцией.

Такие изделия разрабатываются, в частности, в проектах Horizon Europe и MIT Media Lab, где ведутся исследования по прядению волокон, реагирующих на влажность, температуру и pH

кожи. Несмотря на сложность производства, гибридные пряжи позволяют значительно расширить функциональность текстильных изделий.

Таким образом, выбор типа электропроводящей пряжи определяется задачами конечного применения, требуемым уровнем проводимости, условиями эксплуатации и доступностью материалов. Продолжающиеся исследования в области нанотехнологий, гибридных материалов и методов модификации волокон позволяют надеяться на быстрое расширение ассортимента и повышение доступности подобных решений для промышленного использования.

3. Структура и технологии вязания электропроводящей пряжи

Структура трикотажных полотен играет решающую роль в обеспечении функциональности и надёжности электронного текстиля. В отличие от тканых материалов, трикотаж формирует петлевые связи, обладающие способностью к растяжению, изгибу и восстановлению формы, что критически важно при интеграции электропроводящей пряжи. Гибкость структуры обеспечивает устойчивую проводимость при многократных механических деформациях, в том числе растяжении и сжатии.

Электропроводящая пряжа может включаться в полотно двумя основными способами: в качестве основной нити или в виде вкраплений, прокладываемых параллельно основному вязанию. В зависимости от архитектуры полотна (однофонтурные, двухфонтурные, рельефные и рибовые структуры), проводящие дорожки могут располагаться вдоль курсов (горизонтально), вдоль столбиков петель (вертикально) или по диагонали.

3.1 Технологические методы вязания

- Кругловязание используется для создания бесшовных изделий, таких как бельё, спортивные майки и медицинские сенсорные оболочки. Этот метод обеспечивает равномерное распределение электропроводящих нитей по окружности изделия, что улучшает стабильность измерений и снижает контактное сопротивление.
- Плоское вязание применяется при производстве зонально-функциональных изделий: например, в рукавах, манжетах и поясных участках. Оно даёт возможность точно внедрять элементы схем (контакты, антенны) и подводить их к микроконтроллерам. Плоские машины с числовым программным управлением (например, Stoll CMS или Shima Seiki) позволяют интегрировать сложные схемы в одной операции.
- Интеграция через вставки предполагает ручную или автоматизированную прокладку проводящей пряжи во время вязания. Такая технология используется для создания сетей датчиков или экранирующих зон, расположенных по заранее заданным контурам.

3.2 Технические требования к процессу

При работе с электропроводящей пряжей необходимо строго контролировать натяжение нити, избежать чрезмерного трения и перегибов. Используются специальные направляющие, низкофрикционные устройства подачи и иглы с увеличенными каналами. Некоторые производители применяют технологию «влажного вязания» — подача нити с увлажнением для минимизации повреждений тонких металлических компонентов.

Также требуется высокая точность в согласовании петельных плотностей, особенно при комбинировании проводящих и обычных текстильных нитей. При неравномерной растяжимости возможна деформация токопроводящих путей и искажение сигнала.

3.3 Примеры исследований

Растущий интерес к электронному трикотажу стимулировал появление множества экспериментальных и прикладных исследований, направленных на оптимизацию вязания электропроводящей пряжи. Так, Stoppa и Chiolerio (2014) в своём обзоре выделяют использование кругловязальных машин как наиболее стабильный метод получения текстильных сенсорных поверхностей. В одном из экспериментов использовалась пряжа с серебряным покрытием на полиэфирной основе. Было зафиксировано изменение сопротивления менее 10% при циклическом растяжении полотна на 20%, что указывает на высокую стабильность структуры при деформациях [1].

Fan и соавт. (2020) продемонстрировали создание многоэлементной сенсорной сети из 128 датчиков на основе плосковязаного трикотажа. Система обеспечивала точный мониторинг частоты сердечных сокращений и дыхания при сохранении гибкости и удобства изделия [3].

В исследовании Zhu et al. (2018) тестировалась эффективность пряжи, покрытой PEDOT:PSS, в составе трикотажного полотна. Результаты показали высокую стабильность сопротивления даже после 30 циклов стирки, что подчёркивает жизнеспособность полимерно-композитных решений для массового текстиля [7].

Другие исследовательские группы, такие как команда из Университета Гента (Бельгия), сосредоточились на создании программируемых зон проводимости в трикотаже путём варьирования плотности петель и типа переплетения, демонстрируя, что электрические свойства могут быть локально адаптированы без добавления новых материалов.

Исследования группы A. Stoppa (2014) показали, что при вязании электропроводящей пряжи серебросодержащей композицией на кругловязальных машинах с петельной плотностью 14 петель/см удастся достичь стабильности сопротивления до 10% при растяжении на 20% [1]. В другом исследовании (Fan et al., 2020), плоское вязание использовалось для создания сетки из 128 сенсоров, расположенных на майке, с возможностью мониторинга ЧСС и дыхания в реальном времени [3].

Таким образом, выбор типа вязания, плотности и размещения электропроводящих нитей оказывает прямое влияние на точность, чувствительность и надёжность электронных текстильных изделий. Современные технологии позволяют добиваться высокой интеграции без ущерба для комфорта и эстетики конечного продукта.

Трикотаж позволяет интегрировать проводящие нити в процессе производства.

Важно учитывать механические напряжения, чтобы не повредить проводящие компоненты. Используются адаптированные иглы, сниженная скорость вязания, специальное натяжение нити [10].

4. Применение электропроводящих трикотажных полотен

Разнообразие возможностей использования электропроводящих трикотажных полотен обусловлено их гибкой архитектурой, механической стабильностью и способностью адаптироваться к сложным условиям эксплуатации. Успешная интеграция проводящих нитей в трикотажные структуры обеспечивает не только комфорт и лёгкость, но и позволяет формировать замкнутые или разветвлённые токопроводящие контуры, служащие для мониторинга, передачи сигналов или даже питания электронных элементов. Ниже рассмотрены ключевые области применения таких материалов с учётом последних достижений в области электронного текстиля.

4.1 Носимая электроника

Одним из наиболее активно развивающихся направлений является создание текстильных интерфейсов и элементов управления. Трикотажные структуры с интегрированной электропроводящей пряжей могут выполнять функции сенсорных панелей, гибких кнопок и даже дисплеев. Научные коллективы, такие как Myant (Канада), разработали целые линии одежды с встроенными светодиодами, Bluetooth-модулями и модулями обратной связи. Преимущество трикотажа здесь — в возможности многократного растяжения и сохранения работоспособности проводящих цепей даже при сильной деформации [11].

4.2 Медицина

В области цифровой медицины проводящие трикотажные ткани открывают уникальные возможности: мониторинг сердечного ритма, дыхания, температуры тела, а также электромиографическая активность и ЭКГ. Использование мягкой, эластичной и гипоаллергенной структуры делает изделия пригодными для длительного ношения, включая во сне. Продукты компаний Hexaskin и Xenoma E-skin® включают в себя именно трикотажные сенсорные оболочки, адаптированные под спортивную и клиническую среду. С помощью проводящих дорожек данные передаются к микроконтроллеру и далее — на мобильные устройства [12].

4.3 Нагревательные системы

Электропроводящие полотна также широко применяются в текстильных нагревательных системах. Особо эффективны здесь пряжи на основе углеродных волокон или гибридов с металлическими сердечниками. В таких системах структура трикотажа обеспечивает равномерное распределение тепла и возможность адаптации к форме тела или поверхности. Нагревательные элементы на основе трикотажа применяются в одежде для холодного климата, перчатках, автомобильных сиденьях и одеялах. Большинство систем функционируют на безопасном напряжении 5–12 В, обеспечивая при этом комфортные температуры 35–50 °C [13].

4.4 Антистатика и экранирование

Защита от накопления статического заряда и экранирование от электромагнитных излучений — ещё одна важная функция электропроводящего трикотажа. Применение пряж с включением меди, стали или серебра позволяет создавать экранирующие одежды для работы в лабораториях, чистых комнатах, на радиочастотных объектах и в оборонной промышленности. Такие ткани часто используются в виде рибов и интерлоков, обеспечивающих максимальное прилегание к телу и снижение вероятности искрообразования. Согласно исследованию Su и Chern (2004), плотность прокладки проводящих нитей напрямую влияет на уровень затухания сигнала, что позволяет оптимизировать структуру под конкретные диапазоны частот [9].

5. Ограничения и вызовы

Несмотря на значительный прогресс в разработке электропроводящих трикотажных материалов, существует ряд технологических, эксплуатационных и экономических ограничений, сдерживающих их широкое внедрение.

5.1 Деградация проводимости

Одним из ключевых вызовов остаётся стабильность проводимости при эксплуатации. Металлизированные и углеродные пряжи могут терять проводимость после многократных циклов стирки, механических изгибов или контакта с потом и влагой. Исследования показывают, что после 10–20 стирок сопротивление может увеличиться в 1.5–2 раза, особенно при использовании серебра без защитного покрытия [7].

5.2 Трудности соединения с электроникой

Создание надёжных, гибких, моющихся соединений между текстильной частью и микросхемами остаётся сложной задачей. Традиционные пайка и клеевые соединения не обеспечивают долговечность при изгибах. Современные решения включают применение термопроводящих полимеров, гибких разъёмов, а также текстильных застёжек с токопередачей (e-snaps).

5.3 Износ нитей и механическая нестабильность

Тонкие проводящие нити подвержены истиранию и разрыву при длительной носке, особенно в зонах с высоким уровнем изгиба (локти, колени, швы). Комбинация с эластичными волокнами частично решает эту проблему, однако снижает проводимость в целом. Разработка многослойных структур и использование защитных плетений позволяют частично нивелировать эти недостатки.

5.4 Экономические барьеры

Высокая стоимость компонентов, особенно при использовании серебра, графена или углеродных нанотрубок, ограничивает массовое внедрение таких изделий. Промышленность стремится заменить дорогие материалы более доступными: например, медными покрытиями, переработанным углеродом, водорастворимыми проводящими полимерами.

Таким образом, ключевые направления развития включают повышение надёжности, снижение стоимости и создание стандартизированных методов интеграции. Решение этих задач возможно только при междисциплинарном подходе с участием специалистов в области материаловедения, машиностроения, текстильной инженерии и электронной промышленности.

- Потеря проводимости после стирок;
- Сложности соединения с жёсткими электронными элементами;
- Износ нитей при эксплуатации;
- Высокая стоимость некоторых компонентов.

6. Перспективы развития

Развитие электронного текстиля, и в частности электропроводящих трикотажных полотен, определяется множеством факторов — от инноваций в материаловедении до изменений в нормативной базе и рыночном спросе. Перспективные направления развития концентрируются на повышении надёжности, гибкости, устойчивости к многократным воздействиям, а также на функциональной интеграции новых компонентов.

Современные исследования активно сосредоточены на создании саморегенерирующихся материалов. Команды под руководством Y. Zeng (2021) и M. Amjadi (2020) разрабатывают нанокompозитные проводящие нити с эффектом самовосстановления после повреждений [15, 16].

Параллельно ведутся разработки в области интеграции микроэнергетических устройств — гибких аккумуляторов, суперконденсаторов и солнечных панелей, которые могут быть вплетены в ткань (например, разработки команд MIT и EPFL) [17, 18].

Кроме того, ведутся работы по повышению устойчивости к стирке: применяются нанопокрyтия на основе полипиррола и PEDOT:PSS, защищающие структуру от влаги и трения. Разработка стандартов ISO и IEC для электронного текстиля также активно обсуждается на форумах IEEE и CEN [19].

- Создание гибридных нитей с самовосстанавливающимися свойствами;
- Интеграция солнечных панелей и батарей;

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- Повышение устойчивости к износу и влаге;
- Разработка стандартов для массового производства.

7. Заключение

Использование электропроводящей пряжи в трикотажных полотнах открывает уникальные возможности для создания нового класса интеллектуальных материалов. В сочетании с гибкими схемами, биоэлектроникой и интернетом вещей такие изделия способны трансформировать повседневную одежду в функциональные интерфейсы. Необходимы дальнейшие исследования, стандартизация и снижение себестоимости для обеспечения масштабного внедрения.

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СОДЕРЖАНИЕ И ПОКАЗАТЕЛИ МЕЖБАНКОВСКОЙ КОНКУРЕНЦИИ И
КОНКУРЕНТОСПОСОБНОСТИ КОММЕРЧЕСКИХ БАНКОВ

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Аннотация: В статье рассматриваются актуальные вопросы определения сущности понятий «межбанковская конкуренция» и «конкурентоспособность коммерческого банка», проводится сравнение точек зрения разных авторов в рамках правовой и экономической составляющей данной дефиниции. Анализ банковского сектора показал, что в банковском секторе Республики Узбекистан наблюдается как стабильность, так и ряд сложностей, требующих внимания. Необходимость улучшения ликвидных позиций и финансовой устойчивости является ключевым моментом для обеспечения доверия со стороны клиентов и инвесторов. В связи с этим в статье освещаются результаты обновленного рейтинга 36 коммерческих банков страны на основе «Индекса активности банков».

Ключевые слова: банки, банковская деятельность, коммерческие банки, межбанковская конкуренция, конкурентоспособность коммерческого банка, рейтинг банков, индекс активности банков, финансовое посредничество, финансовая доступность, качество активов, доходность, эффективность управления, ликвидность.

CONTENT AND INDICATORS OF INTERBANK COMPETITION AND
COMPETITIVENESS OF COMMERCIAL BANKS

Abstract: The article discusses current issues of defining the essence of the concepts of "interbank competition" and "competitiveness of a commercial bank", comparing the points of view of different authors within the framework of the legal and economic component of this definition. An analysis of the banking sector has shown that the banking sector of the Republic of Uzbekistan has both stability and a number of difficulties that require attention. The need to improve liquid positions and financial stability is key to ensuring the trust of clients and investors. In this regard, the article highlights the results of the updated rating of 36 commercial banks in the country based on the "Bank Activity Index".

Key words: banking, banking activities, commercial banks, interbank competition, competitiveness of a commercial bank, bank rating, bank activity index, financial intermediation, financial accessibility, asset quality, profitability, management efficiency, liquidity.

ВВЕДЕНИЕ.

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Наблюдая ход реформ, происходящих в банковской системе Республики Узбекистан в последние годы, мы убедились, что важным вектором модернизации банковской системы выступает – налаживание эффективного функционирования межбанковской конкуренции и обеспечение конкурентоспособности коммерческих банков.

В современных условиях повышение эффективности функционирования межбанковской конкуренции и обеспечение конкурентоспособности коммерческих банков признается в Республике Узбекистан стратегической задачей, решение которой позволит удовлетворить ожидания общества, бизнеса, государства. Указом президента Республики Узбекистан №УП-5992 от 12 мая 2020 г. утверждена «Стратегия реформирования банковской системы Республики Узбекистан на 2020-2025 годы». Стратегия разработана с учетом основных выводов и рекомендаций Всемирного банка по результатам изучения текущего состояния банковской системы страны. Стратегия определяет цели, задачи и приоритеты развития банковской системы, направления трансформации и реформирования банковской системы в период 2020-2025 гг., пути поиска возможных решений на основе опыта трансформации финансового сектора зарубежных стран и с учетом мировых тенденций в финансовой сфере.

В целях оценки успешности прилагаемых усилий и своевременности достижения поставленных целей по реформированию банковского сектора, принятая Стратегия включает в себя следующие целевые показатели:

- 1) повышение доли активов банков, без государственной доли в общем объеме активов банковской системы с текущих 15% до 60% к 2025 г.;
- 2) повышение доли обязательств банков перед частным сектором в общем объеме обязательств с текущих 28% до 70% к концу 2025 г.;
- 3) привлечение к 2025 г. не менее трех стратегических иностранных инвесторов, обладающих надлежащим опытом, знаниями и репутацией, в капиталы не менее трех банков с долей государства;
- 4) повышение доли небанковских кредитных организаций в общем объеме кредитования с текущих 0,35% до 4% к 2025 г. [1].

Реформирование банковской системы в Узбекистане осуществляется по следующим четырем направлениям.

1. Повышение эффективности банковской системы. Этот ключевой фактор обеспечит растущие потребности клиентов в доступных и качественных финансовых услугах.
2. Обеспечение финансовой стабильности банковской системы. Данное направление является базовым условием успешной реализации трансформации и укрепляет доверие клиентов.
3. Снижение государственной доли в банковском секторе. В этом процессе реализуется комплексная трансформация коммерческих банков с внедрением новых

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цифровых технологий.

4. Доступность и качество финансовых услуг для уязвимых слоев населения и для субъектов малого бизнеса. Непрерывность дистанционных услуг и активизация деятельности небанковской кредитной системы.

В «Стратегии развития Нового Узбекистан на 2022-2026 годы», утвержденной Указом Президента Республики Узбекистан от 28 января 2022 года № ПФ-60 вопросам модернизации банковской системы страны отведена важная роль в обеспечении их ликвидности, с одной стороны, за счет межбанковской конкуренции, с другой – за счет факторов обеспечения их конкурентоспособности на рынке банковских услуг [2].

О значимости обеспечения высокоэффективной межбанковской конкуренции и конкурентоспособности коммерческих банков говорится и в ежегодных посланиях Президента Республики Узбекистан Олий Мажлису, что находит выражение в разработке стратегических программ и задач, нацеленных на гармонизации интересов агентов финансового сектора, регионов и поставщиков банковских услуг.

Ориентация банков на сравнительные преимущества в межбанковской конкуренции за ресурсы и рынки сбыта, предопределяет обоснование методов оценки конкурентоспособности финансовых институтов и факторов, влияющих на разработку конкурентной стратегии.

В связи с тем, чтоб с минимальными сроками и наименьшими затратами достигнуть поставленных целей. Коммерческие банки, как правило, фокусируют свои усилия в условиях межбанковской конкуренции на трех главных направлениях повышения конкурентоспособности: клиентах, внутренних процессах, в условиях не останавливающегося процесса совершенствования профессиональных компетенций работников, постоянного повышения их подготовки, добиваются динамики и приверженности к кампании у каждого сотрудника.

В условиях постоянных исследований в данной области, акцент ставится на финансовые результаты банковских структур, что считается наиболее перспективным с точки зрения финансовой конкурентоспособности. Однако выживание и развитие банков в межбанковской конкуренции зависит не только от финансовой модели банка, но и от управленческих процессов. В связи с этим особенно актуальными являются проблемы межбанковской конкуренции в условиях структурной перестройки национальной финансовой системы, приоритетом которой является повышение конкурентоспособности коммерческих банков.

Основная часть.

Монополизм госбанков приводит к оказанию не всегда выгодных для населения услуг. В Республике Узбекистан, учитывая мировой опыт, приватизация крупных банков осуществляется в два этапа. На первом создаются институциональные основы, а на

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втором - полная реализация государственной доли зарубежным стратегическим партнерам. Институциональные преобразования банков отражаются в совершенствовании корпоративного управления, повышении качества и расширении спектра банковских услуг, во внедрении современных информационных технологий и развитии кадрового потенциала. При внедрении информационно-коммуникативных технологий предусматривается: увеличение количества и охвата дистанционных банковских услуг, в том числе бесконтактных платежей; широкое применение автоматизированной скоринговой системы, цифровой идентификации и кредитного конвейера; повышение информационной безопасности банковских данных и систем; внедрение новых концепций и технологий в банковской сфере (финтех, маркетплейс, цифровой банкинг) [1].

Исследование и анализ показывают, что Узбекистану для развития банковской сферы необходимо:

- 1) обеспечить прозрачность и достоверность банковской сферы для клиентов путем трансформации к цифровым технологиям;
 - 2) расширить перечень и повысить качество банковских онлайн-услуг, активно включая небанковские коммерческие организации в этот процесс наряду с коммерческими банками;
- поднять уровень ликвидности и достаточности собственного капитала банковского сектора за счет эмиссии ценных бумаг.

После успешного завершения трансформации банков на втором этапе осуществляется приватизация государственных долей посредством ценных бумаг стратегическим инвесторам, обладающим большим опытом, знаниями и репутацией в данной сфере. В частности, предусматривается трансформация и приватизация крупных банков АКИБ «Ипотека-банк» и АКБ «Узпромстройбанк» (при содействии Международной финансовой корпорации), АКБ «Алокабанк» (Европейский банк реконструкции и развития, Азиатский банк развития), АКБ «Асака» (Европейский банк реконструкции и развития), а также АКБ «Кишлок курилиш банк» и АКБ «Турон банк» с привлечением международных финансовых институтов и консалтинговых компаний, с рассмотрением вопроса об их слиянии. В результате повышается конкурентоспособность в банковской сфере. Но, учитывая социальное расслоение населения и его потребности в банковских услугах, государственное участие будет сохранено в трех банках: АО «Нацбанк», АКБ «Агробанк» и АКБ «Микрокредитбанк».

Анализ банковского сектора, проведенный центром экономических исследований и реформ (ЦЭИР) показал, что в банковском секторе Узбекистана наблюдается как стабильность, так и ряд сложностей, требующих внимания. Необходимость улучшения ликвидных позиций и

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финансовой устойчивости является ключевым моментом для обеспечения доверия со стороны клиентов и инвесторов.

Если в 2017 году в банковскую систему Республики Узбекистан входило 28 коммерческих банков, то к 2025 году их число увеличился до 36. Все перечисленные банки предоставляют аналогичные банковские услуги: кредитование, депозитные операции, денежно-кредитные услуги и банковские услуги (табл.1).

Таблица-1.

СВЕДЕНИЯ

о функционирующих в Республике Узбекистан коммерческих банках на начало 2025 года (млрд.сумов)

№п/п	Наименование банка	Актив		Кредит		Капитал		Депозит	
		сумма	доля,%	сумма	доля,%	сумма	доля,%	сумма	доля,%
Всего:		751 736	100%	525 887	100%	112 989	100%	297 396	100%
Банки с гос.участием		497 436	66%	363 939	69%	70 183	62%	150 648	51%
1	Миллийбанк	135 399	18%	107 289	20%	18 837	17%	37 844	1
2	Узсаноатқурилиш	86 805	12%	63 996	12%	9 639	9%	18 834	2
3	Агробанк	77 126	10%	59 641	11%	12 398	11%	18 885	3
4	Асака банк	57 314	8%	38 206	7%	6 636	6%	15 483	4
5	Халк банки	46 194	6%	30 045	6%	7 992	7%	23 926	5
6	Бизнесни ривожлантириш банки	33 017	4%	22 696	4%	5 325	5%	10 573	6
7	Микрокредит банк	24 070	3%	17 703	3%	4 829	4%	7 396	7
8	Алока банк	20 244	3%	11 862	2%	2 609	2%	12 538	8
9	Турон банк	17 267	2%	12 501	2%	1 919	2%	5 169	9
Другие банки		254 300	34%	161 948	31%	42 806	38%	146 747	49%
10	Ипотека банк	50 737	7%	34 437	7%	7 400	7%	24 352	8%
11	Капитал банк	45 730	6%	30 937	6%	5 361	5%	35 299	12%
12	Хамкор банк	26 933	4%	18 994	4%	5 044	4%	10 929	4%
13	Ипак йули банк	22 848	3%	14 205	3%	3 571	3%	11 196	4%
14	Ориент Финанс банк	16 205	2%	12 330	2%	3 012	3%	10 475	4%
15	Инвест Финанс банк	11 668	2%	7 585	1%	1 382	1%	8 589	3%
16	УзКДБ банк	10 739	1%	3 292	1%	1 804	2%	6 040	2%
17	Траст банк	10 404	1%	5 617	1%	2 829	3%	7 096	2%
18	Давр банк	9 034	1%	6 834	1%	1 365	1%	3 574	1%
19	Анор банк	8 975	1%	6 678	1%	988	1%	7 630	3%

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20	Тибиси банк	8 931	1%	6 885	1%	2 017	2%	4 666	2%
21	Азия Альянс банк	7 352	1%	3 723	1%	1 115	1%	5 567	2%
22	Тенге банк	6 681	1%	3 847	1%	1 285	1%	2 170	1%
23	Зираат банк	4 034	1%	2 058	0%	654	1%	1 963	1%
24	Октобанк	3 075	0%	49	0%	698	1%	2 051	1%
25	Универсал банк	3 017	0%	1 492	0%	575	1%	2 116	1%
26	Гарант банк	1 931	0%	839	0%	350	0%	1 096	0%
27	Хаёт банк	1 355	0%	833	0%	303	0%	974	0%
28	Узум банк	827	0%	78	0%	474	0%	62	0%
29	Апекс банк	791	0%	192	0%	336	0%	345	0%
30	Мадад инвест банк	641	0%	334	0%	437	0%	91	0%
31	Садерат банк Иран	562	0%	16	0%	498	0%	51	562
32	АВО банк	459	0%	248	0%	436	0%	16	459
33	Смарт банк	452	0%	20	0%	354	0%	75	452
34	Пойтахт банк	424	0%	286	0%	175	0%	177	424
35	Янги банк	322	0%	140	0%	173	0%	147	322
36	Евразийский банк	174	0%	0	0%	172	0%	0	174

В условиях модернизации финансовой системы от уровня развития финансовых зависит уровень конкурентоспособности экономики страны. Развитие качества финансово-банковских услуг позволит стране соответствовать требованиям экономического роста в ближайшие 50 лет, то есть эффективно развиваться в условиях нового технологического уклада [3, с. 38].

В тоже время повышение качества финансовых институтов, являющееся основой роста национальной конкурентоспособности, является и главной целью структурных трансформаций в финансовой сфере, необходимой для обеспечения устойчивого долгосрочного экономического роста [3, с. 31].

Функционирование экономической системы основывается на рыночных механизмах – конкуренции и конкурентной борьбе – эти категории в рыночном хозяйстве являются ключевыми.

Конкуренция традиционно рассматривается в трех аспектах: *поведенческом* (как борьба за клиента на конкурентном рынке), *структурном* (определяется степень свободы покупателя и продавца на рынке и методы выхода из него), *функциональном* (соперничество старого с новым). При этом как механизм саморегуляции и развития рынков товаров и услуг традиционно

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рассматривается в научной литературе применительно к товарным рынкам. Межбанковская конкуренция исследована значительно меньше.

К понятию «конкурентоспособность банка» имеется ряд подходов, согласно одному из них: конкурентоспособность – сущность предмета, определяющее степень потребности в сопоставлении с оптимальными подобными объектами на этом же рынке. Конкурентоспособность – способность объекта с успехом конкурировать с аналогами в условиях определенного рынка. Конкурентоспособность банка, производящего продукт (услугу) относятся друг к другу как часть и целое.

Основными показателями, характеризующими уровень конкурентоспособности, являются: доля рынка, доходность (прибыль), финансовая устойчивость. При этом, анализируя позицию того или иного банка на конкурентном рынке, из перечисленных показателей чаще всего используют показатель доли рынка. Необходимо особо отметить, что он несет в себе две основные функции:

- показывает успешно ли конкретный банк обслуживает целевой рынок или ту или различную долю рынка в настоящее время;
- развивает его рыночные конкурентные преимущества. Сегмент финансового рынка является главнейшим стратегическим активом банка, стимулирующим банк, для повышения уровня его обслуживания по сравнению с конкурентами. Уровень рыночной доли банка вторичен по отношению к величине его конкурентного потенциала. Увеличение конкурентного потенциала непременно приведет к росту доли рынка. Показатель доли рынка, а также динамика ее роста (снижения), бесспорно, имеют важнейшее значение для определения уровня конкурентоспособности банка, и для оценки эффективности реализуемой им стратегии [4, с. 218–222].

Структурировав мнения многих ученых, можно предложить авторскую дефиницию: *конкурентоспособность банка* – происходящий динамический процесс соперничества коммерческих финансовых институтов и банков, в результате которого все составляющие пытаются обеспечить прочные результаты в условиях рынка кредитования и оказания финансовых услуг.

По мнению П. Колесова, в реальной деятельности банка могут проявляться в различных формах [5, с. 28–33]:

1. Репутация банка.
2. Размер уставного капитала.
3. Высокое качество оказываемых услуг.
4. Наличие валютной или генеральной лицензии.
5. Стабильная база клиентов.
6. Корреспондентская сеть.

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7. Платежная система и перечень предлагаемых банковских продуктов и услуг.
8. Сеть филиалов и подразделений, тенденции ее расширения.
9. Эффективная рекламная политика.
10. Квалификация персонала.
11. Эффективный менеджмент.
12. Трудовой стаж работы.

Способность банка соперничать на финансовом рынке напрямую связана с конкурентоспособностью банковского продукта, а также комплексом хозяйственной деятельности, которые влияют на исход конкурентной борьбы. В этой связи следует отметить и другой существующий подход к конкурентоспособности, как к характеристике банковского продукта, показывающей его отличие от аналогичного продукта, предлагаемого конкурентами, как по возможности удовлетворения конкретной общественной потребности, так и по себестоимости данного продукта.

При определении места банка на конкурентном рынке, оценке его надежности и эффективности функционирования, важнейшими являются следующие количественные показатели: прибыль и рентабельность банка, величина уставного фонда и резерва, структура активов и пассивов, доля на рынке кредитов и депозитов, количество разрешенных операций, уровень процентных ставок и т.п. Эти и другие показатели применяются для определения уровня его конкурентоспособности и позиции в рейтинге [6].

В текущих условиях любой банк, который стремится стать конкурентоспособным, современным и эффективным, должен быть клиентоориентированным, т. е. таким, в котором клиент на каждом этапе взаимодействия с банком получает поддержку и удовлетворение своих потребностей и где своевременно и на высоком уровне решаются задачи привлечения, удержания, развития клиентов.

Клиенты относятся к банку с доверием, в том случае, если имеют несложный, недорогой и постоянный доступ к объективной информации о деятельности банка, в частности, о размере чистых активов и динамике доходов. Модель доверия клиентов к банку можно выразить в виде следующей формулы:

Доверие = чистые активы + устойчивость доходов

+ качество информации

(1)

Все зависимости здесь прямые – при увеличении трех показателей: объема, стабильности валовой выручки и структуры информации, – лояльность клиентов к банку увеличивается.

Формула модели удобства для клиентов выглядит следующим образом [6]:

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Удобство= география рынка + спектр продуктов (услуг) + издержки+ качество
(2)

С увеличением географии деятельности банка, ростом качества и расширением перечня предоставляемых услуг привлекательность банка для клиента растет.

На успех или провал нового, или имеющегося банковского продукта на рынке оказывают влияние и другие факторы: маркетинговая деятельность банка, имидж, предлагаемый уровень обслуживания и др. Но, несмотря на важность данных показателей деятельности банка для обеспечения конкурентоспособности, первоочередными являются качество и стоимость банковских продуктов. Поэтому формула конкурентоспособности выглядит так [6]:

Конкурентоспособность = качество+ стоимость банковского продукта+ уровень обслуживания
(3)

Существуют различные способы измерить конкурентоспособность банков. Так, С.М. Дробышевский, С.А. Пащенко предполагают, что оценка конкурентоспособности банка должна основываться на следующих показателях [7, с. 191–192]:

- потребность в реальных и будущих капиталовложениях, как по предприятию в целом, так и по отдельным видам продукции (услуг) и конкретным рынкам;
- перечень конкурентоспособной продукции, ее структура, объем и стоимость («продуктовая дифференциация»);
- структура рынков или их сегментов для каждого продукта («рыночная дифференциация»);

Для определения уровня конкурентоспособности банка необходимо сравнить его положение с положением действующих конкурентов на конкретном рынке. Рейтинг банков позволяет выявить основных конкурентов на кредитном рынке. Упрочнению позиции банка на рынке банковских услуг содействует не только нахождение банка на лидирующих строчках отечественных рейтингов, но также присвоение банку международных рейтингов.

Так, в частности, Fitch характеризуют ликвидность банков. Рейтинги дефолта эмитента («РДЭ») являют собой относительную оценку возможности дефолта. Краткосрочные кредитные рейтинги показывают вероятность своевременного выполнения обязательств. Индивидуальные рейтинги присваиваются только банкам [6].

Методики рейтинговых агентств охватывают обычно целый комплекс показателей. Рейтинговые агентства также не только ликвидность, качество активов, рисков и управление ими, структуру пассивов, достаточность капитала и прибыльности, но и оценивают его положение на рынке (показатели объема рынка, географии, специализации, размера и структуры клиентской базы) и менеджмент (корпоративное управление, качество отчетности,

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организационная структура). Для кредитоспособности банков также важно иметь возможность получить помощь собственников и государства, в случае недостаточности финансовая устойчивости. Рейтинговые агентства также используют несвойственные для рынка показатели. Так, в частности, Fitch располагает данными портфеля деривативов банка и отражение сделок секьюритизации на кредитоспособности учреждения. Помимо этого, принимается во внимание воздействие общих макроэкономических показателей на способность банков кредитовать, в частности банковского регулирования и надзора, политические факторы, особенности законодательства.

Цель данных рейтингов – оценить собственные позиции банка без учета вероятной внешней поддержки табл. 2 [6].

Таблица 2

Характеристика значений индивидуальных рейтингов банков*

Оценк а	Определени е	Характеристика
«А»	Исключите льно устойчивый банк	Высокие прибыльность, прозрачность и устойчивость баланса; большая клиентская база; высокое качество менеджмента, благоприятные экономическая среда и перспективы развития
«В»	Устойчивый банк	Отсутствуют существенные факторы беспокойности. Достаточные прибыльность, прозрачность и устойчивость баланса, большая клиентская база и высокое качество менеджмента, благоприятные экономическая среда и перспективы развития
«С»	Достаточно устойчивый банк	Свойственны один или более факторов, вызывающих беспокойность относительно прибыльности, прозрачности и устойчивости баланса, размера клиентской базы и качества менеджмента, экономической среды или перспектив развития
«D»	Банк, которому свой- ственны определенные недостатки, связанные	Опасения относительно прибыльности, прозрачности и устойчивости баланса, клиентской базы и качества менеджмента, экономической среды или перспектив развития

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	с внутренними и/или с внешними факторами	
«Е»	Банк, испытывающи й очень серьезные трудности	Низкие показатели эффективности деятельности. Требуется внешняя поддержка

**Примечание: разработано автором на основе исследований.*

Рейтинги поддержки характеризуют возможность, объем и качество внешней поддержки банка при наступлении у нее финансовых трудностей. При присвоении рейтингов принимаются во внимание количественные позитивные и негативные характеристики банков, включая целостность баланса, прибыльность и управление рисками.

В целом, кредитные рейтинги, присваиваемые рейтинговыми агентствами, являются на сегодняшний день наиболее публичным и распространенным свидетельством стабильности банка. Кредитные рейтинги снабжают кредитора или инвестора информацией о рискованности вложенных финансов. Для руководства и общественности кредитные рейтинги являются индикатором эффективности деятельности данного банка. Кредитные рейтинги, в первую очередь, характеризуют то, как банки могут ответить по своим обязательствам – за счет собственных и внешних ресурсов [8, с. 77–81].

В целом, рейтинги – это публичное и распространенное свидетельство стабильности банковских структур. Они снабжают кредитора или инвестора информацией о рискованности вложенных финансов. Высокий рейтинг позволяет убрать барьеры для банка доступа к капиталу и другим ресурсам. Для руководства и общественности кредитные рейтинги являются индикатором эффективности их деятельности. Они в первую очередь, характеризуют то, как банки могут ответить по своим обязательствам – за счет собственных и внешних ресурсов [8, с. 77–81].

Выводы:

1. В настоящих реалиях развитой межбанковской конкуренции на региональных рынках финансовых услуг необходима интеграция банковских структур и институтов не только с финансовыми учреждениями, но и с бизнес-структурами, как реципиентами банковско-финансовых услуг, что позволит банкам, использовать свои конкурентные преимущества на местном рынке. Учитывая то, что конкурентоспособными на рынке являются частные розничные банки или банки, с четко представленной бизнес-моделью и высоким качеством бизнес-процессов, в это же время банки с другой диверсификацией

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деятельности не имеют четкой модели развития, что является негативным фактором для развития финансовой системы региона и создает дополнительные проблемы для повышения их конкурентоспособности. Это предопределяет необходимость формирования и развития теоретической базы для уточнения таких дефиниций как «региональный конкурентоспособный банк», «конкурентоспособность банковских услуг» и пр., что предопределяет условия для исследования процессов, происходящих на конкурентном рынке банковских и кредитных услуг.

2. Межбанковская конкуренция является стимулом для активизации и развития институциональной среды для перехода к устойчивому росту финансовых и нефинансовых показателей коммерческих банков, гармонизирующих финансовые интересы власти и частных инвесторов. С этой целью необходимо создание регионального конкурентоспособного банка, базирующегося на ряде признаков сгруппированных по следующим критериям: ведущее место в регионе по уровню доходности, рациональная структура капитала, частный вид собственности, значительный масштаб и диверсификация, качественный менеджмент, значительный сегмент постоянных клиентов, оптимальный состав привлеченных средств, мотивированный персонал, обновленные основные фонды, обоснованные риски. При создании такого банка или присвоение статуса уже имеющегося в регионе банку необходимо создать эффективную организационную структуру, базирующуюся на бизнес-процессном подходе, и принципах оптимальной скорости банковских операций и услуг, беспристрастности и коллегиальности при принятии решения, гармонизации сбалансированных показателей.

3. Исследование научных подходов и их практическое их использование в развитии уровня конкурентоспособности коммерческих банков позволило констатировать то, что они основаны на использовании определенного, зачастую разрозненного перечня критериев и показателей, которые не сбалансированы с интересами финансового развития региона. При этом мониторинг банков фрагментарен и не точен. Это объясняется, во-первых, большим набором критериев, сложностью сбора информации, во-вторых, закрытостью части информации в соответствии с законодательством о банковской тайне. Необходима выработка показателей оценки банковской конкурентоспособности ключевых сегментах его деятельности, а именно в сегменте клиенты и рынки, персонал, бизнес- процессы и финансовый результат.

4. В экономической и финансовой практике нет единого оценочного механизма определения уровня конкурентоспособности регионального банка, что не позволяет дать объективную характеристику динамики его развития. С этой целью разработан и апробирован методический подход к определению индекса конкурентоспособности региональных банков, что позволило определить их рейтинг и выявить резервы для реализации конкурентных преимуществ в условиях межбанковской конкурентной среды.

В исследовании осуществлено концептуальное обоснование влияния межбанковской конкуренции на уровень конкурентоспособности региональных коммерческих банков, что приводит к необходимости участия финансовых институтов в реализации сбалансированной финансовой стратегии российских регионов и формирование на этой основе системы

показателей для мониторинга конкурентной позиции коммерческих банков на региональном рынке банковских услуг.

Таким образом, анализируя имеющиеся подходы авторов, нами сформулированы следующие определения:

- **межбанковская конкуренция** – это процесс развития конкурентной среды финансовых институтов на основе расширения и захвата ограниченных финансовых ресурсов, клиентов, инновационных банковских технологий, качественных бизнес-процессов с целью завоевания высокой доли присутствия банка на рынке финансово-банковских услуг;
- **конкурентоспособность банка** – динамичный процесс соперничества коммерческих банков и кредитных институтов, целью которого является прочное положение на рынке банковских и финансовых услуг.

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ZAMONAVIY TEXNOLOGIYALAR YORDAMIDA KARDIOXIRURGIYA
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Annotatsiya: So'nggi yillarda tibbiyot sohasida yuz bergan texnologik yutuqlar kardioxirurgiya yo'nalishining jadal rivojlanishiga olib keldi. Kompyuter tomografiyasi, sun'iy intellekt, robotlashtirilgan jarrohlik tizimlari, 3D bosib chiqarish hamda minimal invaziv jarrohlik texnikalari yurak-qon tomir kasalliklarining aniqligi bilan tashxislanishi va samarali davolanishiga zamin yaratdi. Ushbu maqolada zamonaviy texnologiyalarning kardioxirurgiyaga qo'shgan amaliy xissasi, bemorlar hayot sifati va tirik qolish ko'rsatkichlariga ijobiy ta'siri ilmiy jihatdan tahlil qilinadi.

Kalit so'zlar: kardioxirurgiya, zamonaviy texnologiyalar, robotlashtirilgan jarrohlik, minimal invaziv texnika, sun'iy intellekt, 3D texnologiya, yurak operatsiyasi

Аннотация: Технологические достижения в области медицины в последние годы привели к быстрому развитию кардиохирургии. Компьютерная томография, искусственный интеллект, роботизированные хирургические системы, 3D-печать и малоинвазивные хирургические методы создали основу для точной диагностики и эффективного лечения сердечно-сосудистых заболеваний. В данной статье с научной точки зрения анализируется практический вклад современных технологий в кардиохирургию, положительное влияние на качество жизни и выживаемость пациентов.

Ключевые слова: кардиохирургия, современные технологии, роботизированная хирургия, малоинвазивная техника, искусственный интеллект, 3D-технология, операция на сердце

Abstract: Recent technological advancements in the medical field have led to the rapid development of cardiac surgery. Computer tomography, artificial intelligence, robotic surgical systems, 3D printing, and minimally invasive surgical techniques have laid the foundation for accurate diagnosis and effective treatment of cardiovascular diseases. This article provides a scientific analysis of the practical contributions of modern technologies to cardiac surgery and their positive impact on patients' quality of life and survival rates.

Keywords: cardiac surgery, modern technologies, robotic surgery, minimally invasive techniques, artificial intelligence, 3D technology, heart surgery

Kardioxirurgiya — yurak va qon tomir tizimi kasalliklarini operatsion yo'l bilan davolashga ixtisoslashgan tibbiyot sohasi bo'lib, uning rivojlanishi inson umrini uzaytirish va kasalliklarni erta davolashda muhim rol o'ynaydi. So'nggi o'n yilliklarda tibbiyotga zamonaviy texnologiyalarning joriy etilishi kardioxirurgik amaliyotlarda katta siljishlarga sabab bo'ldi. Ayniqsa, sun'iy intellekt asosidagi tashxis tizimlari, robot yordamida operatsiyalar, yuqori aniqlikdagi tasvirlash usullari (masalan, 3D tomografiya) hamda yangi avlod biomateriallardan foydalangan holda yurak protetikasi kabilar jarrohlik xavfini kamaytirib, reabilitatsiya muddatini qisqartirishga yordam bermoqda. Ushbu

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maqolada zamonaviy texnologiyalar yordamida kardioxirurgiyada qo'lga kiritilgan muhim yutuqlar, ularning klinik amaliyotdagi ahamiyati va istiqbollari ko'rib chiqiladi.

Zamonaviy texnologiyalarning joriy etilishi kardioxirurgiya sohasida tub o'zgarishlarga olib keldi. An'anaviy ochiq yurak operatsiyalaridan farqli ravishda, hozirda kam invaziv usullar, robotlashtirilgan tizimlar va real vaqt rejimidagi diagnostika texnologiyalari yordamida yurak kasalliklarini samarali davolash imkoniyati kengaydi. Robotlashtirilgan jarrohlik tizimlari, ayniqsa da Vinci Surgical System kabi qurilmalar, yurak operatsiyalarida yuqori aniqlikni ta'minlab, inson qo'liga xos bo'lgan titrashlarni kamaytiradi va murakkab holatlarda xavfni kamaytirishga xizmat qiladi. Statistika shuni ko'rsatadiki, bunday operatsiyalarda infeksiya xavfi sezilarli darajada kamaygan, reabilitatsiya muddati esa an'anaviy usullarga nisbatan qisqargan. Shuningdek, minimal invaziv texnologiyalar ochiq yurak operatsiyalarining o'rmini bosuvchi muhim yo'nalishga aylandi. Xususan, aorta klapanini almashtirish bo'yicha qo'llanilayotgan TAVI usuli yurak faoliyati zaif bo'lgan yoki keksalar uchun xavfsiz alternativ hisoblanadi. Katta kesmasiz bajariladigan bu turdagi operatsiyalar tiklanish jarayonini yengillashtiradi, og'riq darajasini kamaytiradi va bemorning hayot sifatini yaxshilaydi.

3D bosib chiqarish texnologiyasi orqali yurak tuzilmalari modellashtirilib, operatsiya oldidan rejalashtirish imkoniyati yaratildi. Shuningdek, bu texnologiya yordamida individual bemorga moslashtirilgan yurak klapanlari va qon tomir implantlari tayyorlanmoqda. Natijada bemor organizmiga mos biomas materiallar orqali tiklash jarayonlari ancha samaraliroq kechmoqda.

Yana bir muhim yangilik sun'iy intellekt tizimlarining kardiagnostika jarayoniga keng joriy etilishidir. EKG, UTT, MRT va KT kabi tasvirlash usullaridan olingan ma'lumotlar sun'iy intellekt algoritmlari orqali avtomatik tahlil qilinib, yurakdagi nojo'ya o'zgarishlar erta bosqichda aniqlanmoqda. Bu esa bemorni og'ir jarrohlikdan oldin puxta tayyorlash imkonini beradi. Shuningdek, yurak faoliyatini uzoq muddatli kuzatishda sun'iy intellekt asosidagi tizimlar bemorning holatini masofadan turib nazorat qilish imkonini bermoqda.

Biomateriallar va regenerativ tibbiyot texnologiyalari yordamida yurak to'qimalari va qon tomirlarini tiklashda yangi yondashuvlar ishlab chiqilmoqda. Biokompozit materiallar, o'z-o'zini tiklovchi matritsalar va bemorning o'z ildiz hujayralari asosida to'qimalar hosil qilish texnologiyalari tajriba sinovlaridan muvaffaqiyatli o'tmoqda. Bu esa kardioxirurgiyada rekonstruktiv amaliyotlarni yangi bosqichga olib chiqmoqda.

Telemeditsina va masofaviy boshqariluvchi jarrohlik tizimlari orqali uzoq hududlardagi bemorlarni ham yuqori malakali xizmat bilan ta'minlash imkoniyati yaratilmoqda. Ba'zi ilg'or markazlarda robot tizimlar orqali masofadan turib yurak operatsiyalari bajarilmoqda. Bu esa tibbiy xizmatlarning geografik chegaralarini kengaytiradi va sifatli yordam olish imkonini ko'paytiradi.

Yurak stimulyatorlarining yangi avlodi esa yurak ritmini nafaqat tiklab turadi, balki doimiy nazorat qiladigan aqlli tizimlarga ega. Ular yurak faoliyatidagi o'zgarishlarga avtomatik tarzda moslashadi va zarur holatlarda zudlik bilan javob beradi. Mobil ilovalar va datchiklar yordamida bemor holati doimiy kuzatib boriladi, bu esa operatsiyadan keyingi davrni xavfsizroq qiladi.

Umuman olganda, zamonaviy texnologiyalar kardioxirurgiyani ancha xavfsiz, kam invaziv va individuallashtirilgan yo'nalishda rivojlantirdi. Ular bemorning tiklanish muddatini qisqartirib, operatsiyalarning muvaffaqiyat darajasini oshirmoqda. Yaqin kelajakda sun'iy yurak, gen terapiyasi va nanotexnologiyalar asosidagi yangi texnikalar joriy etilishi bilan kardioxirurgiya yanada ilg'or bosqichga chiqishi kutilmoqda.

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Zamonaviy texnologiyalar kardioxirurgiya sohasida yangi imkoniyatlar eshigini ochdi. Robotlashtirilgan jarrohlik tizimlari, minimal invaziv usullar, 3D bosma texnologiyalari, sun'iy intellektga asoslangan diagnostika vositalari, biomateriallar va telemeditsina texnologiyalari orqali yurak operatsiyalari xavfsizligi, aniqligi va samaradorligi sezilarli darajada oshdi. Bu yutuqlar bemorlarning hayot sifatini yaxshilab, ularning tiklanish jarayonini tezlashtirmoqda. Shuningdek, kasalliklarni erta aniqlash va individual yondashuv imkoniyatlari kengayib bormoqda. Kelgusida gen terapiyasi, sun'iy yurak va nanotexnologiyalar kabi ilg'or yondashuvlar bilan kardioxirurgiya sohasi yanada rivojlanib, inson salomatligini ta'minlashdagi o'rni mustahkamlanishi kutilmoqda.

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**PEDAGOGICAL OPPORTUNITIES OF USING INNOVATIVE TECHNOLOGIES IN
EDUCATING STUDENTS IN THE SPIRIT OF NATIONAL PATRIOTISM**

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Abstract: This article scientifically analyzes the pedagogical opportunities of using innovative technologies in the process of educating students in the spirit of national patriotism. It examines the ways of fostering national pride, loyalty to the Motherland, respect for historical heritage, and civic responsibility among students through the effective use of digital tools, interactive methods, quest and gamification elements, mind maps, multimedia presentations, and social networks. Furthermore, the advantages of applying innovative technologies within the framework of the “Family–School–Community” cooperation are revealed, and methodological approaches aimed at strengthening patriotic education are discussed based on international experiences.

Keywords: national patriotism, innovative technologies, pedagogical opportunities, interactive methods, gamification, digital education, student upbringing, Family–School–Community cooperation, national values, civic responsibility

In the era of globalization and information, one of the most urgent tasks of the modern education system is to educate young people in a national spirit, instill loyalty to the Motherland, respect for historical heritage, and civic responsibility. In the state programs and conceptual documents adopted in the Republic of Uzbekistan, national education, patriotism, and the promotion of moral and ethical values to the younger generation are defined as priority areas. In this regard, the wide implementation of innovative technologies in the educational process is recognized as an effective tool for shaping students’ national pride.

The President of the Republic of Uzbekistan, in his Address to the Oliy Majlis on January 24, 2020, emphasized: “If we have set ourselves the goal of turning Uzbekistan into a developed country, we must achieve this not only through rapid reforms, knowledge, and innovation. To do so, we must, first of all, bring up a new generation of cadres who will come forward as initiative-driven reformers, think strategically, and be educated and qualified.” The content of this address clearly highlights that educating students in the spirit of national patriotism and raising them as spiritually mature individuals is one of the most important pedagogical tasks.

National patriotism is a comprehensive concept that embodies an individual’s loyalty to the Motherland, respect for national values, reverence for state symbols, and a sense of responsibility for the country’s development. In the process of educating students in the spirit of patriotism, it is necessary not only to stimulate their interest in historical heritage but also to foster the ability to harmonize it with modern life.

Pedagogical opportunities of innovative technologies - using innovative technologies in patriotic education can be effective in the following directions:

Interactive methods: Techniques such as brainstorming, small group work, and role-playing encourage students to think independently and develop awareness of national values.

Gamification: The use of game elements (point collection, ranking, competition) fosters competitiveness, national pride, and a spirit of teamwork among students.

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Quest and project-based tasks: Assignments dedicated to the lives of historical figures, national traditions, and the heritage of great scholars develop students' research and problem-solving skills.

Multimedia tools: Videos, audio, infographics, and 3D presentations vividly illustrate the richness of national history and culture.

Mind maps: Help students systematically study national heroes, historical processes, and values.

Digital education platforms: Online libraries, virtual museums, and interactive programs allow students to study national history and culture with modern approaches.

The role of "Family–School–Community" cooperation

Patriotic education does not only belong to schools. The role of the family and community is equally important. Through innovative technologies, parents and community leaders can be involved in patriotic education, supporting national value-based projects and strengthening students' engagement.

International experience and national approaches

In foreign countries such as Japan, the USA, and South Korea, information and communication technologies are widely used in patriotic education. In Uzbekistan, the use of innovative methods based on the heritage of national heroes such as Amir Temur, Jaloliddin Manguberdi, and Zahiriddin Bobur, as well as folk tales and epics, creates wide pedagogical opportunities.

Pedagogical opportunities of patriotic education

Didactic opportunities:

Integrative approach: Teaching national values, history, literature, and art in an interdisciplinary manner fosters students' love for their country.

Innovative methods: Quest, gamification, and problem-based learning activities encourage independent thinking and deeper understanding of heritage.

Information technologies: Virtual museums, 3D presentations, and video lessons make learning history engaging and effective.

Educational opportunities:

Family–School–Community cooperation: National values instilled in the family are reinforced at school and in the community, ensuring continuity.

Traditional and modern harmony: Celebrations of Navruz, Independence Day, and Defender of the Motherland Day using modern technologies enhance students' pride.

Role models: The lives and achievements of national heroes provide exemplary models for students.

Social opportunities:

Collective projects: Involvement in cultural and historical projects deepens students' sense of belonging to the nation.

Volunteering activities: Participation in environmental, social, and cultural initiatives strengthens civic responsibility.

Digital space opportunities: Social networks and national media can spread patriotic values widely.

Psychological and pedagogical opportunities:

Personal motivation: Recognition of students' achievements fosters national pride.

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Emotional and impactful approaches: Songs, epics, theater scenes, and videos emotionally strengthen students' love for their country.

Self-awareness process: Reflective activities such as "Me and My Homeland" help students link personal identity with national values.

International and national synthesis: Foreign practices show that digital learning tools and project-based education are effective in patriotic upbringing. UNESCO and other organizations emphasize "civic competence" as a priority. Adapting these practices to Uzbekistan's context broadens students' worldviews while strengthening national patriotism.

Conclusion

The pedagogical opportunities of educating students in the spirit of national patriotism are broad and multifaceted. They can be realized through interactive and innovative methods in the didactic process, educational activities, social cooperation, and psychological approaches. Most importantly, to foster national pride, loyalty to the Motherland, and civic responsibility in students, continuous, systematic, and innovative approaches are necessary.

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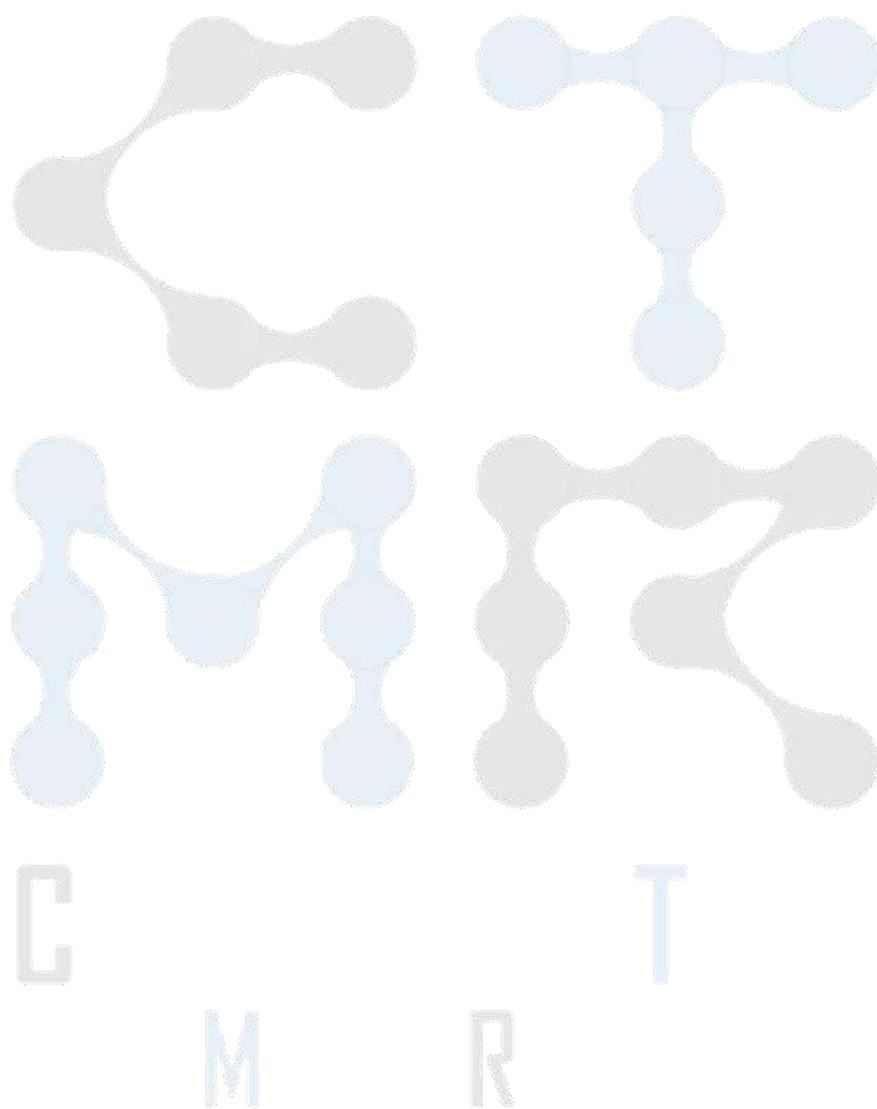
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Increasing productivity through acid treatment

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Annotacion: This article provides information about the most common method of treating the bottom of the well, acid treatment. The well was exposed to various surfactants along with acids and their effect on erosion was determined. The dependence of erosion on temperature was also studied experimentally.

Key words:

A great responsibility is required to meet the demand for oil and oil products in our republic. To meet the demand for oil and oil products, the wells used are treated with chemical methods to increase production. If attention is not paid to the quality of the discovery of productive layers, permeability will deteriorate, which will lead to an increase in the cost of money and materials, and a lengthening of the discovery time.

One of the methods for increasing permeability and accelerating the flow of products in productive layers consisting of carbonate rocks is to treat this layer with acid.

In general, there are the following types of well acid treatment [1, 2, 3]:

1. Conventional acid treatment;
2. Acid bath;
3. Pressure acid treatment;
4. Intermediate or step acid treatment;
5. Hot acid treatment;
6. Acid treatment using hydromonitor transmitters.

Conventional acidizing is a widely applied stimulation technique that relies on the capacity of hydrochloric acid (HCl) to dissolve carbonate formations, particularly limestone and dolomite ($\text{CaMg}(\text{CO}_3)_2$). When HCl reacts with these minerals, the resulting products are highly soluble in water, which facilitates their removal from the near-wellbore zone during subsequent flowback and well clean-up operations. The dissolution process is especially effective within existing pore channels, where the acid enlarges the conduits and progressively transforms them into narrow, elongated cavities [4].

The principal objective of conventional acid treatment is to ensure acid penetration into the reservoir beyond the immediate wellbore wall, thereby enlarging microfractures and natural flow channels while simultaneously improving their interconnectivity. Such structural modifications enhance the overall permeability of the porous medium, which translates into increased well productivity in producing wells or higher injectivity in injection wells.

Acidizing under pressure is a stimulation method designed to force acid into low-permeability intervals of the productive formation by artificially increasing the injection pressure, typically in the

range of 15–30 MPa. The application of elevated pressure during acid injection leads to a reduction in the overall reaction rate between the acid and the rock matrix. As a result, the acid is able to penetrate deeper into the reservoir, ensuring more uniform coverage of low-permeability layers and previously inaccessible zones. This improved penetration and diversion significantly enhance the overall effectiveness of acidizing treatments [5, 6].

Acid emulsions are applied in pressure acidizing to divert acid from high-permeability layers into tighter zones. They are usually prepared from a 12% HCl solution and degassed oil in a 70:30 volumetric ratio. If the oil is too light, heavy additives such as oxidized fuel oil or tar are used. Emulsifying agents improve stability, while mixing time determines dispersion and viscosity. Prolonged mixing yields fine emulsions with viscosities up to 10 Pa·s, ensuring effective diversion and deeper acid penetration.

Zonal or stepwise acidizing is applied in wells that penetrate multiple independent layers characterized by either a common filter or an open-hole completion. When a single hydrochloric acid treatment is performed across the entire interval, the treatment effect is typically concentrated in the most permeable layer, while less permeable intervals remain practically unaffected due to their lower transmissibility.

To ensure effective stimulation of these less permeable layers, isolation techniques are employed. Specifically, two packers are set at the boundaries of the target interval or sublayer to isolate it from the rest of the formation. Acidizing is then conducted within this confined zone. Following the treatment of one interval, a short-term well test is usually carried out to evaluate the response of the treated layer. Subsequently, the process is repeated for the next interval, ensuring that each sublayer receives targeted acid treatment.

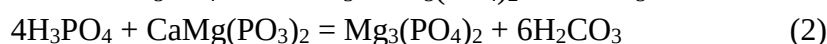
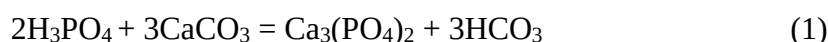
This method provides a more uniform stimulation of multilayer reservoirs, thereby improving the overall sweep efficiency of the acid solution and enhancing the productivity of the entire well [7, 8].

Acid treatment of the formation uses 15% inhibited technical hydrochloric acid. In formations with low permeability and high density, treatment is more effective when carried out in conjunction with surfactants, which penetrate deeper into the wellbore.

Recently, due to the shortage of hydrochloric acid, the difficulty of importing it from Russia and China, and the increase in its cost, experimental work has been carried out with phosphoric acid instead of hydrochloric acid in order to accelerate the production of oil and oil products.

Phosphoric acid is produced in our Republic at the Almalyk "Ammophos" production association and the Samarkand chemical plants.

According to the results of experimental work, it was found that phosphoric acid reacts with carbonate rocks and erodes them slightly slower than hydrochloric acid. We can also see the effect of phosphoric acid on carbonate rocks from its chemical formula.



The formed salts $\text{Ca}_3(\text{PO}_4)_2$ and $\text{Mg}_3(\text{PO}_4)_2$ are in a mobile state due to their difficulty in dissolving in water. Therefore, these salts have the property of being washed out during the washing process or when there is a flow from the productive layer to the bottom of the well.

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The process of salt acid treatment in wells consists of pumping a salt-acid mixture into the layer or, if the layer pressure is low, sending it with its own flow.

The process of salt acid treatment in wells consists of pumping a salt-acid mixture into the formation or, if the formation pressure is low, sending it by its own flow.

The procedure is as follows: The well is cleaned of sand, impurities, paraffin and corrosion products. To clean the well wall from the layer of cement, mud and corrosion products, an "acid bath" is made at the bottom of the open well. In this case, the acid mixture is pumped to the bottom of the well and held there without entering the formation. After a few hours, the affected acid, together with the reaction products, is pumped to the back of the well casing by flushing the washing liquid (oil or water) and brought to the surface by backwashing.

Table 1 below shows the effect of phosphoric acid at various concentrations in combination with surfactants on carbonate rocks.

Table 1.

The effect of phosphoric acid in combination with surfactants on carbonate rock samples.																
№ Pp	The composition of the acid solution	Acid concentration %	Initial weight	% of decay at different times												
				T=15	R%	T=15	R%	T=15	R%	T=15	R%	T=15	R%	T=15	R%	T=15
1	25 ml H ₃ PO ₄ +25 ml H ₂ O	40	5.069	4.621	8.83	4.291	15.38	4.040	20.28	3.820	24.61	3.479	31.35	3.209	36.63	2.957
2	25 ml H ₃ PO ₄ +7 ml H ₂ O+18 ml 1-1	40	5.700	5.233	9.14	4.787	17.36	4.412	23.39	4.090	28.98	3.534	3.86	3.108	46.03	2.705
3	19 ml H ₃ PO ₄ + 31 ml H ₂ O	30	7.044	5.462	22.46	4.303	38.9	3.772	46.47	3.011	57.25	2.359	66.56	1.770	74.86	0.955
4	15.5 ml H ₃ PO ₄ 34.5 ml H ₂ O	25	5.935	2.426	59.1	1.320	77.7	0.732	87.6	0.448	92.4	0.085	98.5	-	100	-
5	15.5 ml H ₃ PO ₄ 34.5 ml H ₂ O+17.5 ml OCFM OCFI -50A	25	5.602	1.818	67.6	0.774	86.1	0.301	94.6	0.112	98.0	-	100	-	100	-
6	15.5 ml H ₃ PO ₄ 34.5 ml H ₂ O+17.5 ml OCFI -50A	25	7.448	4.909	34	3.567	50.7	3.031	59.3	2.554	65.7	1.444	80.6	-	0.91	
7	15.5 ml H ₃ PO ₄ 34.5 ml H ₂ O	25	7.502	4.611	38.5	3.820	49	3.115	58.5	2.577	65.6	1.452	80.6	-	-	0.984
8	12.5 ml H ₃ PO ₄ 37.5 ml H ₂ O	20	4.405	3.860	13.48	3.061	30.50	2.606	40.84	2.099	52.34	1.493	66.10	0.926	78.95	0.606
9	12.5 ml H ₃ PO ₄ 34.5 ml H ₂ O	20	9.040	5.496	39.20	4.272	52.74	3.731	41.26	3.431	62.05	3.086	65.86	2.895	67.97	2.780

Based on the results presented in the table, it was found that a 20-25% concentration of phosphoric acid is effective and is close to hydrochloric acid in terms of corrosion. When 50 ml of 20-25% phosphoric acid was exposed to rocks weighing 5.7-7.5 g, the rock sample immersed in acid for 15 minutes was corroded by 45-55% of its initial weight, and within 150 minutes, an average of 85-90% was corroded.

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The results of the investigation of the effect of phosphoric acid on metal in order to protect pipes used in the well from corrosion are presented in Table 2.

2.1-keste

The temperature for testing the effect of phosphoric acid in combination with SAF on metal corrosion is 20 ± 5 °C

№	Acid type	Concentration %	Sh-1 Quantity ml	H ₂ O Quantity ml	Acid volume	Starting weight in gr.	24 weight after hours gr.	%	48 weight after hours gr.	%	72 weight after hours gr.	%
1.	H ₃ PO ₄	20	19	20	10,41	3,4307	3,3858	1,30	3,3271	3,11	3,2451	5,4
2.	H ₃ PO ₄	25	17	20	13,02	3,2575	3,2138	1,34	3,432	3,50	3,0401	6,7
3.	H ₃ PO ₄	25	-	37	13,03	3,4534	3,1608	8,4	2,3233	32,7	1,8961	45
4.	H ₃ PO ₄	20	-	39,6	10,41	3,2548	2,8582	12,2	2,0781	36,2	1,5588	51
5.	H ₃ PO ₄	20	3	41,1	25	2,3539	2,1645	8,0	2,1298	9,5	2,0820	11

2.3 – table

The temperature for testing the effect of phosphoric acid in combination with SAF on metal corrosion is 100 ± 5 °C

№	Acid type	Concentration %	Sh-1 Quantity ml	The amount of water ml	Acid content ml	Starting weight in gr.	1 weight after hours gr.	%	2 weight after hours gr.	%	3 weight after hours gr.	%	4 weight after hours gr.	%
1	H ₃ PO ₄	25	-	37	13,02	2,060	2,026	1,64	2,021	1,89	2,014	2,23	2,007	2,59
2	H ₃ PO ₄	20	-	39,6	10,41	2,417	2,388	1,23	2,382	1,28	2,357	2,50	2,342	3,1
3	H ₃ PO ₄	20	-	39,6	10,41	2,365	2,355	0,42	2,323	1,79	2,308	2,40	2,307	2,47
4	H ₃ PO ₄	20	5	-	25	2,354	2,311	1,8	2,299	2,35	2,290	2,69	2,285	2,9
5	H ₃ PO ₄	20	5	-	25	2,294	2,260	1,48	2,251	1,89	2,246	2,09	2,240	2,35
6	H ₃ PO ₄	25	17	20	13,02	2,085	2,056	1,41	2,043	2,04	2,037	2,28	2,034	2,47

The results presented in Tables 2.1, 2.2, 2.3 show that when phosphoric acid is used in combination with the surfactant Sh-1 to repair a metal pipe section sample (at room temperature), the corrosion rate increases over time, but this corrosion is much less than the corrosion in experiments conducted under the influence of pure hydrochloric acid. These indicators are also confirmed by experiments conducted at high temperatures.

Tables 2.1, 2.2, 2.3 show that when tested in combination with the surfactant "Sh-1" reagent to reduce the effect of phosphoric acid on the metal, the Sh-1 reagent reduces the effect of phosphoric acid on the metal by 5-6 times.

A 20% solution of phosphoric acid diluted with water at a temperature of $800 \pm 50^\circ\text{C}$ corroded the metal by 11.91%, and a 25% solution by 13.08% within 5 hours, rendering it unusable.

When these processes were repeated with the Sh-1 reagent, the amount of acid corrosion of the metal was 3-5%. Based on the results of the experiments in the tables, it was concluded that phosphoric acid can be used in the chemical treatment of productive layers, and when used together with the "Sh-1" reagent, the Sh-1 reagent reduces the effect of phosphoric acid on the metal, and therefore the corrosion is minimal.

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Xorazm viloyati qishloq va shahar nomlarida xalq geografik qarashlarining ifodalanishi

Abu Rayhon Beruniy nomidagi Urganch davlat universiteti Tabiiy va qishloq xo'jaligi fanlari fakulteti tyutori Aqbayev G'anijon Zoir o'g'li

Annotatsiya: Ushbu maqolada Xorazm viloyatining o'ziga xos tabiiy-geografik sharoitining qishloq va shahar nomlarida (toponimlarida) qanday aks etgani tahlil qilinadi. Xalqning atrof-muhitni idrok etishi, undan amaliy foydalanishi va unga bo'lgan munosabati joy nomlarida o'zining lingvistik ifodasini topgani misollar orqali yoritib beriladi. Maqolada toponimlarning kelib chiqishi (etimologiyasi) xalq geografik atamaları, landshaft xususiyatlari, sug'orish inshootlari, flora va fauna olami hamda tarixiy-ijtimoiy hodisalar bilan bog'liqligi ko'rsatib o'tilgan.

Kalit so'zlar: toponimika, Xorazm, xalq geografik atamaları, oykonim, gidronim, landshaft, etimologiya, qishloq nomlari, shahar nomlari.

Abstract: This article analyzes how the unique natural and geographical conditions of the Khorezm region are reflected in the names (toponyms) of villages and cities. The people's perception of the environment, their practical use of it, and their attitude towards it find linguistic expression in place names, which is illustrated through examples. The article demonstrates that the origin (etymology) of toponyms is connected with folk geographical terms, landscape features, irrigation structures, flora and fauna, as well as historical and social phenomena.

Keywords: toponymy, Khorezm, folk geographical terms, oikonym, hydronym, landscape, etymology, village names, city names.

Аннотация: В данной статье анализируется отражение уникальных природно-географических условий Хорезмской области в названиях сел и городов (топонимах). На примерах показано, как восприятие народом окружающей среды, ее практическое использование и отношение к ней находят свое лингвистическое выражение в географических названиях. В статье демонстрируется связь происхождения (этимологии) топонимов с народными географическими терминами, особенностями ландшафта, ирригационными сооружениями, флорой и фауной, а также историко-социальными явлениями.

Ключевые слова: топонимика, Хорезм, народные географические термины, ойконим, гидроним, ландшафт, этимология, названия сел, названия городов.

Kirish: Geografik nomlar xilma-xil tarixiy sharoitlar va tillar takomilining mahsulidir. Shuning uchun ham geograflardan tashqari filologlar, tarixchilar, arxeologlar va etnograflar toponimikaga tobora ko'proq murojaat qilishadilar. Geografik nomlar asosan o'tmish davrlaridan beri aholining ko'chishi, o'zaro muloqatlari, el-elatlar bo'lib yashab o'tgan xudulari to'g'risida tasavvurlar beradi.

Har qanday geografik ob'ektni to'g'ri nomlash doimo muhim va dolzarb masala hisoblanib kelingan. Aslida yer yuzasidagi barcha ob'ektlar emas, balki inson faoliyati davomida ma'lum ahamiyaga ega bo'lgan yoki boshqa ob'ektlardan nimasi bilandir farq qilib, odamlar diqqatini o'ziga tortgan joylarga nomlangan.

Mustaqillikning dastlabki yillaridan boshlab respublikadagi tabiiy-geografik ob'ektlarga nom berish, ular nomini o'zgartirish, yangi ob'ektlarga nom berish bosqichma-bosqich amalga oshirila boshlandi. Bu tadbirlarning qabul qilinishi va amalga oshishida O'zbekiston Respublikasi Vazirlar Mahkamasining «O'zbekiston Respublikasidagi ma'muriy-hududiy birliklar, aholi punktlari, tashkilotlar va boshqa toponimik ob'ektlarning nomini tartibga solish to'g'risida» 1996 yil 31 mayda qabul qilingan qarori, shuningdek, «O'zbekiston Respublikasida ma'muriy-hududiy tuzilish, toponimik ob'ektlarga nom berish va ularning nomlarini o'zgartirish masalarini hal etish tartibi to'g'risida»gi O'zbekiston Respublikasining 1996 yil 30 avgustdagi Qonuni muhim ahamiyatga ega bo'ldi.

Nom berish jarayoni o'zining qonuniyatlariga ega, chunki nomlardan foydalanish odamlar orasidagi munosabatlarni ta'minlaydi, og'zaki va yozma axborotda ob'ektlarni birxillashtirish (bir shaklga keltirish) imkonini beradi. E.M.Pospelov to'g'ri qayd qilganidek, "Har bir joy nomining birinchi va asosiy vazifasi ob'ektni nomlash, uning atrofdagi boshqa bir xil ob'ektlardan farqlash hisoblanadi".

O'zbek toponimikasining shakllanishi va taraqqiyotida H.Hasanov, S.Qoraev, Z.Do'simov, T.Nafasov, T.Enazarov, B.O'rinboev, N.Oxunov, Sh.Qodirova, T.Rahmatov, L.T.Karimova, Yo.Xo'jamberdiev, J.Latipov, K.Seytniyazov, A.Otajanova, M.Mirakmalov, K.Xakimov, M.Tillaeva, F.Abdullaev, O.Madrahimov, A.Ishaev kabi olimlarning xizmatlari katta bo'ldi. Professor Z.Do'simovning ilmiy tadqiqot ishlari davomida Xorazm toponimlari lingvistik xususiyatlari yasash modellari va tiplari tahlil qilindi. A.Otajanova Xorazm etnotoponimlarining lug'aviy asoslari, grammatik xassalari va etimologik jihatdan tahlil qildi. M.Tillaeva Xorazm vohasi tarixiy-adabiy yodgorliklarning ayrim lisoniy o'ziga xos xususiyatlarini tahlil qildi.

Xorazm shevalarining tarixi va ularning lingvistik xususiyatlari F.Abdullaev, O.Madrahimov, A.Ishaev va boshqa tilshunoslar tomonidan atroflicha o'rganildi. Biroq hudud toponomiyasi geografik jihatdan to'liq o'rganilgan emas.

Yer yuzasidagi barcha geografik joy nomlari juda turli-tuman, ba'zi nomlar g'aroyib, g'alati va ularning kelib chiqishi ham juda xilma-xil. Ularni turlarga ajratish ham juda murakkabdir. Ba'zan til qoidalariga, ba'zan ularning shakllanish bosqichlariga, bunyodga kelishiga, nimalar bilan bog'langanligiga ko'ra ham turlarga ajratildi. Geograflar uchun P.G'ulomov va M.T.Mirakmalov tomonidan quyidagi turlarga ajratish joy nomlarining kelib chiqishi, qanday hodisa va voqealarga bog'langanligiga qarab amalga oshiri maqsadga muvofiq ko'rildi:

Joyning geografik o'rniga bog'liq holda paydo bo'lgan nomlar, ayrim geografik nomlar o'sha joyning, geografik obyektning o'ziga xos xususiyatlaridan paydo bo'ladigan nomlar, suv bilan bog'liq nomlar (gidronimlar), o'simliklarga bog'liq nomlar (fitonimlar), hayvonlarning nomi bilan bog'liq joy nomlari (zoonimlar), foydali qazilmalarga bog'liq joy nomlari, xalq, qabila, urug'lar nomlari bilan bog'liq toponimlar (etnonimlar), aholining kasb - hunaridan olingan nomlar, shaxslarning ism-shariflari, tahalluslariga qo'yilgan geografik nomlar (antroponimlar), afsonaviy va diniy nomlar, garoyib nomlar va zamonaviy nomlardir.

Har bir joy nomi o'zida muayyan bir xalqning tarixi, madaniyati, turmush tarzi va eng asosiysi, o'zini qurshab turgan olamga bo'lgan o'ziga xos qarashlarini mujassam etadi. Toponimlar shunchaki hududlarni bir-biridan ajratib turuvchi belgilar emas, balki asrlar davomida xalqning geografik bilimlari, tasavvurlari va tajribalari jamlangan bebaho manbadir. O'zbekistonning qadimiy va boy

tarixga ega bo'lgan Xorazm viloyati toponimiyasi bu borada alohida ahamiyat kasb etadi. Vohaning Amudaryo quyi oqimida, keng tekisliklar va cho'llar qurshovida joylashgani uning landshafti, iqlimi va xo'jalik hayotiga o'ziga xos tarzda ta'sir ko'rsatgan va bu holat joy nomlarida yaqqol aks etgan.

Xorazmning qishloq va shahar nomlarini o'rganish orqali ajdodlarimizning tabiiy sharoitni qanchalik chuqur his qilgani, undagi o'zgarishlarni sinchkovlik bilan kuzatgani va o'z hayotiy ehtiyojlaridan kelib chiqib, atrof-muhitga nom berganini ko'rish mumkin. Ushbu nomlar xalqning geografik tafakkuri, ya'ni relyef shakllari, suv manbalari, tuproq xususiyatlari, o'simlik va hayvonot dunyosiga oid bilimlarining lingvistik in'ikosidir.

Relyef va landshaftning toponimlardagi ifodasi

Xorazm viloyatining relyefi asosan pasttekislikdan iborat bo'lib, unda qadimiy daryo o'zanlari, kichik tabiiy va sun'iy tepaliklar hamda qumli massivlar uchraydi. Bu geografik xususiyatlar ko'plab aholi punktlari nomlarida o'z aksini topgan.

- **Tepaliklar bilan bog'liq nomlar:** Garchi hudud asosan tekislik bo'lsa-da, mudofaa maqsadlarida qurilgan qo'rg'onlar, qal'alar va qadimiy shahar xarobalari sun'iy tepaliklarni hosil qilgan. Tuproqqal'a, Xonqa (eski turkiy tilda "qo'rg'on", "istehkom" ma'nosini anglatishi mumkin) kabi nomlar bunga yaqqol misoldir. Qishloqlar orasida uchraydigan Tepali, Qo'rg'oncha, Galaqo'rg'on kabi nomlar ham bevosita balandlik, qo'rg'on yoki qal'a bilan bog'liq xalq tasavvurlarini ifodalaydi.

- **Tekislik va pastliklar:** Vohaning keng yassi tekisliklarda joylashgani ham nomlarda aks etgan. Ba'zi qishloq nomlari ularning geografik joylashuviga ishora qiladi. Masalan, Yalang'och kabi toponimlar o'simlik qoplami siyrak, ochiq va keng maydon degan ma'noni anglatishi mumkin.

- **Cho'l va qumli hududlar:** Xorazm vohasi Qoraqum va Qizilqum cho'llari bilan tutashgan. Shu sababli, cho'lga yaqin hududlarda joylashgan qishloqlarning nomlarida bu yaqqol seziladi. Qumloq, Oqmachit (bu yerda "oq" so'zi rangni, "machit" esa ba'zan keng, bo'sh joy ma'nosini ham anglatishi mumkin) kabi nomlar hududning tuproq va landshaft xususiyatlarini ko'rsatadi.

Gidrografik obyektlarning nomlardagi o'rni

Xorazm hayoti azaldan Amudaryo va undan chiqarilgan ko'plab kanallar, ariqlar, yoblar bilan chambarchas bog'liq bo'lgan. Suv – bu hayot manbai, dehqonchilik asosi. Shu bois, Xorazm toponimiyasida gidronimlar, ya'ni suv obyektlari bilan bog'liq nomlar salmoqli o'rinni egallaydi.

- **Daryo va kanallar:** Shovot (Shoh-obod, ya'ni "shoh tomonidan obod qilingan ariq" yoki "katta ariq" ma'nosida), Yangiariq, Bog'ot (bu nomning bir etimologiyasi "bog" va "yop" – ariq so'zlaridan kelib chiqqan bo'lishi mumkin) kabi tuman nomlari bevosita sug'orish inshootlari sharafiga qo'yilgan. Qishloqlar orasida Arna (katta kanal), Yoblon, Kattayop kabi nomlar ko'plab uchraydi. Bu nomlar aholining xo'jalik faoliyatida qaysi ariq yoki kanaldan suv ichgani va uning ahamiyatini ko'rsatadi.

- **Ko'llar va suv havzalari:** Daryo o'zanlarining o'zgarishi natijasida hosil bo'lgan eski ko'llar va suv to'plangan pastqamliklar ham joy nomlariga asos bo'lgan. Ko'lli, Sho'rko'l, Oqkamar (kamar – bu yerda daryoning qayrilishi, egati) kabi nomlar hududdagi suv havzalarining holati, suvinining xususiyatlari (shirin yoki sho'rli) haqida ma'lumot beradi.

- **Suv inshootlari:** Xalq turmushida muhim bo'lgan ko'priklar, suv taqsimlagichlar ham nomlarda o'z aksini topgan. Qo'shko'pir tumanining nomi ikki katta ko'priklar bilan bog'liq ekani

ma'lum. Bu kabi nomlar aholining ijtimoiy va xo'jalik hayotida muhim o'rin tutgan inshootlarni abadiylashtirgan.

Flora va fauna olamining ifodalanishi

Xorazmning o'ziga xos o'simlik va hayvonot dunyosi ham qishloq nomlarida o'z izini qoldirgan. Bu nomlar orqali ma'lum bir hududda qaysi turdagi daraxtlar, o'tlar yoki hayvonlar ko'p bo'lganini bilib olish mumkin.

• **Fitonimlar (o'simlik nomlari):** Bog'ot (serbog' joy), Jiyda-bod, Gulayg'ir, Olmazor, Tutchi kabi nomlar ushbu hududlarda mevali yoki boshqa turdagi daraxtlar ko'p bo'lganini, aholi bog'dorchilik bilan shug'ullanganini ko'rsatadi. Qamishli, Yulg'unzor kabi nomlar esa hududning tabiiy o'simlik qoplamiga ishora qiladi.

• **Zoonimlar (hayvonot nomlari):** Hududda yashagan yoki ko'p uchragan yovvoyi va uy hayvonlari bilan bog'liq nomlar ham mavjud. Masalan, Burgutli, Qarchigay, Ilonli kabi toponimlar ma'lum bir hududning faunasi haqida tasavvur beradi. Hazorasp nomining bir xalq etimologiyasi "ming ot" bilan bog'lanishi ham bunga misol bo'la oladi.

Ijtimoiy-iqtisodiy va etnik omillar

Joy nomlari nafaqat tabiiy-geografik, balki ijtimoiy-iqtisodiy va etnik jarayonlarni ham aks ettiradi. Aholining kasb-hunari, ma'lum bir urug' yoki qabilaga mansubligi, tarixiy shaxslar va voqealar ham toponimlarda saqlanib qolgan.

• **Kasb-hunar bilan bog'liq nomlar:** Degrez (degchi, qozon quyuvchi), Sartarosh, Zargar, Kulolchi kabi qishloq nomlari bu yerda ma'lum bir hunar turi rivojlanganini va shu kasb egalari ixcham yashaganini bildiradi.

• **Etnonimlar:** Qiyot, Qo'ng'iro't, Mang'it, Olchin kabi nomlar Xorazm hududida qadimdan yashab kelgan turli urug' va qabilalarning nomlari bilan bog'liq. Bu toponimlar hududning etnik tarkibi va tarixiy demografik jarayonlarni o'rganishda muhim manba hisoblanadi.

• **Tarixiy shaxslar va voqealar:** Ayrim nomlar tarixiy shaxslar yoki muhim voqealar sharafiga qo'yilgan. Bu kabi nomlar ko'proq yangi davrga xos bo'lsa-da, qadimiy nomlar orasida ham uchrab turadi.

Muhokama: Xorazm viloyatidagi qishloq va shahar nomlari xalqning geografik qarashlarini yaqqol namoyon etadi. Toponimlarda avvalo tabiiy muhit, suv resurslari va tuproq sharoitlariga oid belgilarning ko'pligi kuzatiladi. Bu esa qadimdan Xorazm aholisi hayoti Amudaryo va uning irmoqlari bilan chambarchas bog'liq bo'lganini ko'rsatadi. Masalan, Qo'shko'pir, Shovot, Bo'zovut kabi nomlarda sug'orish tizimlari va yer bilan bog'liq atamalar aks etgan.

Shuningdek, ko'plab nomlarda xalqning ijtimoiy-tarixiy xotirasi, qadimiy xo'jalik faoliyati va etnografik xususiyatlari ham mujassam. Dehqonobod, Hunarmand, Gurlan kabi nomlar aholining kasb-kori va tarixiy taraqqiyoti bilan bog'liq.

Nomlardagi e'tiqodiy va ma'naviy omillar ham muhim o'rin tutadi. Masalan, Shayxlar, Xo'jalar singari toponimlarda diniy qarashlar, tariqatlar va xalq orasida obro' qozongan shaxslarning izlari seziladi.

Demak, Xorazm viloyatidagi toponimlarni o'rganish orqali xalq geografik qarashlarining turli jihatlarini – tabiatni idrok etish, ijtimoiy munosabatlarni ifodalash va ma'naviy qadriyatlarni saqlab qolish jarayonini kuzatish mumkin. Shu bois, qishloq va shahar nomlari ilmiy-geografik manba

sifatida katta ahamiyatga ega bo'lib, ularni tadqiq etish hudud tarixini yanada chuqurroq anglashga yordam beradi.

Xulosa

Xorazm viloyati qishloq va shahar nomlari xalqning ming yillar davomida shakllangan geografik qarashlari, bilimlari va tasavvurlarining o'ziga xos lug'atidir. Ushbu nomlar vohaning tabiiy landshafti, suv resurslarining hayotiy ahamiyati, flora va faunasi hamda aholining ijtimoiy-tarixiy hayoti haqida qimmatli ma'lumotlarni saqlab kelmoqda.

Toponimlarni tahlil qilish orqali biz ajdodlarimizning atrof-muhit bilan qanday uyg'unlikda yashaganini, undagi har bir elementga – ariqdan tortib tepalikkacha, jiyda butasidan tortib qum barxanigacha – e'tibor bilan qaraganini va ularga o'z munosabatini nom berish orqali ifodalaganini ko'ramiz. Shu bois, Xorazm toponimiyasini o'rganish nafaqat tilshunoslik yoki tarix uchun, balki geografiya, ekologiya va etnografiya kabi fanlar uchun ham muhim ilmiy ahamiyatga ega. Bu nomlar o'tmishning ovozi bo'lib, bugungi avlodga o'z yurtining tabiatini va tarixini chuqurroq anglashga yordam beradi.

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Bolalarga oid telekanallarda milliy kontent masalasi, kecha va bugun.

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ANNOTATSIYA: Ushbu maqolada O'zbekistonda bolalarga oid telekanallarda milliy kontent masalalari, namoyish etilayotgan multifilm, reklama va teleko'rsatuvlarning ular ongiga ta'siri, milliy mentalitet tushunchasi, nazariya, g'oyaviy tahdidlar hamda yechimlar borasida so'z boradi.

KALIT SO'ZLAR: Milliy kontent, milliy g'oya, tahlil, yondashuv, bolalar, tomoshabin, g'oyaviy tahdid.

ANNOTATION: This article discusses issues of national content on children's TV channels in Uzbekistan, the impact of animated films, advertisements, and television programs on their consciousness, the concept of national mentality, theory, ideological threats, and solutions.

KEYWORDS: National content, national idea, analysis, approach, children, audience, ideological threat.

АННОТАЦИЯ: В данной статье рассматриваются вопросы национального контента на детских телеканалах в Узбекистане, влияние транслируемых мультфильмов, рекламы и телепередач на сознание детей, понятие национального менталитета, теоретические аспекты, идеологические угрозы и пути их решения.

КЛЮЧЕВЫЕ СЛОВА: Национальный контент, национальная идея, анализ, подход, дети, зритель, идеологическая угроза.

Bolalik – inson umrining eng beg'ubor, kuch - quvvatga, shijoatga to'la, ilm olishga, o'qib - o'rganish orqali dunyoni anglashga qaratilgan unitilmas davrdir. Ayni shu yillarda ko'rish, tinglash, his qilish, va boshqalar natijasida egallangan bilimlar yillar davomida bolaning ong ostida muhirlanadi va kelajak uchun tamal bo'lib xizmat qiladi. Demakki, ayni palladan e'tiboran milliy g'oya va qadriyatlar ruhidagi qarashlarni uning ongiga singdirib borish muhim. Bu harakat, bugungidek dunyoda turli g'oyaviy tahdidlar avj olayotgan bir davrda yanada dolzarb ahamiyat kasb etadi. Negaki, bolalar har bir millatning davomchisi, kelajak bunyodkori. Shu bois bolalarga oid adabiyotlar, bolalar nashrlari, qolaversa, mediakontent masalasiga jiddiy e'tibor qaratib kelinadi. Ho'sh milliy kontent tushunchasi o'zi nima va u nima uchun zarur? Kontent o'z - o'zini ifoda etish, tarqatish, marketing va yoki nashr etish uchun nutq, yozuv yoki har xil san'at turlari kabi biror-bir vosita orqali ifodalanishi kerak bo'lgan axborot vositasi hisoblanadi. Bu borada bir necha jihatni farqlay bilishimiz lozim. Kontent siyosiy, ma'naviy-ma'rifiy, ijtimoiy, ta'limga oid yoki ko'ngilochar mavzularda bo'lishi mumkin. Kichik yoshdagi tomoshabinlar uchun mo'ljallangan telemahsulotlar ma'naviy – marifiy va ko'ngilochar, ya'ni turli o'yinlar, viktorinalar, multifilm, musiqiy dasturlar va boshqalar orqali tashkillashtirilishini hisobga olsak, ularda milliy o'zlikni ifodalash xususiyati birlamchi ahamiyat kasb etadi. Chunki, inson ongini, qalbini zabt etish ma'naviyatidan, qadriyatlaridan, milliy odatlaridan judo qilishga xizmat qiladigan axborot hurujlari ko'rinmaslik xususiyatiga ega. Shu bois ham yot g'oyalarga qarshi mustahkam milliy immunitetni shakillantirishni kichik yoshdan boshlash muhim.

O'tmishga nazar solsak, yurtimizda bolalarga mo'ljallangan telemahsulotlar dastlab, 1960-yildan ekran yuzini ko'ra boshlagan. Jumladan: "Oqshom ertaklari", "Dono bobo davrasida", "Quvnoq startlar", "Bolaligim poshsholigim" singari ko'rsatuvlar namoyish etilgan. Shuningdek, "O'zbekiston" telekanalida taqdim etilgan, bolalarning sevimli ko'rsatuvlaridan yana biri "Ugadayka" (Topag'on) bo'lgan. Unda boshlovchi Olga Polevaya uchta teatr qo'g'irchoqlari: sho'h bolakay Bilmasvoy, mehribon qizaloq Yulduz va ayiqcha bilan birgalikda kattalarni tinglash, o'zini tutish qoidalari, yolg'on gapirmaslik, ilm olishning foydalari kabi kichik tomoshabinlarni ma'rifatli bo'lishga, odob – ahloqqa undovchi g'oyalarni targ'ib etgan. Garchi bu davrda son jihatidan va vaqt nuqtayi nazaridan ko'p telemahsulotlar efirga uzatilmagan bo'lsada, sifat va uning kichik yoshdagi tomoshabiniga beradigan ma'naviy saviyasi asosiy masala sifatida ko'rigan. Xususan: kattalarga hurmat, kichiklarga izzatda bo'lish, do'stlik, ahillik, mehribonlik kabi ijobiy hislatlarni bola ongi va ruhiyatida shakillantirishga qaratilgan g'oyalar yetakchilik qilgan. Mamlakatimizni zamon bilan hamqadam, rivojlanayotgan davlatlar qatorida sanasak, xorij tajribasi o'laroq bugun yurtimizda ham bolalarga oid alohida telekanallar faoliyati allaqachon yo'lga qo'yilgan. Xususan: O'zMTRK tizimida 2013-yil 1-iyunda "Yoshlar" teleradiokanali huzurida "Bolajon" telekanali efir yuzini ko'rdi. Nomidan ma'lumki, bu telekanal aynan bolalar uchun mo'ljallangan bo'lib, qator ma'naviy - ma'rifiy, ko'ngilochar dasturlarni taqdim etishga qaratilgan. Misol uchun, 2023, 2024 - yillarda "Multiponarama", "Sirli o'rmoncha", "Bolajon mehmonxonasi", "Bolalar nigohida", "Zukko bolajon", "Bolajon shou", "Men harbiy bo'laman" kabi qator loyihalar bolalar e'tiboriga havola etildi. Joriy yilda esa "Ertakchi bolajon", "Bolalar vaqti", "Besh tashla" singari loyihalar efir yuzini ko'rmoqda. Ularda bolajonlar ham jismonan ham aqlan sog'lom bo'lishga chorlaydigan jihatlarga alohida e'tibor qaratiladi. Bugun telekanalni auditoriyasi kengligi, ko'rishlar sonining ko'pligi jihatidan O'zMTRK tizimidagi boshqa telekanallar va ko'rsatuvlar bilan taqqoslaganda ustunligini ham alohida qayd etish joiz. Boisi bu telekanaldagi dasturlar auditoriyasi nafaqat bolalar, balki ularning ota - onalari hamdir. Keyinchalik, efir yuzini ko'rgan telekanal soni yana bittaga ko'payib, 2021- yilning 22- martidan "Aqlvoy" bolalar uchun mo'ljallangan ta'lim va ko'ngilochar telekanal sifatida faoliyatini boshladi. Mazkur kanalning asosiy shiori: "Bu sening vaqting!". Ya'ni kashfiyotlar vaqti, mo'jizalar vaqti, yangi narsalarni o'rganish vaqti. Kanal Rossiya, AQSh, Janubiy Koreya, Xitoy kabi o'nlab mamlakatlarda taniqli jahon studiyalari tomonidan yaratilgan eng yaxshi animatsion seriallar va dasturlarni namoyish etib boradi. Barcha ijodiy mahsulotlar litsenziyalangan va rasmiy ravishda sotib olinadi. Telekanalning asosiy auditoriyasi 3 yoshdan 9 yoshgacha bo'lgan bolalar bo'lib, kanal soat 07:00 dan 22:00 gacha faoliyat yuritadi. Telekanal endi ish boshlagan yillarda ko'pincha tayyor telemahsulotlarga murojaat qilingan bo'lsa, bugun bu tarkib "Qachon, qanday qilib", "Shumbolaning sarguzashtlari", "Men O'zbekistonlikman", nomli ko'rsatuvlar bilan kengaymoqda.

Statistik ma'lumotlarga ko'ra, yurtimizda bolalar auditoriyasi doimiy ravishda o'smoqda. Birgina 2021-yilni olib qaraydigan bo'lsak, O'zbekistonda 10 yoshgacha bo'lgan bolalar soni 7,5 million nafardan ziyodni tashkil etganini ko'rish mumkin. Shu bois o'zbek tilidagi yuqori sifatli tarbiyaviy va ko'ngilochar bolalar televizion kontenti zamon talabiga aylanib bormoqda. Shunday ekan bugun bolalarga namoyish etilayotgan telemahsulotlarning barchasini saviyali deya olamizmi? Masalan, ko'proq turli zamonaviy telestudiyalar tayyorlagan xorij multifilmlari namoyish etiladigan "Aqlvoy" telekanalida bolalarning tarbiyasi hamda ruhiyatiga salbiy ta'sir ko'rsatadigan epizodlar,

qolaversa, mediakontentlarni uchratish mumkin. Bolalar dunyoqarashi uchun nomaqbul bo'lgan ayrim multiseriallar masalan: "Shaxrizoda. Aytilmagan hikoyalar", "Art- Odissey" singari loyihalardagi bazi sahnalar jamoatchilikning keng muhokamalariga sabab bo'lgani sir emas. Animatsion film - bu san'atning bir turi bo'lib, uning asosiy elementi animatsiya texnikasi hisoblanadi. Bugun animatsiya yuqori daromadli biznesga aylanib ulgurgani, ko'pincha foyda olishga qaratilgani ochig'i undagi ahloqiy masala keyingi o'ringa tushib qolayotganini ko'rsatmoqda. Yana bir jihat esa nafaqat kichik yoshdagi tomoshabinni, balki biz kattalarni ham chuqur o'ylantirib qo'yadi. Telekranlarimizda namoyish etilayotgan aksariyat multifilmlardagi qahramonlarning tashqi ko'rinishiga qarab kim yoki nima ekanligini izohlashda ko'pgina so'roqlarga duch kelasiz. Masalan, "Winx", "Futurama" qahramonlari haqiqiydan yiroq ko'rinishga ega, ular xunuk, nomutanosib ravishda tasvirlangan. Shu o'rinda haqli savol tug'iladi milliyligimiz aks etgan o'zbek multiplikatsion filmlari yetarlimi va ularning ko'rimgiligi rivojlanib borayotgan davr talablariga bugun qanchalik javob bera oladi? Gap shundaki salkam 50 yillik tarixga ega o'zbek multiplikatsiya san'ati asarlari ("Charxpalak", "Mening go'zal yashil rangim", "Sehrli tanbur") hamon sanoqli darajada, qolaversa, dizayn tomonlama dunyo sahnida texnik imkoniyatlar kun sayin ildamlab borayotgan bir davrda nisbatan oddiy, sodda ishlanganligi uning tomoshaviyligiga ham ta'sir ko'rsatmaydi deyish mushkul. Bundan tashqari milliy kontent haqida gapirganda bolalar yosh hususiyatlarini ham inobatga olish joiz. Ular yoshga ko'ra quyidagi guruhlariga bo'linadi.

1. Maktabgacha tarbiya yoshidagi bolalar (2 yoshdan 7

yoshgacha);

2. Maktab yoshidagi kichik bolalar (7 yoshdan 10-11

yoshgacha);

3. O'rta va katta yoshdagi bolalar (12-14 yoshdan 15-17 yoshgacha).

Demak, ular tomosha qilayotgan mediakontent ham shunga mos bo'lishi shart. Jumladan ko'rsatuvlar, multifim hatto reklamalar ham. Biroq, bu jihatlar bizda bazi o'rinlarda nomutanosib. Shu sabab ham bugun bolalar telekanallarida bu borada ayrim muammolar borligi sir emas. Keling, birgina reklamalar mavzusini olaylik. Ota – onalar uchun sog'lomlashtirishga qaratilgan dori-darmonlar va anjomlar, go'zallik vositalari, zargarlik buyumlari, kir yuvish vositalari, ayollar gigienik vositalari, umuman ro'yxatni uzoq davom ettirish mumkin. Reklamaniing vaqt jihatidan davomiyligi esa yana bir jiddiy masala. Vaholanki "Reklama to'g'risida," gi qonunning 27-moddasiga ko'ra, telekanallar efirida, tele, video, kinoxronikali dasturlarda tarqatilayotgan reklamaniing umumiy davomiyligi ko'rsatuv vaqtining bir soati davomida yigirma foizdan, sutkada o'n besh foizdan oshishi mumkin emas. Bu esa bir soatlik teledasturning 16 daqiqasida reklama berilishini anglatadi. Biroq, muayyan teledastur davomida bir necha marotaba reklamalar namoyishi takrorlanishi va 10 daqiqadan 13 daqiqagacha davom etishini ko'rish mumkin. Shu o'rinda uning bolalar ongiga salbiy huruji masalasini ham unutmasligimiz lozim. Negaki, multifilm yoki bolalar ko'rsatuvini qiziqib tomosha qilayotgan bolakay e'tiborini bo'lib, unga umuman qiziq bo'lmagan reklamalarni tiqishtirish bola ruhiyatini salbiy oqibatlariga olib kelishi mumkin. Aksariyat multiseriallar va reklama roliklari mentalitetimizga ham, odob - axloqimizga ham to'g'ri kelmaydigan sahnalarga boyligi esa achinarli holat. Davlatimiz rahbari tomonidan 2025-yil 15-mayda qabul qilingan "Bolalar uchun mo'ljallangan milliy kontentlar yaratish va ularni ommalashtirishni qo'llab-quvvatlash chora-tadbirlari to'g'risida"gi Qaror bolalarni zararli chet el

ta'siridan himoya qilish hamda xavfsiz va rivojlantiruvchi axborot muhitini yaratishga qaratilgan keng qamrovli strategiyaning amalga oshirishning boshlanishi bo'lsa ajab emas. Negaki, globallashuv jarayonida milliy kontentga talab va ehtiyoj ortib borayotganini yashira olmaymiz. Ilmiy manbalarga ko'ra 2-3 yoshgacha, multfilmning mazmuni bola tomonidan idrok etilmaydi; 3 yilgacha vizual tizim hali ham shakllanmoqda va animatsiyalarni tomosha qilish bolaning vizual funktsiyasini shakllantirish va rivojlantirish jarayonini buzadi; 3 yoshgacha bo'lgan bolalar multfilmlarni tomosha qilish markaziy asab tizimining ortiqcha yuklanishiga olib keladi, bu esa giperaktivlik yoki letargiyaga sabab bo'ladi. Qolaversa, bolalarda turmush tajribasining ortishi, tasavvur obrazlarining kengayishi natijasida vujudga keladi, mohiyati va mazmuni jihatidan oddiydan murakkabga qarab takomillashib boradi. Shunday ekan bir qarashda biz kattalar uchun mediakontentda oddiy holat sifatida ko'rilgan har qanday videomaterial (ko'rsatuv, multfilm, reklama) bolalar dunyosiga qanday va qanchalik ta'sir xususiyatiga egaligini doimo yodda tutish shart!

Bu jarayonda aynan bolalarga oid telekanallarda milliy kontent yaratish va nazoratni amalga oshirishda quyidagilarni nazarda tutish joiz.

1 – **Yoshi mosligi:** Bolalar telekanallarida turli yoshdagi bolalarga mos, ularning qiziqishlariga mo'ljallangan va ijtimoiy-mafkuraviy, ma'naviy- ma'rifiy, sport, musiqiy-ko'ngilochar mavzularga bag'ishlangan ko'rsatuvlarni ko'proq efitra berish. Shuningdek, bolalar uchun maxsus yaratilgan plotformalardan unumli foydalanish.

2 – **Qonun hujjatlariga qattiy amal qilish.**

3 – **Sifat va samaradorlikni ta'minlash:** OAVlarni milliy kontent bilan to'ldirishda jurnalistlar bilan bir qatorda, rejissyor, rassom, turli kreativ sohalar mutaxassislari, adabiyot, san'at va madaniyat namoyandalardan iborat ijodiy jamoalarni shakllantirish, hamkorlikda ishlashi uchun imkoniyat yaratish. Ko'p yillik ish tajribasiga ega, malakali jurnalistlar qatori yosh ijodkorlarni ham kashf etish va jarayonga kengroq jalb qilish.

4 – **Interaktivlikni nazorat qilish:** Bolalar bugun qanday kontentni tomosha qilmoqda? Bunda ota- ona ham birdek mas'uliyatni his etishi shart. Ekran oldida bo'lib, ular qanday mavzu va mazmundagi filmni tomosha qilyapti nazorat qilish lozim. Aynan qaysi joylarini yoki qismlarini ko'rishni takrorlayapti yoki istayapti o'rganish, tahlil etish, bu boradagi fikr-mulohazalarni bayon etib borish joiz.

5– **Subsiya va grantlar:** Bolalar uchun kontent yaratishni qo'llab- quvvatlash maqsadida davlat tomonidan beriladigan, imtiyoz va qator moliyaviy yordam dasturlarini ishlab chiqish va kengaytirish.

6 – **Milliylikka e'tibor qaratish:** Milliy an'ana va qadriyatlarga yot g'oyalarni targ'ib etadigan telemahsulotlarni tahlil etish, chuqur tahrirlash, lozim bo'lsa, taqiqlash. Yaratilgan yoki tomosha qilinadigan materiallarni qat'iy tekshirish, bolalar uchun xavfli yoki noo'rin bo'ladigan qismlarni albatta olib tashlash kabi chora- tadbirlarni aytish mumkin.

7 – **Ta'lim muassasalari bilan hamkorlik:** Pedagog va bolalardan tashabbuslarni qabul qilish, ularning fikr- mulohazalarini o'rganish, hamkorlikda ishlashni yo'lga qo'yish.

Xulosa, o'rnida takidlash kerakki kun sayin zamonaviy texnik ishlanmalar hayotimizni, qimmatli vaqtimizni zabt etayotgan bir davrda kichiklikdanoq bolalarga sifat va mazmunan milliy o'zlikni anglashga qaratilgan mediakontentni ko'proq yaratish va taqdim etish joiz. Shundagina ularda kelgusida taqdim etilayotgan har qanday axborotlarga qarshi ijobiy immunitet shakllanadi.

Zero, har bir bolajon ertaga millat ma'naviyati bardovomligini ta'minlashda kerakli shaxs ekanligini unutmash zarur.

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KICHIK VA O'RTA GIDROELEKTROSTANSIYALARNING (GES) ENERGIYA TARMOG'IDAGI AHAMIYATI

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ANNOTATSIYA: Ushbu maqolada kichik va o'rta gidroelektrostansiyalarning (GES) energetika tizimidagi ahamiyati ilmiy asosda tahlil qilingan. Dunyo miqyosida qayta tiklanuvchi energiya manbalari ulushini oshirish hamda barqaror rivojlanish maqsadlarini amalga oshirishda kichik va o'rta GESlar muhim o'rin tutadi. Tadqiqotda, bir tomondan, ularning ekologik xavfsizligi va iqtisodiy samaradorligi ko'rib chiqilgan, ikkinchi tomondan, elektr energiyasi ta'minotida diversifikatsiya yaratish, elektr uzatish tarmoqlarida barqarorlikni ta'minlash va energetik xavfsizlikni mustahkamlashdagi roli yoritilgan. Maqola natijalariga ko'ra, kichik va o'rta GESlar elektr energiyasi ishlab chiqarish jarayonida resurslardan oqilona foydalanishni ta'minlab, mahalliy hududlarda ijtimoiy-iqtisodiy rivojlanish uchun muhim omil bo'lib xizmat qilishi aniqlangan. Shuningdek, ular issiqxona gazlari chiqindilarini kamaytirish, mahalliy energiya manbalaridan samarali foydalanish va energetika mustaqilligini oshirishga sezilarli ta'sir ko'rsatishi ilmiy dalillar bilan asoslangan.

KALIT SO'ZLAR: kichik GES, o'rta GES, qayta tiklanuvchi energiya, energiya tarmog'i, barqaror rivojlanish, energetik xavfsizlik.

ABSTRACT: This article analyzes the importance of small and medium-sized hydroelectric power plants (HPPs) in the energy system on a scientific basis. Small and medium-sized hydroelectric power plants play an important role in increasing the share of renewable energy sources worldwide and achieving sustainable development goals. The study, on the one hand, examines their environmental safety and economic efficiency, and on the other hand, highlights their role in diversifying electricity supply, ensuring stability in power transmission networks, and strengthening energy security. According to the results of the article, it was found that small and medium-sized hydroelectric power plants provide rational use of resources in the process of electricity generation and serve as an important factor for socio-economic development in local regions. It is also scientifically proven that they have a significant impact on reducing greenhouse gas emissions, effectively using local energy sources, and increasing energy independence.

KEYWORDS: small hydropower plant, medium hydropower plant, renewable energy, energy network, sustainable development, energy security.

АННОТАЦИЯ: В данной статье на научной основе анализируется значение малых и средних гидроэлектростанций (ГЭС) в энергетической системе. Малые и средние гидроэлектростанции играют важную роль в увеличении доли возобновляемых источников энергии во всем мире и достижении целей устойчивого развития. В исследовании, с одной стороны, рассматривается их экологическая безопасность и экономическая эффективность, а с другой стороны, подчеркивается их роль в диверсификации электроснабжения, обеспечении стабильности в сетях электропередачи и укреплении энергетической безопасности. По результатам статьи установлено, что малые и средние гидроэлектростанции обеспечивают рациональное использование ресурсов при производстве электроэнергии и служат важным

фактором социально-экономического развития местных регионов. Также научно доказано, что они оказывают существенное влияние на сокращение выбросов парниковых газов, эффективное использование местных источников энергии и повышение энергетической независимости.

КЛЮЧЕВЫЕ СЛОВА: малая гидроэлектростанция, средняя гидроэлектростанция, возобновляемая энергетика, энергетическая сеть, устойчивое развитие, энергетическая безопасность.

KIRISH

Energiya resurslaridan oqilona foydalanish va qayta tiklanuvchi manbalarni keng joriy etish bugungi kunda global miqyosda dolzarb masalalardan biridir. Xususan, gidroenergetika sohasi elektr energiyasi ishlab chiqarishda barqaror, ekologik toza va iqtisodiy jihatdan samarali yo'nalish sifatida alohida ahamiyat kasb etadi. Yirik GESlardan tashqari, kichik va o'rta gidroelektrostansiyalar (GES) energiya tarmog'ining muhim tarkibiy qismi hisoblanadi. Ularning afzalliklari orasida energiya ta'minotini diversifikatsiya qilish, hududiy energetik mustaqillikni kuchaytirish, transport va taqsimotdagi yo'qotishlarni kamaytirish hamda ekologik xavfsizlikni ta'minlash kabi omillar mavjud.

Jahon tajribasi shuni ko'rsatadiki, kichik va o'rta GESlar chekka hududlarni elektr energiyasi bilan ta'minlashda, qishloq xo'jaligi va sanoat ishlab chiqarishini barqaror elektr energiyasi bilan qo'llab-quvvatlashda muhim o'rin tutadi. Shu bilan birga, ular energetik infratuzilmani rivojlantirishda katta kapital talab qilmaydi va qisqa muddatda ishga tushirilishi mumkin. Bu esa ularni rivojlanayotgan mamlakatlar uchun strategik muhim bo'g'in sifatida namoyon etadi.

O'zbekiston Respublikasida ham qayta tiklanuvchi energiya manbalarini rivojlantirish, xususan, kichik va o'rta GESlarni barpo etish bo'yicha keng qamrovli islohotlar amalga oshirilmoqda. Davlat energiya siyosati doirasida gidroenergetikaning ulushini oshirish orqali elektr energiyasi ishlab chiqarishda barqarorlikni ta'minlash va energetik xavfsizlikni mustahkamlashga qaratilgan tashabbuslar muhim ahamiyat kasb etmoqda. Mazkur tadqiqot kichik va o'rta gidroelektrostansiyalarning energiya tarmog'idagi o'rni, ularning iqtisodiy va ekologik afzalliklari hamda istiqbolli rivojlanish yo'nalishlarini ilmiy asosda tahlil qilishni maqsad qiladi.

METADOLOGIYA

Mazkur tadqiqotda kichik va o'rta gidroelektrostansiyalarning (GES) energiya tarmog'idagi ahamiyatini aniqlash va ularning iqtisodiy hamda ekologik samaradorligini baholashga qaratilgan ilmiy asoslangan metodologiya qo'llanildi.

Tadqiqot yondashuvi

Ishda kompleks yondashuv qo'llanib, energiya ishlab chiqarish jarayonlari iqtisodiy, ekologik va ijtimoiy ko'rsatkichlar orqali tahlil qilindi. Tadqiqot nazariy va empirik uslublar uyg'unligiga asoslandi.

Ma'lumot manbalari

Energetika vazirligi, Gidroenergetika uyushmasi va xalqaro tashkilotlarning statistik hisobotlari;

O'zbekiston va xorijiy olimlarning ilmiy maqolalari, monografiyalari; Amaldagi energetika sohasidagi normativ-huquqiy hujjatlar.

Tahlil usullari

Qiyosiy tahlil – kichik va oʻrta GESlarning ishlab chiqarish quvvatlari yirik GES va boshqa qayta tiklanuvchi manbalar (quyosh, shamol) bilan solishtirildi.

Ekonometrik tahlil – ishlab chiqarilgan energiyaning tannarxi, iqtisodiy samaradorlik koʻrsatkichlari va investitsion jozibadorligi hisoblandi.

Ekologik baholash – kichik va oʻrta GESlarning atrof-muhitga taʼsiri, karbon chiqindilarini kamaytirishdagi oʻrni aniqlash uchun mavjud maʼlumotlar asosida baholash amalga oshirildi.

Sotsiologik yondashuv – energetika mutaxassislari va hududiy ekspertlar bilan suhbat va soʻrovnoma oʻtkazildi.

Tadqiqot bosqichlari

Birinchi bosqichda adabiyotlar tahlili orqali nazariy asos ishlab chiqildi; Ikkinchi bosqichda statistik maʼlumotlar yigʻildi va qayta ishlash usullari tanlandi; Uchinchi bosqichda iqtisodiy va ekologik koʻrsatkichlar asosida tahlillar oʻtkazildi; Yakuniy bosqichda olingan natijalar umumlashtirilib, kichik va oʻrta GESlarning energiya tarmogʻidagi oʻrni boʻyicha ilmiy xulosalar tayyorlandi.

Metodologiyaning ilmiy yangiligi

Tadqiqotda kichik va oʻrta GESlarning nafaqat elektr energiyasi ishlab chiqarishdagi ulushi, balki energiya tizimidagi barqarorlikni taʼminlash, iqtisodiy samaradorlik va ekologik xavfsizlik jihatlaridan ham kompleks tahlili amalga oshirildi.

NATIJALAR

Tadqiqot natijalari shuni koʻrsatdiki, kichik va oʻrta gidroelektrostansiyalar (GES) mamlakat energiya tizimida muhim oʻrin tutadi va bir nechta ustunliklarga ega:

Energiya balansiga qoʻshgan hissasi – Kichik va oʻrta GESlar mavjud elektr energiyasi ishlab chiqarish quvvatining oʻrtacha 8–12 foizini taʼminlab, markazlashgan yirik GES va issiqlik elektr stansiyalariga nisbatan energiya taʼminotida muvozanat yaratishga xizmat qildi.

Barqaror va qayta tiklanuvchi manba sifatida – Oʻrganilgan hududlarda kichik GESlar yil davomida toʻxtovsiz energiya ishlab chiqarish imkoniyatini koʻrsatib, shamol va quyosh kabi mavsumiy oʻzgaruvchan manbalarga nisbatan barqarorroq boʻlib chiqdi.

Hududiy energiya xavfsizligi – Natijalar kichik va oʻrta GESlarning chekka qishloq hududlarini energiya bilan taʼminlashda samarali ekanini koʻrsatdi. Ayniqsa, elektr tarmogʻidan uzoq joylashgan hududlarda energiya uzilishlarini kamaytirishda ijobiy taʼsir koʻrsatdi.

Iqtisodiy samaradorlik – Hisob-kitoblarga koʻra, kichik GESlarda ishlab chiqarilgan elektr energiyasining tannarxi yirik stansiyalarga nisbatan past boʻlib, lokal isteʼmolchilar uchun tariflar barqarorligini saqlashga yordam berdi.

Ekologik natijalar – Tadqiqot natijalariga koʻra, kichik va oʻrta GESlar zararli gazlar chiqindisini kamaytirishga xizmat qilgan. Bu global iqlim oʻzgarishi bilan bogʻliq ekologik xavflarni bartaraf etishda muhim omil sifatida qayd etildi.

Umuman olganda, oʻtkazilgan tahlillar kichik va oʻrta GESlarning nafaqat energiya ishlab chiqarishda, balki hududiy rivojlanish, ekologik barqarorlik va iqtisodiy samaradorlikni taʼminlashda ham muhim rol oʻynashini koʻrsatdi.

MUHOKAMA

Kichik va oʻrta gidroelektrostansiyalar (GES) bugungi kunda global energetika tizimining muhim tarkibiy qismi sifatida qaralmoqda. Ularning afzalligi, birinchi navbatda, qayta tiklanadigan

energiya manbai sifatida barqarorlik va ekologik xavfsizlikni ta'minlashidadir. Tadqiqotlar shuni ko'rsatadiki, kichik va o'rta GESlarning joriy etilishi katta kapital mablag' talab qilmaydi, ular mahalliy sharoitga tez moslasha oladi va energiya taqchilligi kuzatiladigan chekka hududlar uchun samarali yechim bo'la oladi (UNIDO, 2021).

Energetika tarmog'ida kichik va o'rta GESlarning ahamiyatini tahlil qilganda, bir nechta jihatlar ajralib turadi. Birinchidan, ular yirik GESlarga qaraganda ekologik jihatdan xavfsizroq, chunki suv omborlari hajmi kichik bo'lib, tabiiy muhitga salbiy ta'sir darajasi nisbatan past bo'ladi. Ikkinchidan, energiya ishlab chiqarishdagi barqarorlik va diversifikatsiyani ta'minlab, energiya xavfsizligiga hissa qo'shadi. Ayniqsa, O'zbekiston kabi suv resurslari cheklangan, lekin tog'li hududlarga ega mamlakatlarda kichik GESlarni ko'paytirish mahalliy iqtisodiyot uchun katta imkoniyat yaratadi.

Bundan tashqari, kichik va o'rta GESlarning ijtimoiy-iqtisodiy foydalari ham e'tiborga molikdir. Ular yangi ish o'rinlari yaratish, mahalliy infratuzilmani rivojlantirish, qishloq xo'jaligi ishlab chiqarishini qo'llab-quvvatlash va elektr energiyasi tannarxini pasaytirishga xizmat qiladi. Xalqaro tajribaga ko'ra, bunday GESlar energiya ishlab chiqarish hajmini orttirish bilan birga, hududlarning mustaqil energiya ta'minoti darajasini ham yaxshilaydi (IEA, 2020).

Shuningdek, kichik va o'rta GESlar iqlim o'zgarishi sharoitida issiqxona gazlari chiqindilarini kamaytirishga yordam beradi. Masalan, Xitoy va Yevropa mamlakatlarida bu turdagi stansiyalar "yashil energetika" dasturlarining ajralmas bo'lagi sifatida ko'rilmogda. Bu esa kelajakda O'zbekistonning ham barqaror rivojlanish strategiyasida kichik va o'rta GESlarga e'tiborni kuchaytirish zarurligini anglatadi.

Umuman olganda, kichik va o'rta gidroelektrostansiyalarni rivojlantirish nafaqat energiya ta'minotining barqarorligini oshiradi, balki iqtisodiy samaradorlik, ekologik muhofaza va ijtimoiy farovonlikka ham bevosita hissa qo'shadi. Shu bois, kelajakda ularni energetika siyosatining ustuvor yo'nalishlaridan biri sifatida qo'llab-quvvatlash ilmiy hamda amaliy jihatdan asosli hisoblanadi.

XULOSA

Kichik va o'rta gidroelektrostansiyalar (GES) zamonaviy energetika tizimining barqaror rivojlanishida muhim o'rin tutadi. Tadqiqotlar shuni ko'rsatadiki, bunday stansiyalar yirik GESlarga nisbatan iqtisodiy jihatdan tejamkor, ekologik toza hamda mahalliy resurslardan samarali foydalanish imkonini beradi. Kichik va o'rta GESlarning hududiy energiya tarmog'iga integratsiyalashuvi elektr energiyasi ta'minotida diversifikatsiyani kuchaytiradi, energetik xavfsizlikni ta'minlaydi va qayta tiklanuvchi manbalar ulushini oshiradi.

Shuningdek, ularning ekologik ta'siri past bo'lib, atmosferaga chiqindilar ajratmaydi va tabiiy suv resurslaridan qayta foydalanishni yo'lga qo'yadi. Mahalliy iqtisodiyotda kichik va o'rta GESlar yangi ish o'rinlari yaratadi, hududiy infratuzilmaning rivojlanishiga hissa qo'shadi hamda energiya mustaqilligini kuchaytiradi.

Umuman olganda, kichik va o'rta gidroelektrostansiyalarni rivojlantirish nafaqat iqtisodiy, balki ekologik va ijtimoiy jihatdan ham katta ahamiyatga ega bo'lib, ularni milliy energetika siyosatida ustuvor yo'nalishlardan biri sifatida ko'rib chiqish maqsadga muvofiqdir.

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ОРГАНИЗАЦИОННАЯ КОНКУРЕНТОСПОСОБНОСТЬ: ФАКТОРЫ, МЕТОДОЛОГИЧЕСКИЕ ПОДХОДЫ И НАПРАВЛЕНИЯ ДАЛЬНЕЙШИХ ИССЛЕДОВАНИЙ

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Аннотация

В статье рассматриваются ключевые концепции и подходы к пониманию организационной конкурентоспособности в контексте современных исследований. На основе анализа научных работ, выделены основные факторы, влияющие на конкурентоспособность организаций, как внутренние, так и внешние. Особое внимание уделено теоретическим подходам М. Портера и Дж. Барни, а также современным дебатам о многомерности и методах измерения данного конструкта. Статья подчеркивает необходимость дальнейших эмпирических исследований для уточнения методологии измерения конкурентоспособности и выявления ключевых драйверов, определяющих успешность организаций в разных контекстах.

Ключевые слова: организационная конкурентоспособность, конкурентное преимущество, внутренние факторы, внешние факторы, многомерность, измерение.

Введение

Проблематика конкурентоспособности организаций занимает центральное место в исследованиях по стратегическому менеджменту и организационному развитию. Несмотря на значительное количество научных публикаций и теоретических разработок, единого подхода к пониманию и измерению данного конструкта пока не выработано. Организационная конкурентоспособность рассматривается как способность компании обеспечивать устойчивое преимущество на рынке за счет эффективного использования ресурсов, внедрения инноваций, а также взаимодействия с внешней средой.

Научное сообщество активно дискутирует о природе конкурентоспособности: одни авторы трактуют её как совокупность результатов, выражающихся в финансовых показателях, доле рынка и устойчивости позиции компании (Porter, 1980–1985), другие акцентируют внимание на ресурсной базе и уникальных компетенциях организации (Barney, 1991). В этой связи конкурентоспособность выступает не просто как характеристика текущего состояния фирмы, но как динамическая способность адаптироваться к изменениям внешней среды, вырабатывать новые стратегии и использовать возможности, возникающие в результате технологических и институциональных трансформаций.

Актуальность данной проблематики объясняется несколькими факторами. Во-первых, усиливающаяся глобальная конкуренция требует от организаций поиска новых источников конкурентных преимуществ. Во-вторых, процессы цифровизации, интернационализации и формирование инновационной экономики изменяют характер взаимодействия компаний и отраслей, что приводит к появлению новых драйверов конкурентоспособности. В-третьих, для стран с развивающейся экономикой исследование данного вопроса имеет особое значение, так

как конкурентоспособность отдельных компаний формирует основу для развития национальной экономики и её интеграции в глобальные цепочки создания стоимости.

Вместе с тем в научной литературе отсутствует концептуальный консенсус относительно сущности организационной конкурентоспособности. Одни исследователи считают её одномерным конструктом, включающим набор отдельных показателей (производительность труда, инновационная активность, качество продукции), другие предлагают рассматривать её как многомерный феномен, включающий комплекс взаимосвязанных факторов, среди которых внутренние ресурсы, организационная культура, стратегия, а также институциональная и отраслевая среда. Такой разнотой в подходах затрудняет выработку универсальных методик измерения и сравнения конкурентоспособности организаций.

Особое внимание в литературе уделяется внутренним факторам, формирующим конкурентоспособность. Это управление человеческими ресурсами, организационные способности, качество процессов, уровень инноваций и знаний, наличие материальных и нематериальных активов. Научные работы последних лет (Ahuja, 2012; Ageron et al., 2012) подчёркивают, что именно способность к постоянному обучению, инновациям и развитию организационной культуры становится важнейшим источником устойчивого преимущества.

Наряду с внутренними факторами значительную роль играют внешние условия, которые формируют рамки для функционирования организаций. К ним относятся государственная политика, институты поддержки бизнеса, наличие кластеров, инфраструктуры, а также сетевых взаимодействий между компаниями, научными учреждениями и государственными органами. В этой связи исследования конкурентоспособности всё чаще обращаются к междисциплинарному подходу, объединяющему стратегический менеджмент, экономическую социологию и институциональную теорию.

Цель данной статьи – систематизировать современные представления об организационной конкурентоспособности, выделить ключевые внутренние и внешние факторы её формирования, а также обозначить существующие методологические ограничения и направления дальнейших исследований.

Задачи статьи включают:

1. Провести анализ теоретических подходов к пониманию конкурентоспособности организаций.
2. Выявить внутренние и внешние факторы, определяющие её развитие.
3. Рассмотреть методологические трудности при измерении данного конструкта.
4. Определить перспективные направления исследований в данной области.

Научная новизна статьи заключается в систематизации современных дискуссий относительно конкурентоспособности организаций, а также в выделении ключевых направлений, требующих дальнейшей эмпирической проверки.

Практическая значимость работы заключается в том, что результаты исследования могут быть использованы при разработке стратегий развития компаний, формировании государственной политики в области поддержки бизнеса, а также при создании инструментов оценки эффективности организационного развития.

Таким образом, рассмотрение конкурентоспособности организаций требует комплексного подхода, учитывающего как управляемые внутренние ресурсы, так и условия внешней среды. Важно подчеркнуть, что конкурентоспособность не является статичным состоянием: она постоянно трансформируется под воздействием глобальных тенденций, технологических изменений и институциональных факторов. Именно поэтому данная проблематика остаётся одной из наиболее дискуссионных в современной экономической науке и управленческой практике.

Теоретические основы организационной конкурентоспособности

Одними из наиболее влиятельных теоретических подходов к исследованию конкурентоспособности стали:

- Отраслевая перспектива М. Портера (1980–1985 гг.), акцентирующая внимание на конкурентных силах, определяющих привлекательность отрасли и стратегические позиции компании.
- Ресурсно-ориентированный подход Дж. Барни (1991 г.), согласно которому конкурентное преимущество формируется благодаря уникальным ресурсам и способностям организации.

Эти подходы оказали значительное влияние на развитие как теоретических, так и эмпирических исследований. На их основе сформировалось понимание конкурентоспособности как результата взаимодействия различных факторов, включающих как внутренние организационные возможности, так и внешние условия.

Внутренние факторы конкурентоспособности

Анализ научной литературы показывает, что внутренние факторы играют ключевую роль в формировании конкурентоспособности. Среди них можно выделить:

- Управление цепочкой поставок – интеграция процессов поставки и логистики, позволяющая снижать издержки и повышать эффективность.
- Человеческие ресурсы – квалификация, мотивация и вовлеченность персонала, а также системы развития и управления знаниями.
- Инновации и качество – способность к внедрению новых технологий, продуктов и услуг, поддержание стандартов качества.
- Организационные ресурсы – как материальные (производственные мощности, инфраструктура), так и нематериальные (бренд, репутация, организационная культура).
- Партнёрства и сети – установление стратегических альянсов и кооперации для расширения возможностей.

Таким образом, внутренние факторы представляют собой управляемую часть конкурентоспособности, зависящую от стратегических решений компании.

Внешние факторы конкурентоспособности

В отличие от внутренних, внешние факторы не поддаются прямому влиянию со стороны отдельной организации, однако создают институциональную и инфраструктурную основу для развития отраслевой конкурентоспособности.

К ним относятся:

- Государственная политика и регулирование – законодательная база, программы поддержки бизнеса, налоговые и таможенные условия.

- Инфраструктура – транспортная, энергетическая, цифровая инфраструктура, обеспечивающая деятельность организаций.

- Институциональная среда – наличие эффективных государственных институтов, профессиональных ассоциаций и взаимодействие с академическим сообществом.

- Сетевое взаимодействие в отрасли – кооперация между компаниями, формирование кластеров и отраслевых альянсов.

Эти факторы формируют условия для развития всей отрасли и определяют возможности отдельной компании.

Методологические подходы к измерению конкурентоспособности

Современная литература указывает на отсутствие консенсуса в понимании конкурентоспособности как исследовательского конструкта. Существуют два основных подхода:

1. Одномерный подход – конкурентоспособность рассматривается как совокупность отдельных показателей (например, прибыльность, доля рынка, инновационная активность).

2. Многомерный подход – конкурентоспособность понимается как интегративный конструкт, включающий комплекс факторов внутренней и внешней среды.

Для её измерения применяются как качественные, так и количественные методы, включая экспертные оценки, опросы, индексный анализ и построение комплексных шкал. Однако до настоящего времени не существует универсальной методики, что затрудняет сопоставимость результатов исследований.

Обсуждение и направления будущих исследований

На основании проведённого анализа можно выделить несколько ключевых направлений для дальнейших исследований:

- Выявление драйверов конкурентоспособности, оказывающих наиболее значимое влияние в различных отраслях и странах.

- Изучение взаимодействия факторов и их комбинированного воздействия на организационное развитие.

- Разработка унифицированной методологии измерения, позволяющей учитывать многомерность конструкта.

- Проведение сравнительных исследований в развитых и развивающихся странах, что позволит выявить специфику национальных контекстов.

Ограничения исследования

Анализ основывался на публикациях за период с 2009 по 2018 гг., что не позволяет в полной мере охватить весь спектр исследований в данной области. Кроме того, рассмотренные работы были ограничены источниками на английском и испанском языках, что также могло привести к неполному охвату научного материала.

Заключение

Организационная конкурентоспособность представляет собой сложный и многогранный конструкт, формируемый под воздействием совокупности внутренних и внешних факторов. Несмотря на значительный прогресс в теоретическом осмыслении данного феномена,

остаются нерешёнными вопросы, связанные с его измерением и выработкой универсальной методологии. Конкурентоспособность не может быть сведена только к финансовым показателям или доле рынка — это динамическое свойство, отражающее способность организации адаптироваться, учиться и развиваться в условиях постоянных изменений.

Сегодня для исследователей и практиков особенно важно понимание того, что конкурентоспособность — это не конечное состояние, а процесс, который необходимо поддерживать и укреплять. Компании сталкиваются с необходимостью реагировать на ускоряющиеся технологические изменения, глобальные вызовы, такие как переход к цифровой экономике, экологическая устойчивость и социальная ответственность. Все эти факторы требуют расширенного анализа механизмов формирования и поддержания конкурентоспособности.

Одним из ключевых выводов является необходимость признания многомерности данного конструкта. Конкурентоспособность организации следует рассматривать одновременно на нескольких уровнях:

- Стратегическом — способность формулировать и реализовывать долгосрочные стратегии, обеспечивающие устойчивое преимущество.
- Операционном — умение эффективно управлять процессами, ресурсами и инновациями.
- Институциональном — способность взаимодействовать с государством, профессиональными сообществами, научными учреждениями и партнёрскими организациями.

Именно интеграция этих уровней позволяет компаниям не только удерживать позиции на рынке, но и формировать новые источники конкурентных преимуществ.

Не менее важно учитывать, что конкурентоспособность определяется не только внутренними усилиями организаций, но и качеством внешней среды. В странах с развитой инфраструктурой, стабильной институциональной системой и эффективными государственными механизмами поддержки бизнеса компании имеют больше возможностей для устойчивого развития. В то же время в развивающихся экономиках наличие барьеров, связанных с недостатком ресурсов, слабой институциональной базой или отсутствием кластерного взаимодействия, создаёт дополнительные вызовы для повышения конкурентоспособности.

Таким образом, исследования в данной области должны учитывать контекстуальные различия: одни факторы могут играть ключевую роль в странах с развитой экономикой, другие — в странах с формирующимися рынками. Это открывает широкие возможности для проведения сравнительных исследований, способных выявить специфику национальных и отраслевых моделей конкурентоспособности.

С методологической точки зрения остаётся открытым вопрос о разработке комплексных инструментов измерения. Современные исследования опираются как на количественные, так и на качественные методы: от анализа финансовых показателей до экспертных оценок и индексов инновационности. Однако отсутствие унифицированного подхода затрудняет сопоставимость данных и делает невозможным формирование единой международной базы для анализа. В этой связи одним из перспективных направлений является разработка

гибридных методик, которые учитывали бы как экономические результаты деятельности, так и институциональные, социальные и инновационные аспекты развития организаций.

С практической точки зрения для компаний крайне важно вырабатывать стратегию управления конкурентоспособностью, включающую следующие элементы:

1. Инновационное развитие – системное внедрение новых технологий и бизнес-моделей.
2. Управление знаниями и персоналом – создание условий для постоянного обучения и развития сотрудников, формирование организационной культуры, ориентированной на рост и сотрудничество.
3. Сетевое взаимодействие – активное участие в кластерах, альянсах и стратегических партнёрствах.
4. Социальная ответственность и устойчивое развитие – интеграция принципов ESG (Environmental, Social, Governance) в стратегию компании.

Для государства же ключевая задача состоит в создании институциональной и инфраструктурной базы, способствующей повышению конкурентоспособности бизнеса. Это включает развитие транспортной и цифровой инфраструктуры, совершенствование законодательной базы, формирование прозрачной системы регулирования и стимулирование инновационной активности.

С точки зрения академического сообщества необходимо продолжать развитие теоретических основ исследования конкурентоспособности, интегрируя достижения различных дисциплин — экономики, менеджмента, социологии, институциональной теории. Важным шагом является создание междисциплинарных платформ для обмена опытом и результатами исследований, что позволит выработать более целостное понимание феномена конкурентоспособности.

Подводя итог, можно утверждать, что организационная конкурентоспособность является динамичным и комплексным конструктом, который невозможно рассматривать в отрыве от глобальных экономических процессов и институциональных преобразований. В будущем научные исследования должны быть направлены на выявление ключевых драйверов конкурентоспособности, разработку комплексных инструментов её измерения, а также проведение сравнительных межстрановых и межотраслевых анализов. Только в этом случае удастся выработать универсальные подходы, которые будут полезны как для научного сообщества, так и для практиков, стремящихся к устойчивому развитию и укреплению позиций на глобальном рынке.

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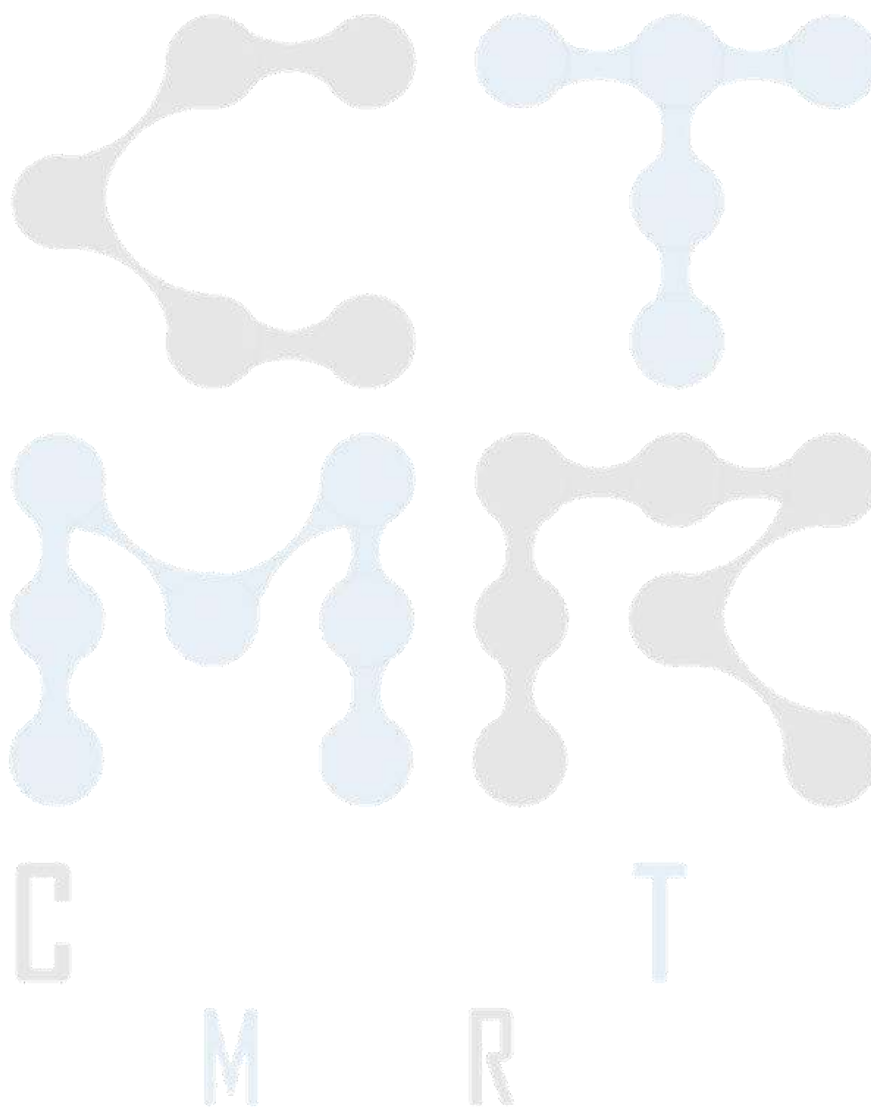
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Chakana bank xizmatlari samaradorligini oshirish: Turonbank ATB misolida

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Abstract

The article examines the issue of increasing the practical efficiency of retail banking services in Uzbekistan using the example of Turonbank JSCB. The introduction explains the relevance of the topic and digital changes in the banking sector. The methods section clearly explains the sources of information, selected approaches and criteria. The analysis section systematically describes real business processes in the channel, segment and product segments, the system of key indicators, as well as observations on seasonality and load peaks. The results highlight the expansion of digital channels, reduction of queue pressure and changes in customer experience. The discussion offers specific solutions in the areas of infrastructure, customer experience and human capital. The conclusions and recommendations section summarizes the expected benefits for the bank and customers.

Keywords

Retail banking; efficiency; customer experience; mobile banking; digital transformation; Turonbank.

Annotatsiya

Maqolada O'zbekistonda chakana bank xizmatlarining amaliy samaradorligini oshirish masalasi Turonbank ATB misolida ko'rib chiqiladi. Kirish bo'limida mavzuning dolzarbligi va bank sektoridagi raqamli o'zgarishlar tushuntiriladi. Metodlar bo'limida ma'lumot manbalari, tanlangan yondashuvlar va mezonlar aniq izohlanadi. Tahlil bo'limida kanal, segment va mahsulot kesimidagi real ish jarayonlari, asosiy ko'rsatkichlar tizimi hamda mavsumiylik va yuklama piklari bo'yicha kuzatishlar tartib bilan bayon qilinadi. Natijalarda raqamli kanallar kengayishi, navbat bosimining pasayishi va mijoz tajribasidagi o'zgarishlar yoritiladi. Muhokamada infratuzilma, mijoz tajribasi va inson kapitali yo'nalishlarida aniq yechimlar taklif etiladi. Xulosa va tavsiyalar bo'limida esa bank va mijozlar uchun kutiladigan foydalar umumlashtiriladi.

Kalit so'zlar

Chakana bank; samaradorlik; mijoz tajribasi; mobil banking; raqamli transformatsiya; Turonbank.

So'nggi besh-o'n yil ichida mamlakatimiz bank tizimida raqamli xizmatlar tez kengaydi. Mobil ilovalar, QR to'lovlar, masofaviy identifikatsiya va real vaqt rejimidagi o'tkazmalar oddiy mijoz uchun ham odatiy holga aylanib bormoqda. Lekin har qanday texnologik yangilikning qiymati uni amalda qanday joriy etishimizga bog'liq. Filialdagi navbat, ilovadagi uzilish yoki operator bilan muloqotdagi kichik noqulaylik — bularning barchasi mijozning umumiy bahosiga bevosita ta'sir qiladi. Shuning uchun "raqamli yechim bor" degan gapning o'zi etarli emas; muhim savol shuki, bu yechim kundalik ish jarayonini haqiqatan yengillashtiryaptimi?

Mazkur maqolada aynan shu savolga javob izladik. Maqsad — Turonbank ATB misolida chakana xizmatlar samaradorligining amaliy jihatlarini ko'rsatish, kuchli va zaif tomonlarni ochib berish hamda amaliy takliflar berish. Dolzarblik shundaki, samaradorlik faqat bankning iqtisodiy ko'rsatkichlariga emas, balki moliyaviy inklyuziya, to'lovlar shaffofligi va mijoz madaniyatiga ham

ta'sir ko'rsatadi. Bank va mijoz o'rtasidagi har bir kontakt nuqtasi — bu tajriba. Biz aynan shu tajribani yaxshilash orqali natijaga erishishni ko'zda tutdik.

Tadqiqot uch bosqichda tashkil etildi. Avvalo, ma'lumotlar bazasi shakllantirildi: ochiq regulyator hisobotlari, bankning rasmiy manbalari, mijoz fikrlari va ichki ish jarayonlarida kuzatilgan holatlar bir joyga jamlandi. Keyin, tahlil chizmasi belgilandi: statistik-dinamik baholash, qiyosiy tahlil hamda jarayon xaritalash usullaridan foydalanildi. Nihoyat, sifat ko'rsatkichlari tematik kodlash orqali toifalandi.

O'lchovlar tizimi qulay va amaliy bo'lishi uchun quyidagi mezonlar tanlandi: raqamli qabul qilinish darajasi, muvaffaqiyatli tranzaksiyalar ulushi, o'rtacha ko'rib chiqish vaqti, birinchi murojaatda hal etish ulushi, mijoz sodiqligi hamda sa'y-harakat indeksi, raqamli onboarding konversiyasi va 10 ming tranzaksiyaga to'g'ri keladigan shikoyatlar soni. Ma'lumotlar tozalandi, dublikatlar chiqarildi va kanal (filial, mobil, veb, koll-markaz), mijoz segmentlari (retail/biznes, yosh guruhlari, raqamli savod darajasi) hamda mahsulot turlari (kartalar, omonatlar, mikroqarz, o'tkazmalar) bo'yicha ajratildi.

Tahlil jarayonida bir necha amaliy kuzatishlar asosiy xulosalarga olib keldi. Avvalo, ish haqi to'lanadigan kunlar atrofida yuklama tabiiy ravishda oshadi; bu davrda filiallardagi navbatlar cho'ziladi, raqamli kanallarda esa tezkor xatoliklar ko'payadi. Shu sababli texnik resurslarni oldindan kengaytirish va qo'llabquvvatlovchi xodimlar sonini vaqtincha ko'paytirish foyda beradi. Ikkinchidan, mobil ilovada tranzaksiya bosqichlari soni ko'p bo'lsa, mijozlar yo'qotilishi ortadi — ayniqsa yangi foydalanuvchilar orasida. Uchinchi kuzatish: shikoyatlarni kuzatish tizimi yagona identifikator bilan ishlaganda, muammo tezroq topiladi va qaytib kelishi kamayadi.

Jarayon xaritasi (ariza → identifikatsiya → scoring → tasdiqlash → faollashtirish) bo'yicha tahlil qilinganida, dublikat tekshiruvlar va qo'lda ma'lumot kiritish vaqtini cho'zishi aniqlanadi. Shu o'rinda avtomatlashtirilgan tekshiruvlar, shablon hujjatlar hamda oflayn-rejimda ishlaydigan kesh mexanizmlari muhim rol o'ynaydi. Mijoz tajribasi nuqtayi nazaridan esa oldindan aniq axborot — komissiya, limit va muddatlarni ochiq ko'rsatish — norozilikni keskin kamaytiradi. Segmentlar kesimida raqamli qabul qilinishi yuqori guruhlarda xizmat ko'rsatish tannarxi pasaygani, filial navbatlari va o'rtacha ko'rib chiqish vaqti barqaror qisqargani ko'zga tashlanadi.

Kutilganidek, raqamli kanallarning kengayishi filiallardagi yukni yengillashtirdi: navbatlar qisqardi, tranzaksiyalar tezligi oshdi va foydalanuvchi o'z hisobini mustaqil boshqaradigan holatlar ko'paydi. Mijozlar eng avvalo qulaylikni qadrladi: 24/7 kirish, kartani vaqtincha bloklash, tezkor ogohlantirishlar, QR to'lovlar kabi funksiyalar umumiy bahoni yaxshiladi. Shu bilan birga, qisqa muddatli texnik uzilishlar mijoz kayfiyati va sodiqligiga sezilarli ta'sir ko'rsatishi aniqlandi; bu holatlarda oflayn-rejimda tranzaksiyani saqlash va uzilishdan keyin avtomatik yakunlash mexanizmlari ijobiy samara berdi. Ichki jarayonlarda ortiqcha bosqichlar qisqartirilganda, arizalar ko'rib chiqish vaqti sezilarli qisqargani kuzatildi.

Topilmalar uch yo'nalishda yechimlarni talab qiladi. Birinchidan, infratuzilma: mikroxizmatlarga asoslangan arxitektura, monitoring va avtomatik kengaytirish, zaxira serverlar hamda qat'iy kiberxavfsizlik protseduralari barqarorlikni oshiradi. Ikkinchidan, mijoz tajribasi: interfeysni soddalashtirish, tranzaksiya oldidan aniq axborot berish, shaxsiylashtirilgan takliflar va raqamli onboardingda bosqichlar sonini kamaytirish — bular ishonchni mustahkamlaydi. Uchinchidan, inson kapitali: frontline xodimlar uchun mo'ljallangan qisqa, ammo muntazam

treninglar, amaliy holatlarga mos skriptlar va qo'llanmalar xizmat madaniyatini yaxshilaydi. Bozor nuqtayi nazaridan esa paketlangan servislari, qo'shma fintech hamkorliklari va loyallik dasturlari raqobatda farqlanish imkonini beradi.

Xulosa qilib aytganda, Turonbank ATB misolida ko'rilgan tajriba shuni ko'rsatadiki, raqamli yechimlar o'z-o'zidan maqsad emas — ular aniq jarayonlar bilan uyg'unlashgandagina foyda beradi. Texnik barqarorlik, ochiq va tushunarli axborot, qisqa jarayonlar va malakali xodimlar yig'indisi mijoz sodiqligi, tezlik va tannarx ko'rsatkichlarini yaxshilaydi. Amaliy tavsiyalar sifatida: yuqori yuklama davrlarida resurslarni oldindan rejalashtirish; ilova interfeysida keraksiz bosqichlarni qisqartirish; shikoyatlarni yagona ID bilan boshqarish; vaqti-vaqti bilan xodimlar uchun qisqa treninglar o'tkazish hamda mahsulot portfelini paketlash taklif etiladi.

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THE IMPORTANCE AND EVOLUTION OF ADULT EDUCATION IN THE 21ST CENTURY

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Abstract

This article explores the evolving landscape of adult education in the 21st century, emphasizing its significance for individuals, economies and societies. It traces the historical development of adult learning and analyzes current forms such as formal, non-formal, and informal education. The paper discusses key challenges including access, digital inequality, and policy gaps, while highlighting the transformative role of technology in adult learning. Finally, the article offers strategic recommendations for making adult education more inclusive, flexible, and future-oriented.

Keywords: adult education, lifelong learning, digital literacy, informal learning, educational policy, social inclusion, workforce development, technology in education, non-formal education, flexible learning pathways.

Introduction

In area of rapid technological advancement, shifting job markets, and global interconnectedness, lifelong learning has become not only a personal pursuit but also a societal necessity. Adult education – defined as the practice of teaching and engaging adults in learning new skills, knowledge, or values – has transformed dramatically over the past few decades. No longer limited to evening classes or basic literacy programs, adult education now encompasses a vast range of formal, non-formal, and informal learning opportunities designed to empower individuals and strengthen communities. This paper explores the evolution, significance, challenges, and future prospects of adult education in the 21st century.

Adult learning and education (ALE) is an important part of life-long education, and this task is currently assigned a key role in addressing the challenges faced by modern society. Thanks to ALE, adults expand their knowledge, capabilities, skills, and abilities throughout their life, and acquire popular professions. Sustainable development of the state and its competitiveness depend on the continuous professional education and lifelong skills and expertise improvement of the population, especially adults.

Historical Background an Evolution of Adult Education

Historically, adult education emerged out of necessity, often in response to war, industrialization, and social reform. In the 19th and early 20th centuries, adult education initiatives in Europe and North America focused on basic literacy, civic education, and vocational training. These efforts were typically supported by religious institutions, labor unions, and philanthropic organizations.

The post –World War II era saw a significant expansion of adult education, driven by the reconstruction of societies and economics. The UNESCO 1976 Nairobi conference on adult education marked a turning point, recognizing education as a lifelong process and not confined to childhood or adolescence. This laid the foundation of the concept of “lifelong learning”, which is now central to educational policies worldwide.

In the 21st century, adult education has evolved to include digital literacy, continuing

professional development, higher education for non – traditional students, and online learning. The shift from teacher-centered models to learner-centered approaches reflects broader pedagogical transformations influenced by technology and globalization.

The Significance of Adult education

Adult education plays a vital role on multiple levels – personal, economic, societal.

Personal Empowerment

For individuals, adult education provides the opportunity to acquire new skills, transition careers, or pursue personal interests. It also boosts self-confidence and improves critical thinking, decision-making, and communication abilities. These are essential for navigating modern life, especially in democratic societies.

Economic Benefits

From an economic perspective, adult education contributes to workforce development and economic resilience. As industries evolve, workers must continually upgrade their skills to remain competitive. This is particularly important in sectors like information technology, healthcare, and green energy. Countries with strong adult education systems often report higher productivity and innovation levels.

Social Inclusion and Citizenship

Adult education fosters social cohesion and reduces inequality by providing learning opportunities to marginalized groups, including immigrants, elderly populations, and individuals with disabilities. It encourages active citizenship by informing individuals of their responsibilities and by promoting community involvement.

Types of Adult Education

Formal education: includes degree-granting programs offered by universities and colleges to adult learners, often through flexible schedules, part-time formats, and online platforms.

Non-formal Education: comprises structured learning outside the formal system, such as community education, workplace training, and professional development programs.

Informal learning: involves self-directed learning through daily activities, reading, online resources, and life experiences. This form is often overlooked but crucial in fostering continuous personal growth.

Challenges in Adult Education

Despite its importance, adult education faces several persistent challenges:

1. **Access and Equity.** Many adults – particularly those from disadvantaged backgrounds – face barriers such as cost, lack of time, childcare responsibilities, and limited access to technology.
2. **Recognition of Prior Learning.** Many educational institutions and employers fail to recognize informal and non-formal learning, discouraging adults from investing in lifelong learning.
3. **Motivation and Engagement.** Adult learners often struggle with balancing education with work and family responsibilities. Maintaining motivation and sustaining participation requires tailored support and flexible learning environments.
4. **Funding and Policy Support.** Adult education is often underfunded compared to primary and secondary education. National policies may lack coherence or long-term vision for adult learning strategies.

The Impact of Technology on Adult Education

Technology has dramatically changed the landscape of adult education. Online courses, digital certifications, virtual classrooms, and mobile learning have made education more accessible than ever. Massive Open Online Courses(MOOCs), in particular, have democratized learning by offering free or low-cost education from top institutions.

However, the digital divide remains a significant barrier. Adults with low digital literacy or limited internet access may be excluded from these opportunities. Ensuring digital inclusion must be a priority in adult education policies.

Future Prospects and Recommendations

To strengthen adult education and ensure its relevance for future generations, several steps must be taken:

1. Integrate Lifelong Learning into National Policies. Governments should embed lifelong learning into their economic, social, and educational strategies, ensuring sustainable funding and coordination across sectors.
2. Promote Flexible Learning Pathways. Institutions should recognize prior learning, provide credit for work experience, and offer modular courses that accommodate adult learners' schedules.
3. Invest in Digital Infrastructure and Skills. Bridging the digital divide is essential. Providing affordable internet, training educators in digital tools, and developing accessible learning platforms are critical steps.
4. Strengthen Community-Based Learning. Local learning centers, libraries play a vital role in reaching underserved populations. Supporting community education initiatives can foster inclusion and participation.

Conclusion

Adult education is a cornerstone of inclusive, dynamic, and knowledge – based societies. It empowers individuals to adapt to change, promotes democratic participation, and drives economic development. As we navigate the complexities of the 21st century, the value of lifelong learning will only grow. By addressing current challenges and investing in inclusive, flexible, and technology – driven approaches, we can ensure that adult education continues to transform lives and communities around the world.

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STRATEGIC INNOVATION CAPABILITIES IN EXPORT-ORIENTED SUPPLY CHAINS:
A MULTI-LEVEL MANAGEMENT APPROACH FOR TRANSITIONAL ECONOMIES

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ABSTRACT

In an era of global volatility and accelerating technological change, export-oriented enterprises (EOEs) in transitional economies face mounting pressure to innovate systemically. This article proposes a multi-level analytical framework that integrates the Resource-Based View, Network Theory, and the Triple Helix model to conceptualise innovation capabilities within EOE's supply chains. Using embedded case illustrations from Uzbekistan, three capability clusters are identified: internal operational routines, inter-firm agility, and institutional integration. A tailored digital maturity scale adapted from McKinsey is applied to assess EOE's readiness for innovation-driven growth. Empirical data show that most Uzbek firms operate at intermediate levels of digital integration, and achieve the strongest results when digital tools are reinforced through learning routines, cross-functional collaboration, and policy alignment.

Keywords: innovation capability, export-oriented enterprises, digital maturity, transitional economy, supply chain innovation, Uzbekistan, Triple Helix, Network Theory

Export-oriented enterprises in transitional economies operate within environments that are often characterised by limited infrastructure, institutional fluidity, and fragmented innovation ecosystems [1]. These conditions create a paradox: while firms must compete in increasingly complex global value chains, they often lack the capabilities to innovate beyond process optimisation.

Uzbekistan represents a compelling case. Despite structural reforms and digitisation initiatives such as the "Digital Uzbekistan 2030" programme, EOE's in key sectors such as textiles, logistics, and agro-processing still face low levels of systemic integration and knowledge transfer[1][2].

To explore the strategic dynamics shaping innovation in transitional supply chains, this paper formulates a multi-tiered conceptual model tailored to the economic and institutional context of Uzbekistan. The framework is designed to address two core research questions: (1) Which categories of innovation capabilities are essential for export-oriented enterprises (EOEs) operating under volatile international market conditions? (2) In what ways do institutional factors in transitional economies influence the development, deployment, and scaling of such capabilities?

The study draws on three theoretical pillars: the Resource-Based View (RBV), Network Theory, and the Triple Helix model. The RBV focuses on internal resources—such as enterprise software systems, experiential know-how, and human capital—as foundations for sustained competitive advantage, particularly when these assets are embedded in organisational routines [3]. Network Theory contributes a meso-level lens, emphasising the strategic importance of inter-organisational relationships, including supplier alliances and logistics partnerships, in fostering innovation through information flow and joint problem-solving[4][5]. At the macro level, the Triple Helix model captures the dynamic interactions between government, industry, and academia that jointly shape the innovation landscape, particularly in environments marked by institutional transition and policy reform [6].

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A qualitative, multiple case study approach was employed. Data were collected through reports from multilateral organisations (ADB, OECD, UNDP), industry publications, and case materials provided by IT Park Uzbekistan. Three EOE's were selected for detailed analysis: GERMES TEKS (textile sector), TransAsia Logistics (freight and supply chain), and UzAgroExport (agro-processing). Cases were chosen based on digital tool adoption, process transformation, and measurable export outcomes. GERMES TEKS achieved over 20% reduction in export lead times after implementing ERP systems and standardising workflows, supported by public innovation funding. TransAsia Logistics reduced border delays by 18% by integrating IoT-based fleet tracking with customs dashboards, enhancing both visibility and compliance [7]. UzAgroExport expanded to two new international markets after aligning its traceability protocols with national phytosanitary certification platforms[8].

A five-level digital maturity model, adapted from McKinsey, was used to benchmark EOE's readiness [9]:

- Manual operations;
- Basic digital tools (e.g., Excel, local e-docs);
- Modular integration (e.g., CRM, partial ERP);
- End-to-end digital integration (ERP + SCM + dashboards);
- Predictive innovation (AI, simulation tools).

According to IT Park and UNDP, over 60% of EOE's in Uzbekistan remain at Levels 2–3. Barriers include low digital literacy, lack of skilled personnel, and weak coordination between enterprise needs and government support mechanisms [10].

The results affirm that innovation emerges through a layered interaction of internal capabilities, external collaboration, and institutional alignment. RBV provides explanatory power for how digital tools translate into competitive advantage when embedded in routines [11]. The role of inter-organisational agility—demonstrated by TransAsia—supports Network Theory's assertion that trust and information flow enhance adaptive performance [6]. The Triple Helix model underscores that public innovation ecosystems (like IT Park) can provide the foundation for scaling innovations—though in practice, such alignment remains partial [12].

Uzbekistan's progress in developing a digital economy is promising but uneven. While IT services exports reached \$280 million in 2023, most EOE's outside of IT operate below full integration¹. A coordinated focus on blended finance, workforce development, and interagency cooperation is required to close this maturity gap.

This study presents a comprehensive framework designed to assess and enhance innovation capabilities specifically in Emerging Organizational Environments (EOEs), with a particular focus on transitional economies. By combining elements from the Resource-Based View (RBV), Network Theory, and the Triple Helix model, the framework provides valuable diagnostic tools and strategic insights that can significantly benefit stakeholders.

For businesses, the introduction of a digital maturity scale serves as a practical and actionable tool that allows firms to benchmark their current capabilities and prioritize future investments effectively. This thoughtful approach enables organizations to identify areas for improvement and to allocate resources in a manner that drives innovation forward.

For policymakers, the study underscores the necessity for synchronized actions, emphasizing that infrastructure development must not operate in isolation. Rather, it should be accompanied by robust

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capacity-building initiatives and tailored policy incentives that collectively foster an environment conducive to innovation and growth.

Looking ahead, the findings suggest avenues for future research that could involve applying this comprehensive framework to other economies or conducting firm-level surveys and longitudinal analyses. Such investigations could further illuminate the dynamics of innovation across different contexts, enriching our understanding of how to cultivate a thriving ecosystem for innovation in diverse settings.

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УСОВЕРШЕНСТВОВАНИЕ МЕХАНИЗМА РАБОЧИХ ОРГАНОВ ОЧИСТКИ
ВОЛОКНА

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Аннотация. В настоящий этап развития хлопка перерабатывающей промышленности важными являются увеличение объема выпуска и повышению качества получаемого хлопка-волокна. Для осуществления этих задач необходимо: проведение повсеместной реконструкции, существующих и строительство новых хлопка перерабатывающих заводов и их оснащение новыми современным оборудованием, отвечающими мировым стандартам, совершенствование технологических процессов переработки хлопка сырца, улучшать качество научных исследований и повсеместно внедрять их результаты в промышленность.

Ключевые слова: волокноочиститель, колосник, модуль очистки, очистительный эффект.

Основным критерием при переработке хлопка-сырца является качество получаемого волокна. Одним из ответственных этапов регламентированного технологического процесса переработки хлопка-сырца является очистка волокна от сорных примесей. Несмотря на то, что до процесса джин, хлопок-сырец неоднократно очищается от сорных примесей, и сам процесс джин сопровождается некоторой дополнительной очисткой, в получаемом хлопке-волокне все же остаются некоторая часть мелких сорных примесей и пороков, что делает процесс очистки волокна обязательным [1].

Существующие очистители волокна не обеспечивают получение хлопка-волокна достаточно высокого качества; основными причинами которого; являются: многократность процесса очистки волокна; несовершенство конструкций рабочих органов и механизмов; недостаточно обоснованный выбор из рабочих параметров и режимов движения; жесткие условия протекания технологического процесса очистки.

С целью устранения указанных недостатков возникает необходимость выявления причин низкой эффективности воздействия рабочих органов на обрабатываемое волокно и разработки новых конструкций рабочих органов очистителей волокна, обладающих свойством эффективного воздействия на хлопок-волокно с одновременным сохранением его природных свойств, способствующих повышению качества выпускаемого волокна [2].

Исследования динамики движения рабочих органов и ее влияние на технологический процесс очистки волокна проводились недостаточно полно.

В связи с этим, разработка новых конструкций рабочих органов очистителей волокна, рациональный выбор параметров и режимов их движения является актуальной народнохозяйственной задачей, решению которой посвящена диссертационная работа.

Общая методика исследований. Задачи поставленные в настоящей работе решались теоретическими и экспериментальными методами исследований.

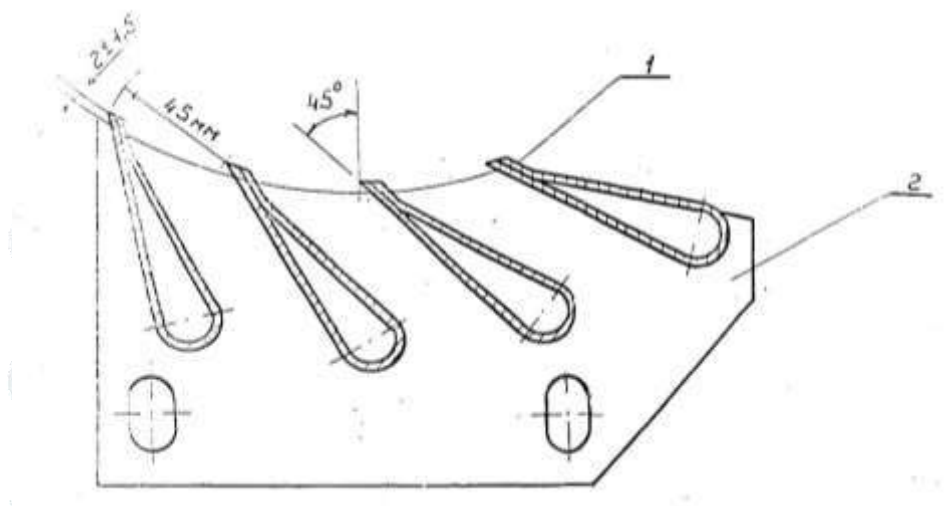
Динамический анализ машинного агрегата волокноочистителя проводился методами общей теории механизмов и машин. Решение задачи динамики проводилось аналитически с использованием известных методов решения дифференциальных уравнений [3].

Экспериментальные исследования силовой загрузки механизма привода пильного барабана и колосниковых решеток очистителя волокна проводились методом тензометрирования, а скоростных параметров магнитоэлектрическими датчиками.

По результатам проведенных исследований разработаны новая конструкция пильных барабанов и колосниковой решетки очистителей волокна [4].

В первой главе работы приводится обзор работ по исследованию очистителей хлопка-волокна.

Работая над совершенствованием волокноочистителей, исследователи в работах рекомендовали применение пустотелых штампованных колосников каплевидной формы [5]. Такая колосниковая решетка была применена в модернизированном волокноочистителе ЗОВП-М (рис.1).



Рис– 2 Колосниковая решетка волокно очистителя
1 – колосник; 2 – обойма

Простотой конструкции отличается разработанная нами колосниковая решетка очистителя волокнистого материала, приведенная на (рис- 2)

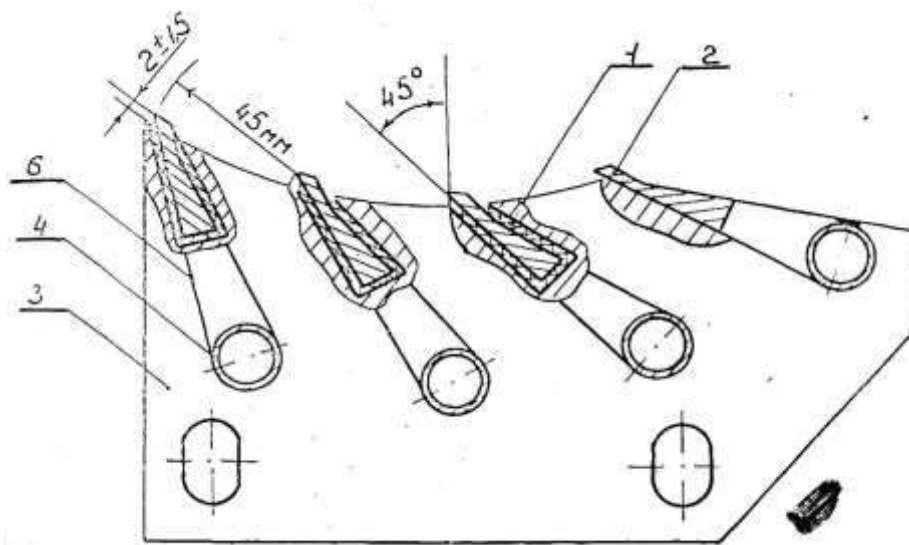
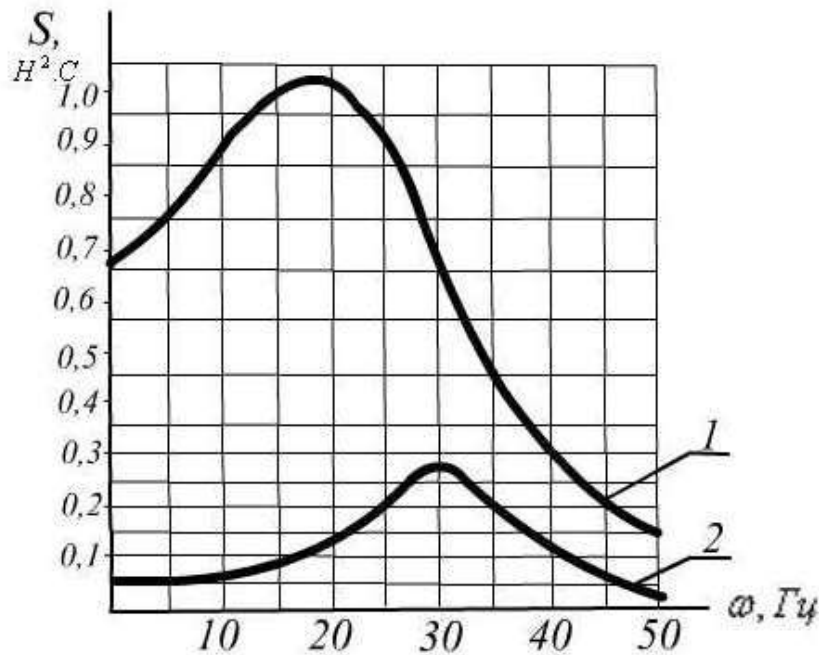


Рис – 1. Колосниковая решетка очистителя волокнистого материала
1 – упругий элемент; 2 – колосник; 3 – боковина; 4 – опорная труба;
5 – обтекатели

Колосниковая решетка состоит из колосников трапецидального сечения 2, установленных в боковине 3 посредством упругих элементов (опор) 1. С целью сохранения технологического зазора между кромкой колосников и рабочим барабаном в допустимых пределах и создания благоприятных условий в околоколосниковой зоне, предотвращающих налипание выделенных сорных примесей к рабочей поверхности, колосники соединены с помощью обтекателей 5 к опорным полым стержням 4. В процессе очистки волокнистой материал протрещивается по колосниковой решетке, в результате чего сорные примеси выбиваются из прядок волокна. Установка колосников 2 на упругих опорах 1, обуславливает их динамический (колебательный) режим движения в процессе очистки. При этом на свободные колебания прядок волокна накладываются вынужденные колебания со стороны колосников, которые возбуждаются от самого же перерабатываемого материала [7]. Соответствующим подбором параметров упругой опоры (материала и геометрических размеров) можно установить такие режимы колебаний колосников при которых возможны резонансные или околорезонансные колебания сорных включений, что приведет к увеличению очистительного эффекта очистителя волокна [8].



Рис– 3. Спектральные плотности случайных функций

Изгибающих сил в крайних зонах сечений I-серийного колосника; 2-колосника.С упругими элементами

Общие выводы. На основе анализа существующих конструкций колосниковых решеток очистителей волокна предложена их функциональная классификация и разработана новая конструкция колосниковых решеток с упругими элементами, более активно воздействующие на обрабатываемое волокна.

Разработана методика теоретического расчета режимов движения колосников с упругими элементами при воздействии крат ссовременных; периодических импульсов от хлопка-волокна, позволяющая определяет закон его движения, а также проводить качественную характеристик упруги элементов изменения закона движения в зависимости от геометрических и жесткостных характеристик упругих элементов, пила и частоты приложения импульсов.

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ON CERTAIN ISSUES OF DEVELOPING DIGITAL TECHNOLOGIES IN UZBEKISTAN.

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Abstract: This article explores the current state, challenges, and future prospects of developing digital technologies in Uzbekistan. It emphasizes the importance of digital transformation as a key factor for economic growth, education, healthcare, and governance. The paper examines national initiatives, particularly the “Digital Uzbekistan – 2030” program, highlighting both the achievements and obstacles in the process of digitalization. Special attention is given to issues of digital literacy, infrastructure gaps, and cybersecurity. The study concludes that despite existing challenges, Uzbekistan has significant opportunities to become a regional leader in digital technologies through innovation, youth engagement, and international cooperation.

Keywords: Uzbekistan; digital technologies; digital transformation; e-government; innovation; digital literacy; cybersecurity; Digital Uzbekistan – 2030

In the modern world, digital technologies have become one of the main forces driving global development. They influence not only communication and information exchange but also transform economies, education systems, healthcare, and even government structures. The rapid growth of the digital sphere has created new opportunities for progress, while at the same time presenting nations with significant challenges. Those countries that manage to implement digital transformation effectively are more likely to achieve sustainable economic growth and social stability. For Uzbekistan, digital technologies represent both a necessity and a strategic opportunity. The country is undergoing a period of modernization in which the development of digital infrastructure, electronic government services, and innovative solutions is viewed as a national priority. This process is not only about introducing computers or the internet into daily life but about fundamentally reshaping how society functions and how the state interacts with its citizens. The government of Uzbekistan has already launched ambitious programs such as “Digital Uzbekistan – 2030”, which aim to build a knowledge-based economy, improve the quality of public services, and enhance global competitiveness. At the same time, the country is facing real challenges: disparities between urban and rural areas in access to technology, insufficient digital literacy among parts of the population, and the growing need for cybersecurity. Therefore, discussing the development of digital technologies in Uzbekistan is highly relevant. It allows us to evaluate not only the progress already made but also the obstacles that must be addressed. Moreover, it highlights the potential of digitalization to open new prospects for economic growth, social equality, and global integration. While the government has initiated digital reforms, the private sector and start-ups have not yet reached their full potential. In most advanced economies, innovative companies drive technological breakthroughs, but in Uzbekistan their role is still limited. Causes:

- Limited access to venture capital and investment funds
- Bureaucratic barriers to starting and scaling new businesses
- Lack of mentorship and incubation programs for young entrepreneurs

Consequences: Dependence on state-driven projects rather than private innovation. Slow development of local IT products and services. Brain drain, as talented youth move abroad for

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better opportunities. Possible Solutions: Creating favorable conditions for start-ups through tax incentives and simplified registration. Developing venture capital markets and supporting IT incubators, encouraging cooperation between universities, businesses, and government institutions. Finally, digital transformation is not only a technological issue but also a cultural and institutional one. Resistance to change, corruption risks, and a lack of transparency can undermine even the most advanced technological projects. Digital transformation in Uzbekistan should not be seen merely as the introduction of new technologies; it represents a broader cultural and socio-economic shift that can redefine the country's development trajectory. Looking at the future, several opportunities appear especially promising. Uzbekistan's young generation is not only a passive consumer of digital products but increasingly a producer of knowledge and technology. Thousands of students are engaging in robotics, programming, and start-up ecosystems. Unlike previous generations, today's youth think globally: they follow global IT trends, participate in international online courses, and collaborate with peers across borders. If this intellectual energy is properly directed, Uzbekistan could cultivate a homegrown digital elite capable of competing with major global tech players. The challenge is to create conditions where young innovators can remain in the country and channel their creativity into national development rather than seeking opportunities abroad. The adoption of artificial intelligence, blockchain, and fintech is not a luxury for Uzbekistan, but a necessity. For instance: AI can revolutionize agriculture, which employs a significant share of the population, through smart irrigation and crop management systems. Blockchain could solve long-standing problems of transparency in land ownership and public procurement. Fintech is vital for financial inclusion, enabling rural citizens to access credit, savings, and insurance without relying on physical banks. Smart city projects in Tashkent and Samarkand show that technological modernization can also improve the urban experience, reducing traffic congestion, pollution, and bureaucratic inefficiency. One of the most transformative opportunities lies in creating a genuine digital state. If e-government platforms evolve beyond simple online services and become instruments of accountability, they can change the relationship between the state and its citizens. Digital governance has the power to reduce corruption, simplify communication, and foster trust. This, however, requires more than technical upgrades: it calls for a cultural shift within state institutions, where transparency, efficiency, and openness become core values. Uzbekistan has the chance to become a digital crossroads of Central Asia. Its active role in regional cooperation, combined with investments in fiber-optic networks and digital logistics, can make the country a hub for regional trade, education, and security. By inviting global IT companies and establishing joint ventures, Uzbekistan can integrate global expertise while retaining national sovereignty over critical technologies. Prospects alone do not guarantee success. The real opportunity for Uzbekistan lies in turning these scattered initiatives into a coherent strategic vision: Investing in people as much as in infrastructure. Supporting local innovation rather than importing ready-made solutions. Balancing rapid digitalization with ethical standards and inclusiveness. The digital transformation of Uzbekistan is not only a technological reform but also a fundamental social and economic project that will determine the country's place in the global knowledge economy. Significant progress has already been achieved through the "Digital Uzbekistan – 2030" program, the expansion of infrastructure, and the growing use of digital technologies in education, healthcare, and business. However, numerous challenges — such as unequal access to technology, insufficient digital literacy, cybersecurity risks, and weak entrepreneurial ecosystems — continue to limit the full realization of this potential. At the same time, Uzbekistan possesses unique opportunities that can turn these

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challenges into strengths. A young and dynamic population, the rapid development of fintech, AI, and smart city solutions, as well as the expansion of transparent e-government systems, create the basis for long-term progress. The key to success lies in combining government initiatives with private sector innovation, strengthening international cooperation, and fostering a culture of digital literacy and trust. In short, Uzbekistan's digital future will depend not only on infrastructure but also on people — their knowledge, creativity, and ability to adapt. If these resources are mobilized effectively, the country can emerge as a regional leader in digital development and ensure that digital transformation becomes a driver of sustainable growth and social well-being.

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UMUMIY O'RTA TA'LIM MAKTABLARIDA EKOLOGIK TARBIYANI
AMALGA OSHIRISHDA PEDAGOGIK YONDOSHUV

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68-maktabda geografiya va tabiiy fan o'qituvchi*

Annotatsiya. Ushbu ilmiy maqolada umumiy o'rta ta'lim maktablarida ekologik tarbiyani rivojlantirish texnologiyalari tahlil qilinagan. Ekologik tarbiyani amalga oshirishda qo'llaniladigan pedagogik yondoshuvlar, innovatsion o'qitish metodlari, ekologik tadbirlar va amaliy faoliyatlar orqali ekologik bilimlarni o'rgatish jarayonini o'rganilgan. Shuningdek, maktablarda ekologik faoliyatni kengaytirish, o'quvchilarni ekologik ongni shakllantirishda ekologik tarbiya sohasidagi yangi pedagogik yondoshuvlar va metodlarni qo'llash bo'yicha taklif va tavsiyalar berilgan.

Kalit so'zlar: Ekologik tarbiya, pedagogik yondoshuvlar, ekologik bilimlar, ekologik muammolar, ekologik faoliyatlar, ekologik ong, maktabda ekologik tadbirlar.

Аннотация: В данной научной статье проанализированы технологии развития экологического воспитания в общеобразовательных школах. Изучен процесс обучения экологическим знаниям посредством педагогических подходов, инновационных методов обучения, экологической деятельности и практической деятельности, применяемых при осуществлении экологического воспитания. Также даны предложения и рекомендации по расширению экологической деятельности в школах, применению новых педагогических подходов и методов в области экологического воспитания в формировании экологического сознания учащихся.

Ключевые слова: Экологическое воспитание, педагогические подходы, экологические знания, экологические проблемы, экологическая деятельность, экологическое сознание, экологическая деятельность в школе.

Abstract: This scientific article analyzes technologies for the development of environmental education in general secondary schools. The process of teaching environmental knowledge through pedagogical approaches used in the implementation of environmental education, innovative teaching methods, environmental activities and practical activities has been studied. Proposals and recommendations have also been made to expand environmental activities in schools, to apply new pedagogical approaches and methods in the field of environmental education in the formation of environmental awareness of students.

Keywords: Environmental education, pedagogical approaches, environmental knowledge, environmental problems, environmental activities, environmental awareness, environmental activities in schools.

Kirish. Hozirgi kunda ekologiya va atrof-muhitni muhofaza qilish sohasidagi bilimlar yosh avlodni shakllantirishda muhim o'rin tutadi. Ekologik tarbiya o'quvchilarni atrof-muhitga nisbatan mas'uliyatli munosabatni shakllantirishga, ularni ekologik muammolarni hal qilishga tayyorlashga qaratilgan.

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Bugungi kunda dunyoda atrof-muhitga oqilona munosabatda bo'lish, ekologumanitar ta'lim paradigmasini tabiatga bo'lgan antropogen ta'sirlarning oldini olish negizida yoshlarda ekologik mas'uliyat hissini shakllantirish muhim ahamiyat kasb etib, toza texnologiyalarni tabiatni muhofaza etish tadbirlariga joriy qilish implementatsiyasi bilan baholanmoqda. XXI asrning dolzarb muammosi ekologiya va iqlim o'zgarishini o'rganish borasida dunyoning barcha davlatlarida BMT bosh assemblyasining "Barqaror rivojlanish" sammitida qabul qilingan rezolyutsiyasiga muvofiq 2030-yilgacha bo'lgan davrda global barqaror muhitni rivojlantirish ko'lamini tobora kengaytirib borish bo'yicha qator chora tadbirlar olib borilmoqda.

Asosiy qism. Umumta'lim maktablarida ekologik tarbiyani rivojlantirish hozirgi kunda juda dolzarb masala hisoblanadi. Sababi har bir o'quvchining dunyoqarashi, fikrlashi, ekologik tarbiyasi va ekologik madaniyati tabiat va inson munosabatlarida, o'zi yashab turgan joy tabiatini asrab avaylash va tabiiy resurslardan ratsional foydalanishida ifodalanadi. Yon atrofimizda sodir bo'layotgan tabiiy jarayonlardan talafot ko'rishning takrorlanib turishi, yong'inlar, tabiiy ofatlardan, iqlimning keskin isishi va sovib ketishidan zarar ko'rishlar, shamol, suv kabi tabiiy ofatlardan zarar ko'rish kabi muammolarning ohirgi vaqtlarda tez-tez qulog'imizga chalinishi, bu atrof muhitdan bizga kelayotgan ogohlantirishdir.

Tabiiy muhitni o'rganish, inson – tabiat munosabatlarini keskinlashuviga yo'l qo'ymaslikka erishish, tabiiy resurslardan oqilona foydalanish va buni kundalik odatlarga aylantirish, yosh avlod tarbiyasida mana shu mexanizmni shakllantirish hozirgi davr talabi.

Mamlakatimizda atrof-muhitni muhofaza qilish, tabiiy resurslardan oqilona foydalanish, sanitariya va ekologik holatni yaxshilashni ta'minlash sohasida izchil ishlar olib borilmoqda. So'nggi tadqiqotlarga ko'ra hozirgi kunda ota-onalar farzandiga kam vaqt ajratishi, texnika va texnologiya rivojlanishi bilan turli xil mobil vositalar va gadjetlardan bolalar orasida foydalanish holatining yuqoriligi, ularning ham foydali, ham zararli tomonlarini inobatga olish lozimligini hisobga olsak, ekologik ta'lim-tarbiyani takomillashtirishda dasturiy ta'minot vositalarining o'rnini va ulardan to'g'ri foydalanish mexanizmlarini yaratish hozirgi kunda dolzarb masalalaridan biriga aylanib ulgurgan.

Ekologik tarbiya tashqi muhit va vujud orasidagi uzviy bog'liqlik mavjudligini his ettirish, tabiiy va ijtimoiy muhitga nisbatan oqilona munosabatda bo'lish ko'nikmalarini hosil qildirishda namoyon bo'ladi. Maktab o'quvchilarida ekologik tarbiya ko'nikmalarini rivojlantirishda ularga to'g'ri tarbiya berish, ekologik tushuncha va atamalarni o'rgatish, tabiatni muhofaza qilishni odatga aylantirish, hayot faoliyatlari davomida tabiatga nisbatan adekvat munosabatda bo'lish va bo'layotgan voqea–

hodisalarni to'g'ri talqin qilishga o'rgatish hozirgi kunda pedagogik soxa vakillari oldida turgan asosiy masalalardan biridir.

Ekologik tarbiya o'quvchilarda atrof-muhitni tushunish, tabiiy resurslardan oqilona foydalanish va ekologik mas'uliyatni shakllantirishga qaratilgan muhim jarayon hisoblanadi. Buning uchun pedagogik yondoshuvlar muhim rol o'ynaydi. Pedagogik yondoshuvlarning to'g'ri tanlanishi ekologik tarbiyaning samaradorligini oshiradi. Quyidagi pedagogik yondoshuvlar ekologik tarbiya jarayonini samarali amalga oshirishda yordam beradi:

Gumanistik yondoshuv - o'quvchilarni faqat bilimlar bilan emas, balki inson sifatida rivojlantirishga ham e'tibor qaratadi. Bu yondoshuvda ekologik tarbiya o'quvchilarning shaxsiy tajribalari, hissiy va axloqiy qadriyatlari asosida shakllantiriladi. Ularning atrof-muhitga bo'lgan munosabatini o'zgartirishda asosiy e'tibor individual va guruhviy muhokamalarga, ekologik masalalar yuzasidan fikr almashish va ijtimoiy faoliyatga qaratiladi.

Faol yondoshuv (aktiv o'qitish metodlari) - ekologik tarbiyani o'quvchilarni faollikka undashga asoslangan. Bu yondoshuvda o'quvchilar o'rganayotgan materialga faol ishtirok etadilar, muammolarni hal qilishda mustaqil fikrlashga harakat qiladilar. Masalan, ekologik loyihalar, tabiatga chiqishlar, amaliy tadbirlar (masalan, toza hududlar yaratish, daraxt ekish kabi) orqali o'quvchilar ekologik masalalarni amalda hal qilishadi. Faol yondoshuv o'quvchilarni ekotizimga nisbatan mas'uliyatli munosabatda bo'lishga o'rgatadi.

Integratsiyalashgan yondoshuv - ekologik tarbiyaga boshqa fanlar bilan hamkorlikda yondashishni anglatadi. Ekologiya fanining o'quv dasturi boshqa fanni o'rganish bilan birlashtiriladi (masalan, biologiya, kimyo, geografiya, iqtisodiyot, huquqshunoslik). Bunday yondoshuv ekologik muammolarni ko'proq anglashni ta'minlaydi, shuningdek, o'quvchilarda tabiat va jamiyat o'rtasidagi bog'liqlikni tushunishga yordam beradi. Shu tarzda, ekologik muammolarni o'rgatish boshqa fanlar bilan birgalikda ko'rib chiqiladi.

Tajriba-yordamli yondoshuv - o'quvchilar ko'proq amaliy tajriba orqali o'rganadilar. Ekologik tarbiyani samarali amalga oshirish uchun o'quvchilarga tabiat bilan bevosita aloqada bo'lish imkoniyati beriladi. Masalan, ekoturizm, bog'dorchilik, tabiatni kuzatish, ekologik eksperimentlar va ilmiy tadqiqotlar orqali o'quvchilar ekologik ma'lumotlarni amaliyotda qo'llashadi.

Problemali o'qitish yondoshuvi - o'quvchilarni tabiat va ekologiya masalalarida fikr yuritishga undaydi. O'qituvchi ekologik muammo yoki vaziyatni taqdim etadi, va o'quvchilar bu masalani hal qilish uchun guruhlar yoki individual ravishda izlanish olib boradilar. Masalan, "Qanday qilib plastik chiqindilardan foydalanishni kamaytirish mumkin?" yoki "Shaharlar ekologik toza qilish uchun nimalarni

o'zgartirishi kerak?" kabi savollar orqali o'quvchilarning fikrlashini rivojlantirish mumkin.

Darsdan tashqari faoliyatlar orqali pedagogik yondoshuv - maktablarda ekologik to'garaklar, klub va musobaqalar tashkil etish ekologik masalalarni o'quvchilarga yanada qiziqarli va samarasiz tarzda yetkazadi. Tabiatni o'rganish, ekologik kunlar, chiqindilarni to'g'ri joylashtirish bo'yicha aksiyalar kabi tadbirlar o'quvchilarni o'qishdan tashqari faoliyatda ham ishtirok etishga undaydi.

Kreativ pedagogik metodlar - ekologik tarbiya samaradorligini oshirish uchun o'qituvchilar yangi kreativ va innovatsion metodlardan foydalanishlari kerak. Masalan, ekologik masalalarni video, multimediya materiallari, vizual metodlar (diagrammalar, kartalar) yordamida tushuntirish. Shu bilan birga, zamonaviy texnologiyalardan (masalan, virtual ekskursiyalar, onlayn tadqiqotlar, ekologik dasturlar) foydalanish o'quvchilarga ekologik ma'lumotlarni yanada qiziqarli va tushunarli tarzda taqdim etadi.

Refleksiv yondoshuv - o'quvchilar ekologik mavzularda fikrlar almashib, o'z tajribalari, amaliyotlari va o'rganilgan bilimlarni baholashlari kerak. Bu yondoshuv o'quvchilarda mas'uliyatni shakllantiradi va ularni o'zgarishlar qilishga tayyorlaydi. Ekologik tarbiya faqatgina pedagogik jarayonda emas, balki har bir bola yashab turgan muhitda, oilada, mahalladagi jarayonlar, joydagi insonlarning bir-biri bilan shuningdek, jonli va jonsiz tabiat bilan bo'lgan munosabatlarida ham aks etadi. Tarbiya mexanizmlarini takomillashtirishda tushuntirish, kuzatish, hikoya, namuna ko'rsatish, suhbat, munozara metodlari samarali hisoblanadi.

Ekologik tarbiyani amalga oshirishda pedagogik yondoshuvlar, asosan, o'quvchilarni ekologik muammolarga nisbatan mas'uliyatli, ijtimoiy faollikka ega bo'lgan shaxslar sifatida tarbiyalashga qaratilgan. Ular ekologik bilimlarni amaliyotda qo'llash, atrof-muhitni saqlashga qaratilgan texnologiyalarni o'rganish va tabiatni sevishga yo'naltirilgan faoliyatlarni tashkil etish orqali amalga oshiriladi. Pedagogik yondoshuvlar ekologik tarbiyaning samarali bo'lishini ta'minlaydi va o'quvchilarni kelajakda ekologik mas'uliyatni tushunadigan avlod sifatida tarbiyalaydi.

O'quvchilarda ekologik madaniyatni shakllantirish. Bu, eng avvalo, oiladan boshlanmog'i lozim. O'quvchilardagi ekologik tarbiyani shakllantirishda quyidagi jihatlar alohida e'tibor berilmog'i lozim:

- tabiatni ifloslantirish kishilarga kasalliklarini olib keluvchi manbaa bo'lishligiga;
- inson va tabiat munosabatlaridagi uyg'unlikka, atrof-muhitni muhofaza qilishning mazmun mohiyatini bilishlikka;

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- raqamli texnologiyalardan foydalanish hayotiy ehtiyojga aylangani va ulardan to'g'ri maqsadlarda foydalanish haqidagi bilim, ko'nikma va malakalarni shakllantirishga;
- dasturiy ta'minot vositalaridan ta'lim-tarbiya maqsadida foydalanishga keng ahamiyat qaratish orqali ekologik tarbiyalanganlik darajasini oshirishga;
- o'quvchilar ongida ekologik tasavvurlarni shakllantirish. Jamiyat va tabiat munosabatlari, ta'sirini anglashga; (dasturiy ta'minot mazmuni sabab-oqibat omillarini tahlil qilishda yordam beradi)
- daraxtlar, o'simliklar olamiga va hayvonlarga nisbatan murosasizlik bilan munosabatda bo'lish oqibatlarini o'rgatish, ekologik monitoring – kuzatish olib borish orqali ekologik ilmiy-tadqiqotchilikka undash. (dasturiy ta'minot orqali xabardorlikni oshirish, ma'lumotlarni olish, baham ko'rish va h.k)
- zavod va fabrikalardan chiqayotgan zararli chiqindilarning insoniyat rivojlanishiga ta'sirini va uning oqibatlarini o'quvchilar ongiga singdirishning axborot-komunikativ texnologiyalarini yaratishga erishish;
- barcha fanlarni o'qitishda ekologik tarbiyani olib borish: (ekologik tarbiya mazmunini oshirish)
- sinf va maktabdan tashqari mashg'ulotlarda va ekskursiya hamda eko sayohatlarda ekologik tarbiyani olib borish:(individual ta'lim muhitini yaratish)
- fanlarni o'qitishda o'quvchilarga ekologik muammolarni o'rgatish orqali ularda tabiatni muhofaza qilish, uning boyliklaridan oqilona foydalanishga oid beriladigan bilim, ko'nikma va malakalarni shakllantirish.

Xulosa. Ekologik tarbiyani rivojlantirish texnologiyasini yanada samarali qilish uchun maktablarda ekologik to'garaklar, ma'rifatli tadbirlar, ekologik kunlar va boshqa faoliyatlarni tashkil etish, o'quvchilarni ekologik masalalarda ishtirok etishga, mas'uliyatli munosabatda bo'lishga undash zarur. Shuningdek, ekologik yondoshuvni jamiyat darajasida keng targ'ib qilish muhimdir.

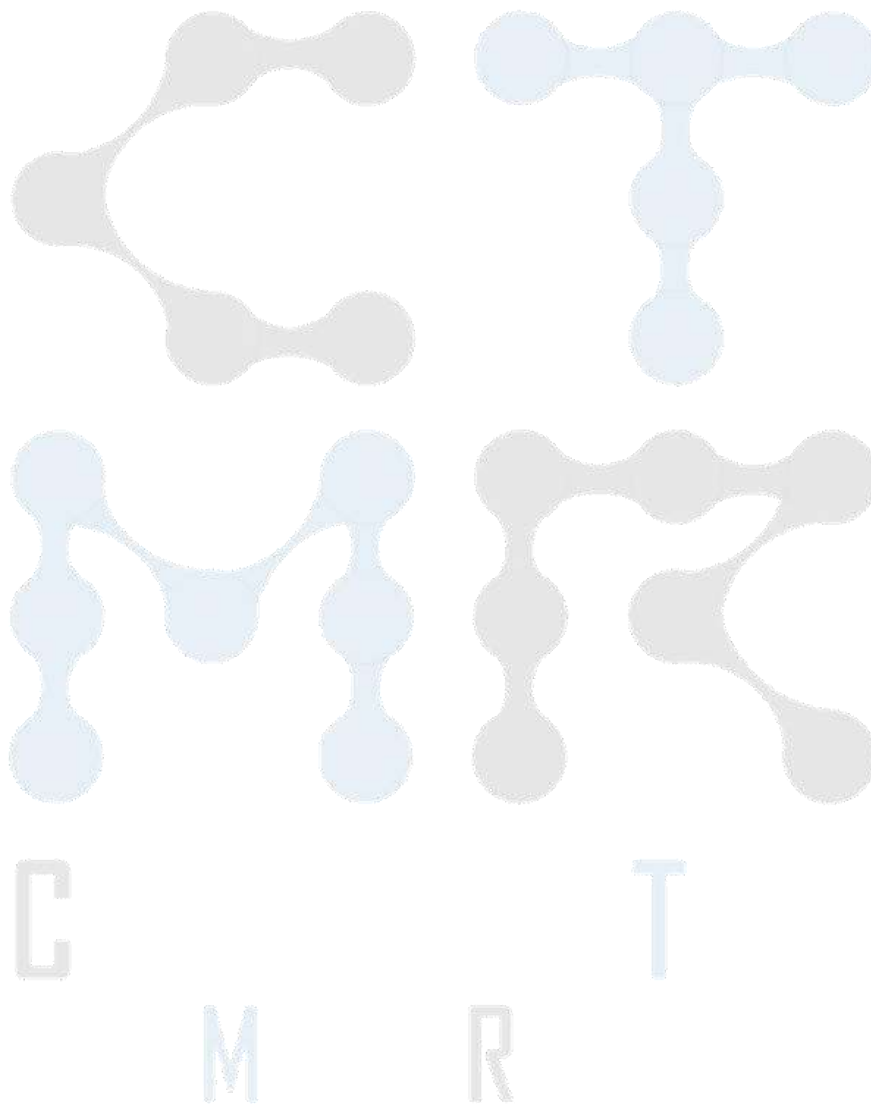
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HOW TECHNOLOGY IS TRANSFORMING THE INDUSTRY OF TOURISM

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Annotation: One of the fastest growing sectors is certainly tourism and hospitality industry. This article is going to outline a brief history of tourism, the integration of smart technologies like artificial intelligence, virtual reality, digital booking platforms etc. into the tourism sector and how it is affecting visitors' overall experience and their choice of tourist destination, potential opportunities and challenges that technology can create, with data security and over-reliance being the main ones. Special attention is given to South Korea as an example, a country that was able to boost its tourism further with the integration of so-called technologies. In conclusion, this article would give certain recommendations to and tourism organizations on adopting technology in a way that can benefit both tourists and nationals.

Key words: tourism and hospitality, smart technologies, artificial intelligence, South Korea, opportunities, challenges, tourist attractions, hotels, visitors, websites, virtual reality, tourist organizations

1)Online Booking

One of the biggest changes in tourism is the rise of online booking platforms. Websites such as Booking.com, Agoda, Airbnb, and Expedia have replaced traditional travel agencies for many tourists. These platforms allow travelers to compare prices, read reviews, and make reservations in just a few minutes. Mobile applications make this process even easier enabling users to book flights or hotels anytime and anywhere.

Online booking brings several advantages:

Convenience: Tourists can plan trips without leaving home. This is especially convenient for people with heavy workloads who might spend hours trying to book flights in person.

Transparency: Travelers can compare prices and read reviews before making a decision. By this way, they can not only save their time but also their money.

Global access: A small hotel in a particular city or a country can now receive international guests through online platforms. This certainly impacts the competitiveness among hotels, resulting in lower prices and better customer service.

However, there are also challenges that one should bear in mind. Hotels usually pay commissions to booking websites, which can reduce their profits. Moreover, tourists without internet access or digital literacy may struggle to use these services. This is especially true for elderlies or for people with certain disabilities.

2) Virtual Reality (VR) and Augmented Reality (AR)

With VR, tourists can explore a destination before visiting. This is certainly one of the most amazing pieces of gadget that technology has offered to tourism industry. Moreover, museums and cultural sites use AR to provide interactive guides. This gives visitors a richer and more enjoyable experience helping them to choose the most suitable tourist destinations for themselves and their families as well.

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With all these amazing features this technology is offering, there are still some challenges it can cause. Firstly, the cost of supporting equipment and headsets for VR is very high. This is the main reason why the majority of people do not have access to it or even are unaware of what VR actually is. The second problem is health concerns of using VR. Although if used moderately VR does not threaten our health seriously, it still can cause headaches, motion sickness and even eye strain.

Smart Hotels

Although it is not common yet, but many hotels in developed nations use mobile check-in, digital room keys, and AI-powered assistants. These technologies certainly save time and help to provide better service for tourists. Apart from that, using these techs helps hotels attract tourists around the world and can also cut monthly expenses hotels might spend on their employees.

However, if all hotels use the same system as this in the future, this certainly results in the increase of unemployment rate. Employees being replaced by robots or Ai-powered machines is much more beneficial for hotels itself rather than ordinary people. Data security is another worry people have for such machines. These machines usually require some personal information from tourists to help better adapt to their new environment. They might for tourists' preferences in terms eating, sleeping and so on. Although, the purpose of those machines is helping customers, they also collect vast amount of personal data at the same time.

South Korea – A Leader in Smart Tourism

South Korea is widely recognized as one of the most successful examples of integrating technology into tourism and hospitality. The country has a strong digital infrastructure, a population that is highly skilled in using technology, and a government that actively supports smart tourism projects. These factors together have helped South Korea attract millions of international visitors every year.

1. Digital Infrastructure and Smart Cities

South Korea has one of the fastest internet networks in the world. Free Wi-Fi is available in most public areas, including airports, subway stations, buses, and even parks. This makes travel easier for international tourists who may not have local mobile data. Cities like Seoul and Busan are developing into “smart cities,” where transport, security, and tourism information are connected digitally.

2. Transportation and Travel Apps

Tourists in South Korea benefit from advanced transport technologies. Mobile applications provide real-time information about subway systems, buses, and taxis. Apps like **KakaoMap** and **Naver Map** are widely used for navigation, while **KakaoTaxi** allows tourists to easily book rides. The T-money card, a rechargeable transport card, can be used on almost all forms of public transport, making travel convenient and cash-free.

3. Smart Hospitality Services

Hotels in South Korea are adopting smart solutions to improve customer satisfaction. Digital check-in and check-out services save time for guests. Some hotels use robots to deliver items such as towels or bottled water directly to rooms. AI-powered chatbots are also available for answering tourist questions in multiple languages.

4. AR and VR in Cultural Tourism

South Korea is using augmented reality (AR) and virtual reality (VR) to make cultural experiences more interactive. At **Gyeongbokgung Palace** in Seoul, tourists can use AR applications to see how the palace looked centuries ago. Museums offer VR headsets that allow visitors to “enter” historical

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scenes or view 3D reconstructions of ancient artifacts. This blend of tradition and technology makes cultural heritage sites more engaging, especially for younger visitors.

Lessons from South Korea

South Korea demonstrates that tourism can grow rapidly when combined with technology. Its strong digital infrastructure, smart hospitality services, and innovative cultural experiences have made it a leading destination in Asia. For developing countries which invest on tourism regularly, South Korea provides an excellent model of how technology can modernize the tourism sector, attract more international visitors, and create a balance between tradition and innovation.

CONCLUSION:

Technology has transformed the global tourism and hospitality industry. From online booking platforms and digital marketing to smart hotels and virtual reality, every stage of the tourist journey is now influenced by digital tools. These technologies increase convenience, improve efficiency, and allow destinations to reach a global audience more effectively.

Suggestions

In order to further strengthen the impact of technology in the tourism and hospitality industry, several steps should be considered. First, it is important to invest in reliable digital infrastructure so that tourists have easy access to the internet and online services wherever they travel. Developing national mobile applications that provide maps, guides, booking systems, and translation services would also make travel in the country more convenient and attractive. In addition, greater attention should be given to the use of social media platforms for promoting cultural heritage and natural sites, since modern travelers often choose their destinations based on the content they see online. Museums, historical monuments, and cultural centers could also introduce virtual and augmented reality technologies, allowing visitors to experience the past in an interactive way and making tourism more engaging for younger generations. At the same time, small and medium businesses in the tourism sector should be supported with training and resources so that they can adopt digital tools such as online booking systems and digital marketing. Finally, while integrating advanced technologies, it is necessary to preserve personal interaction and cultural authenticity, since the warmth of human hospitality remains one of the most important reasons why tourists return.

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TA'LIM TIZIMIDA INNOVATSION IQTISODIY MENEJMENTNING AHAMIYATI

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Annotatsiya. Maqolada ta'lim tizimida innovatsion iqtisodiy menejment tushunchasi, uning nazariy asoslari hamda amaliy ahamiyati tahlil qilindi. Xususan, O'zbekiston oliy ta'lim muassasalarida, ayniqsa xususiy universitetlarda raqamli transformatsiya jarayonlari, innovatsion boshqaruv modellarining joriy etilishi va iqtisodiy samaradorlikka ta'siri yoritilgan. Xorijiy tajribalar bilan solishtirish asosida mavjud muammolar va istiqbollar ko'rib chiqilib, amaliy tavsiyalar berilgan.

Kalit so'zlar: innovatsiya, iqtisodiy menejment, ta'lim tizimi, raqamli transformatsiya, xususiy, samaradorlik.

ЗНАЧЕНИЕ ИННОВАЦИОННОГО ЭКОНОМИЧЕСКОГО МЕНЕДЖМЕНТА В СИСТЕМЕ ОБРАЗОВАНИЯ

Солиева Паризод Шердил кизи

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Аннотация. В статье анализируется концепция инновационного управления экономикой в системе образования, её теоретические основы и практическое значение. В частности, освещаются процессы цифровой трансформации в высших учебных заведениях Узбекистана, особенно в частных вузах, внедрение инновационных моделей управления и их влияние на экономическую эффективность. На основе сравнения с зарубежным опытом рассматриваются существующие проблемы и перспективы, а также даются практические рекомендации.

Ключевые слова: инновации, управление экономикой, система образования, цифровая трансформация, частный сектор, эффективность.

THE IMPORTANCE OF INNOVATIVE ECONOMIC MANAGEMENT IN THE EDUCATION SYSTEM

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Abstract. The article analyzes the concept of innovative economic management in the education system, its theoretical foundations and practical significance. In particular, the processes of digital transformation in higher education institutions of Uzbekistan, especially private universities, the introduction of innovative management models and their impact on economic efficiency are highlighted. Based on comparison with foreign experience, existing problems and prospects are considered, and practical recommendations are given.

Keywords: innovation, economic management, education system, digital transformation, private, efficiency.

Kirish. So'nggi yillarda globallashuv va raqamli transformatsiya jarayonlari ta'lim tizimini tubdan o'zgartirmoqda. Ta'lim tizimi endilikda nafaqat bilim berish maydoni, balki iqtisodiy rivojlanishning eng muhim omiliga aylanmoqda. Zamonaviy universitetlarning samaradorligi ularning ta'lim sifati bilan birga iqtisodiy menejment tizimining samaradorligiga ham bog'liq bo'lib qoldi.

O'zbekiston Respublikasi Prezidentining 2019-yil 8-oktabrdagi PF-5847-son Farmonida oliy ta'lim tizimini tubdan isloh qilish, innovatsion yondashuvlarni joriy etish va xalqaro reytinglarda mamlakat

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universitetlarining mavqeini oshirish vazifalari belgilab berilgan. Shuningdek, 2020-yil 6-maydagi PQ-4708-son qarorda oliy ta'lim muassasalarida raqamli texnologiyalarni joriy etish hamda boshqaruv samaradorligini oshirish chora-tadbirlari ko'rsatib o'tilgan.

Demak, ta'lim muassasalarida resurslarni oqilona taqsimlash, raqamli texnologiyalarni keng joriy etish va innovatsion boshqaruv modellarini shakllantirish – bugungi kunda dolzarb masala bo'lib, innovatsion iqtisodiy menejmentning zarurligini ko'rsatmoqda.

Innovatsion iqtisodiy menejment tushunchasi va nazariy asoslar. Menejment nazariyasi bo'yicha yetakchi olimlardan biri P. Druker menejmentni “resurslardan samarali foydalanish san'ati” deb ta'riflagan. M. Porter esa raqobat ustunligini ta'minlashda innovatsion boshqaruvning hal qiluvchi rolini ta'kidlagan. X. Mintzbergning fikricha esa menejment bu – tashkilotdagi iqtisodiy va insoniy resurslarni bir butun tizimda muvofiqlashtirish jarayonidir. An'anaviy iqtisodiy menejment resurslar taqsimoti, byudjet rejalashtirish va moliyaviy hisobotlarga e'tibor qaratgan bo'lsa, innovatsion iqtisodiy menejment ushbu jarayonlarni yangi texnologiyalar bilan uyg'unlashtiradi.

Ta'lim tizimida innovatsion iqtisodiy menejment quyidagi yo'nalishlarda amalga oshiriladi:

Raqamli boshqaruv – elektron dekanat, elektron hujjatlar aylanishi va Learning Management System (LMS) kabi platformalar orqali jarayonlarni soddalashtirish.

Moliyaviy diversifikatsiya – davlat grantlari bilan cheklanib qolmasdan, xalqaro grantlar, homiylik mablag'lari va qo'shimcha xizmatlardan daromad topish.

Sifat menejmenti – ta'lim natijalarini xalqaro indikatorlar asosida baholash va iqtisodiy samaradorlik bilan bog'lash.

Kadrlar menejmenti – professor-o'qituvchilarning reyting asosida baholanishi, doimiy malaka oshirish kurslari.

Shunday qilib, innovatsion iqtisodiy menejment — bu universitetlarni zamonaviy bozor iqtisodiyoti sharoitida barqaror faoliyat yuritishga imkon beradigan strategik mexanizm hisoblanadi.

Xorijiy tajriba va O'zbekistondagi holat. Dunyoning rivojlangan mamlakatlarida ta'lim tizimida innovatsion boshqaruv keng joriy etilgan. AQSh: universitetlarda “University Management System” dasturlari orqali moliyaviy va akademik jarayonlar raqamlashtirilgan. Masalan, Harvard va MIT universitetlari barcha byudjet va ta'lim ko'rsatkichlarini onlayn kuzatib boradi. Yevropa Ittifoqi: Bolonya jarayoni doirasida ta'lim sifatini baholashning yagona indikatorlari ishlab chiqilgan. Germaniya va Fransiya universitetlar moliyaviy shaffoflikka alohida e'tibor qaratadi. Janubiy Koreya: “Cyber University” modeli orqali ta'lim jarayonlari butunlay raqamlashtirilgan, bu esa iqtisodiy samaradorlikni sezilarli darajada oshirgan. Finlyandiya: ta'lim muassasalarining iqtisodiy menejmenti davlat grantlari bilan qo'llab-quvvatlanadi, universitet byudjeti asosan tashqi loyihalar hisobidan shakllantiriladi. O'zbekistonga to'xtalsak, Davlat statistika qo'mitasi ma'lumotlariga ko'ra, 2016-yilda mamlakatda 77 ta oliy ta'lim muassasasi mavjud bo'lgan bo'lsa, 2024-yilda ularning soni 200 dan oshdi. Shundan qariyb 40 foizi xususiy universitetlardir. Raqamli texnologiyalarni joriy etishda xususiy OTMlar tezroq harakat qilayotgan bo'lsa-da, ularning barchasida yagona indikator va boshqaruv standartlari mavjud emas.

Muhokama: muammolar va istiqbollari. Innovatsion iqtisodiy menejment ta'lim tizimida samaradorlikni oshirishi shubhasiz, ammo amaliyotda quyidagi muammolar mavjud:

Kadrlar malakasi yetarli emas. Ko'plab universitet menejerlari an'anaviy boshqaruvga ko'nikkan bo'lib, innovatsion texnologiyalarni to'liq qo'llay olmayapti.

Me'yoriy-huquqiy baza cheklangan. Xususiy OTMlar uchun alohida iqtisodiy boshqaruv standartlari ishlab chiqilmagan.

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Sifat va samaradorlikni o'lchash indikatorlari yo'q. Bitiruvchilarning ishga joylashuvi, ta'lim sifati va iqtisodiy samaradorlik o'rtasida aniq bog'lanish mavjud emas.

Texnik infratuzilma farqi. Yirik universitetlarda raqamlashtirish keng yo'lga qo'yilgan bo'lsa-da, ayrim kichik OTMlarda bu jarayon sust bormoqda.

Istiqbol nuqtai nazaridan, O'zbekiston ta'lim tizimida innovatsion iqtisodiy menejmentni keng joriy etish uchun quyidagilar talab etiladi:

Menejer va rahbarlar uchun maxsus qayta tayyorlash kurslari.

Xususiy sektor uchun moslashtirilgan boshqaruv me'yorlarini ishlab chiqish.

Raqamli boshqaruv platformalarini barcha OTMlarda bir xil darajada joriy etish.

Ta'lim samaradorligini iqtisodiy ko'rsatkichlar bilan uyg'unlashtiruvchi milliy indikatorlarni yaratish.

Xulosa. Yuqorida olib borilgan tahlillar shuni ko'rsatadiki, innovatsion iqtisodiy menejment ta'lim tizimini barqaror rivojlantirishning, ta'lim sifatini oshirishning hamda iqtisodiy samaradorlikni ta'minlashning asosiy omillaridan biridir. Bugungi globallashtirish davrida ta'lim muassasalari nafaqat bilim berish markazi, balki ilmiy-innovatsion faoliyat va iqtisodiy rivojlanishning muhim bo'g'ini sifatida qaralmoqda. Shuning uchun ta'lim tizimini boshqarishda zamonaviy yondashuvlar, raqamli texnologiyalar va innovatsion menejment usullaridan keng foydalanish zarur.

O'zbekiston oliy ta'lim tizimida keyingi yillarda amalga oshirilayotgan islohotlar innovatsion iqtisodiy menejmentning dolzarbligini yanada oshirmoqda. Universitetlar sonining keskin ortishi, xususiy oliy ta'lim muassasalarining faoliyati va raqamli boshqaruv tizimlarining bosqichma-bosqich joriy etilishi natijasida ta'lim muassasalari oldida yangi vazifalar paydo bo'lmoqda. Ular orasida resurslardan samarali foydalanish, xalqaro reytinglarda yuqori o'rinlarni egallash, kadrlar salohiyatini oshirish va xalqaro tajribalarni milliy ta'lim tizimiga moslashtirish eng muhimlaridan hisoblanadi. Shu bilan birga, mavjud muammolarni ham e'tibordan chetda qoldirish mumkin emas. Jumladan, malakali menejer kadrlarning yetishmasligi, xususiy sektor uchun alohida boshqaruv standartlarining ishlab chiqilmaganligi, ta'lim sifatini iqtisodiy ko'rsatkichlar bilan bog'laydigan milliy indikatorlarning yo'qligi va texnik infratuzilmadagi farqlar bu jarayonni sekinlashtirmoqda.

Kelajakda innovatsion iqtisodiy menejmentni ta'lim tizimiga keng tatbiq etish orqali quyidagi natijalarga erishish mumkin:

oliy ta'lim muassasalarining iqtisodiy barqarorligini mustahkamlash;

ta'lim sifatini oshirish orqali xalqaro reytinglarda yuqori o'rinlarni egallash;

raqamli transformatsiya yordamida boshqaruv jarayonlarini soddalashtirish;

ta'lim tizimida samaradorlik va natijadorlikni yangi bosqichga ko'tarish;

xalqaro hamkorlikni kengaytirish va global ilmiy hamjamiyatga integratsiyalashuv.

Shunday qilib, innovatsion iqtisodiy menejmentni ta'lim tizimida samarali joriy etish O'zbekiston oliy ta'lim muassasalarini xalqaro maydonda raqobatbardosh qilish, zamonaviy bilim va ko'nikmalarga ega kadrlarni tayyorlash hamda mamlakatning barqaror iqtisodiy rivojlanishiga xizmat qiladi. Ushbu yo'nalishda olib boriladigan ilmiy tadqiqotlar, amaliy loyihalar va xorijiy tajribalarni o'zlashtirish esa kelajakda ta'lim tizimining poydevorini yanada mustahkamlaydi.

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ОЦЕНКА ЭФФЕКТИВНОСТИ ЭНДОХИРУРГИЧЕСКОГО ЛЕЧЕНИЯ ЖЕЛЧНОКАМЕННЫХ ЗАБОЛЕВАНИЙ.

Umumiy jarrohlik va transplantologiya kafedrası assistenti **Hoshimov Ilhomboy**
Mo'sojon o'g'li

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В данном научном сообщении авторы анализируют результаты хирургического лечения больных с желчекаменной болезнью осложненным холангитом и механической желтухой. Для диагностики желчекаменной болезни осложненной холангитом и механической желтухой использованы высокоинформативные методы (УЗИ, КТ, МСКТ, ЭРПХГ, ФГДС). В целом результаты проведенных исследований авторами показали, что применение хирургических операций при желчекаменной болезни осложненной механической желтухой и холангитом позволили снизить ранние послеоперационные осложнения на 12,5% по сравнению с традиционными оперативными вмешательствами на желчных путях.

Ключевые слова: желчекаменная болезнь, холедохолитиаз, холангит, механическая желтуха, КТ, МСКТ, УЗИ, ЭРПХГ, лапароскопическая холецистэктомия, холедохолитотомия, эндохирургические операции, ЭПСТ.

EVALUATION OF THE EFFECTIVENESS OF ENDOCURRICULAR TREATMENT OF BILE STONE DISEASES.

In this scientific report, the authors analyze the results of surgical treatment of patients with cholelithiasis complicated by cholangitis and mechanical jaundice. For the diagnosis of cholelithiasis complicated by cholangitis and mechanical jaundice used highly informative techniques (ultrasound, CT, CT, ERCP, EGD). In General, the results of the research conducted by the authors showed that the use of surgical operations for cholelithiasis complicated by mechanical jaundice and cholangitis reduced early postoperative complications by 12.5% compared to traditional surgical placements on the bile ducts.

Key words: gallstone disease, choledocholithiasis, cholangitis, mechanical jaundice, CT, MSCT, ultrasound, ERPHG, laparoscopic cholecystectomy, choledocholitotomy, endosurgical operations, EPST.

Введение. В настоящее время желчнокаменная болезнь занимает лидирующее положение в структуре заболеваний органов гепатобилиарной системы. Она имеет не только большую медицинскую, но и социальную значимость, так как количество больных молодого и трудоспособного возраста из года в год

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неуклонно возрастает. За последние годы наблюдается тенденция к росту заболеваемости желчнокаменной болезнью во всем мире, в том числе и в Узбекистане. Одновременно с ростом заболеваемости желчекаменной болезни растет и число осложненных ее форм: холедохолитиаза в сочетании с холангитом и механической желтухой.

Таким образом, проблема лечения желчнокаменной болезни и ее протоковых осложнений является одной из наиболее актуальных для современной хирургии желчевыводящих путей [3,8]. За последнее время для лечения желчекаменной болезни холедохолитиаза, наиболее широкое распространение получили эндоскопические оперативные вмешательства, которые в настоящее время являются «золотым стандартом» в лечении данной патологии [5,10]. Однако, техническая возможность выполнения эндоскопических вмешательств имеется не всегда. Трудности возникают у 10-20% пациентов, имеющих крупные, «неудобной» формы, либо локализации конкременты, измененной анатомии зоны Фатерова соска, при синдроме Мириззи [9]. При этом, у 5,4-15% из них эндоскопические вмешательства осложняются кровотечением, острым панкреатитом, повреждением общего желчного протока и двенадцатиперстной кишки, отрывом, вклиниванием литэкстрактора и рядом других осложнений [7], которые в ряде случаев приводят к летальному исходу.

Традиционная лапаротомная холедохолитотомия, несмотря на возможность выполнения любого вмешательства на внепеченочных желчных протоках, в 19 37,7% случаев сопровождается развитием осложнений как в раннем, так и в позднем послеоперационном периодах и переносится больными в целом тяжелее, чем какие-либо другие вмешательства [2,6]. Летальность после открытых вмешательств на внепеченочных желчных протоках по данным ряда авторов достигает 7,8%. Данное обстоятельство делает лапаротомную холедохолитотомию менее предпочтительным методом лечения пациентов с желчнокаменной болезнью, осложненной холедохолитиазом, ограничивает ее применение и побуждает к поиску новых путей решения проблемы [6].

В связи с этим, как альтернатива операциям из лапаротомного доступа, большой интерес представляют вмешательства на внепеченочных желчных протоках с использованием эндовидеоскопических технологий. Новейшие технологии, материалы, методы, применяемые в лапароскопической хирургии, позволяют добиться впечатляющих результатов в лечении пациентов с ЖКБ холедохолитиазом осложненной холангитом и механической желтухой.

Цель исследования: улучшение результатов хирургического лечения больных желчекаменной болезнью, холедохолитиазом, осложненным холангитом и

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механической желтухой, на основе своевременной диагностики и рациональной хирургической тактики с применением эндоскопической декомпрессии желчных путей.

Материалы и методы исследования. В хирургических клиниках Андижанского филиала Республиканского научного центра экстренной медицинской помощи (РНЦЭМП) с 2014 до 2023 годы по поводу желчекаменной болезни, холедохолитиазом, осложненной холангитом и механической желтухой оперировано 87 больных, из них женщин было 54 (62.1 %), мужчин - 33 (37.9 %). Все больные, были разделены на две группы - контрольную и основную. Контрольную группу составили 47 оперированных больных за период с 2014 по 2018 годы. В основную группу вошли 40 больных, получивших лечение в АФ РНЦЭМП в период с 2018 по 2023 годы. Основная группа больных подразделена на подгруппу А и Б в зависимости от вида операций.

Контрольная и основная группы сравнивались по следующим параметрам: пол, возраст, сроки госпитализации от момента заболевания, по длительности заболевания, уровню лейкоцитоза, ЛИИ, АЛТ, гипербилирубинемии, послеоперационных осложнений и летальности.

Распределение больных по полу представлено в таблице 1.

Таблица 1.

Распределение больных по полу

Пол	Количество больных.			
	Контрольная группа n (%)	Основная А группа n(%)	Основная Б группа n (%)	Всего n (%)
Женщин	31(35,6)	15 (17,2)	8 (9,2)	54 (62,1)
Мужчин	16 (18,4)	15 (17,2)	2 (2,3)	33 (37,9)
Всего	47 (54)	30 (34,5)	10(11,5)	87 (100)

Таким образом, среди больных с желчекаменной болезни, осложнённой холангитом и механической желтухой, женщины составили большинство, возраст больных колебался в широких пределах - от 20 до 80 лет.

Таблица 2.

Распределение больных по возрастным категориям, контрольной и основной (А, Б) группы.

Возрастные-группы	Возраст, лет	Контрольная группа n (%)	Основная А группа n (%)	Основная Б группа n (%)	Всего n (%)
Зрелый	20-40	7(8)	6(7)	-	13 (15)
Средний	40-50	6(7)	6(7)	1 (1Д)	13 (15)
Пожилый	50-60	14 (16)	9 (10,4)	3 (3,5)	26 (29,8)
Старческий	60-70	7(8)	5 (5,7)	4 (4,6)	16(18,3)

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<i>Долгожители</i>	<i>70-80</i>	<i>13 (15)</i>	<i>4 (4,6)</i>	<i>2 (2,3)</i>	<i>19 (21,9)</i>
<i>Всего n (%)</i>		<i>47(54)</i>	<i>30(34,5)</i>	<i>10(11,5)</i>	<i>87(100)</i>

При анализе возрастной характеристики отмечено, что большинство больных исследуемых групп были пожилого возраста из них 14 (16 %) больных в контрольной группе, 9 (10,4 %) - в основной А и 3 (3,5 %) - в основной Б.

В большинстве случаев пациенты поступали в хирургические отделения от 2 до 6 часов от начала заболевания - 36 (41,4 %). Средние сроки поступления от начала заболевания составили 9,4 часов в контрольной группе, 6 часов в основном А группе и 2 часа в основном Б группе. Длительность заболевания исследуемых варьировала от 1 до 10 лет.

Всем поступившим больным проводилось клиничко-лабораторные, инструментальные (УЗИ, КТ, МСКТ, ФГДС, эндоскопическая ретроградная панкреатохолангиография, ЭРПХГ). В диагностике причины механической желтухи при холангите определённое значение имело ультрасонография печени, желчного пузыря и желчных протоков. Камни желчного пузыря были выявлены у 77 (88,5 %) больных, камни холедоха — у 87 (100 %) больных. В диагностике холедохолитиаза и холангита определённое значение имело определение диаметра холедоха. Увеличение его диаметра косвенно свидетельствовало о возможной обструкции протока.

Наиболее информативным методом исследования желчных путей являлось эндоскопическая ретроградная панкреатохолангиография (ЭРПХГ), которая выполнена у 40 (46 %) больных с холангитом и механической желтухой после госпитализации по поводу желчнокаменной болезни. Рентгенэндоскопические исследования выполнялись с использованием фиброэндоскопов фирмы «PENTAX» (Япония) с электронно-оптическим преобразователем фирмы «ERBE» (Германия). ЭРПХГ у 38 (43,7 %) больных выполнялась однократно, у 2 (2,3 %) - дважды.

В предоперационную подготовку были включены антибактериальные препараты, спазмолитики, общеукрепляющее, противовоспалительное, дезинтоксикационное лечение, гемостатики, гепатопротекторы, антиоксидантные препараты и декомпрессию желудка. Больным с явлениями панкреатита применяли ингибиторы протеаз (контрикал, гордокс, трасилол).

Большинство больных (66 %) прооперированы позднее 24 часов от начала заболевания. Только 4 пациентов (8,5 %) были оперированы в первые 6 часов болезни, 12 (25,5 %) больных оперированы от 6 до 24 часов от начала заболевания.

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Наиболее частыми жалобами пациентов у всех групп являлись боль в правом подреберье 85 (97,7 %), тошнота 84 (96,6 %), рвота 66 (75,9 %) и сухость во рту 70 (80,5%). У больных являющиеся клиническими проявлениями холангита желтуха 59 (67,8 %), озноб 3 (3,4 %), лихорадка 21 (24,1 %) наблюдались. Сопутствующие заболевания диагностированы у 56,3 % больных, дыхательной системы в 6 клинических случаях (6,9 %), сердечно-сосудистой системы у 7 (8,05 %) больных.

Сопутствующие заболевания желудочно-кишечного тракта имели место у 21 (24,1 %), мочевыделительной у - 3 (3,45 %) и нервной системы у 1 (1,15 %). Сопутствующие заболевания прочих органов и систем диагностированы 5 (5,75 %) случаев.

Распределение исследуемых групп по методу проводимого лечения представлено в таблице 3.

Таблица 3.

Распределение исследуемых групп по методу проводимого лечения.

Исследуемые группы	Вид лечения	Количество	
		Абс.	%
I группа 2014-2018 г.	Традиционная холецистэктомия, холедохолитотомия, наружное дренирование желчных путей.	47	54
II Группа подгруппа А 2018-2023 г.	Эндоскопическая декомпрессия и санация желчных путей (ЭПСТ, литоэкстракция). Лапароскопическая холецистэктомия	30	34,5
II группа подгруппа Б 2018-	Эндоскопическая декомпрессия и санация желчных путей (ЭПСТ, литоэкстракция).	10	11,5
Всего		87	100

Результаты и обсуждение. В зависимости от проводимого лечения больные были распределены на 2 группы. Первую группу составили 47 (54 %) больных с желчекаменной болезнью, осложненной холангитом и механической желтухой, которым проводилось консервативное и оперативное лечение по общепринятым методикам. У 30 (34,5 %) больных, составивших вторую группу подгруппу А, в предоперационном периоде первым этапом проводилось консервативное лечение и эндоскопическая декомпрессия желчных путей, а вторым - выполнено лапароскопическая холецистэктомия. 10 (11,5 %) больных второй Б подгруппы, которые поступали с стационаром с диагнозом состояние после холецистэктомии, холедохолитиаз, механическая желтуха и холангит проводилось консервативное лечение и была выполнена эндоскопическая папиллосфинктеротомия, литоэкстракция с полной ликвидацией нарушения проходимости желчных протоков.

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Распределение больных I группы по методу проводимого оперативного вмешательства представлено в таблице 4.

Таблица 4.

Проводимое оперативное вмешательство у больных I группы

Вид операции	Всего	
	Абс.	%
Холецистэктомия, холедохотомия, холедохолизитотомия, наружное дренирование холедоха по Вишневскому	22	46,8
Холецистэктомия, холедохолизитотомия, наружное дренирование холедоха по Пиковскому	17	36,2
Холецистэктомия, холедохотомия, холедохолизитотомия с наложением холедоходуоденоанастомоза по Юрашу	4	8,5
Лапароскопия, конверсия, традиционная холецистэктомия, холедохолизитотомия, наружное дренирование холедоха	2	4,25
Релапаротомия, наружное дренирование холедоха	2	4,25
Всего больных	47	100

Как видно из таблицы 4, у больных первой группы были выполнены 22 (46,8 %) операции в виде холецистэктомии, холедохотомии, холедохолизитотомии и наружного дренирования желчевыводящих путей по методу Вишневского, а у 17 (36,2 %) - холецистэктомии, холедохолизитотомии и наружного дренирования холедоха по Пиковскому, у 4 (8,5 %) больных этой группы выполнена холецистэктомия, холедохотомия, холедохолизитотомия с наложением холедоходуоденоанастомоза по Юрашу, у 2 (4,25 %) выполнена лапароскопия, конверсия, традиционная холецистэктомия, холедохолизитотомия, наружное дренирование холедоха, у 2 (4,25 %) больных выполнена релапаротомия, наружное дренирование холедоха.

Проводимое лечение у больных IIА группы представлено в таблице 5.

Таблица 5.

Проводимое лечение у больных IIА группы

Вид лечения	Всего	
	Абс.	%
ЭРПХГ и ЭПСТ, литоэкстракция + лапароскопическая холецистэктомия	28	93,3
ЭРПХГ и ЭПСТ, из холедоха не удалось извлечь конкремента из-за отёка БДС и холедоха, установлен стент. Через 4 дня стент	2	6,7
Всего	30	100

Всем больным второй А группы была выполнена ЭРПХГ, причем у 25 (83,3 %) больных причиной механической желтухи и холангита был холедохолизитиаз, у 3 (10 %) - холедохолизитиаз сопровождался стенозом БДС, у 2 (6,7 %) больных

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холедохолитиаз с отёком БДС и холедоха. У 11 (36,7 %) пациентов после эндоскопической папиллотомии конкременты отошли самостоятельно, у 17 (56,6 %) - конкременты были удалены с помощью корзинки Dormia, у 2 (6,7 %) больных из холедоха не удалось извлечь конкремента из-за отёка БДС и холедоха, установлен стент. Через 4 дня стент удален и извлечен конкремент из холедоха. У всех больных от 3 до 7 дней после ЭПСТ, и декомпрессии желчных протоков и после ликвидации патологического процесса со стороны желчных протоков была выполнена лапароскопическая холецистэктомия.

Всем больным второй Б группы была выполнена эндоскопическая папиллосфинктеротомия. Во время ЭПСТ из холедоха выделялось гнойное выделение с примесью желча. У 6 (60 %) больных причиной гнойного холангита был холедохолитиаз, у 1 (10 %) больного густая субстанция в холедохе, у 1 (10 %) - холедохолитиаз, ущемления конкремента в БДС.

Распределение больных II Б группы по видам операций продемонстрировано в таблице 5.

Таблица 5.

Распределение больных II Б группы по видам операций

Вид операции	Всего	
	Абс.	%
<i>Произведена ЭПСТ, конкремент удален из холедоха с корзинкой Dormia и корзинкой литотриптора</i>	8	80
<i>Произведена ЭПСТ, корзинкой литотриптора из холедоха извлечен густая масса</i>	1	10
<i>Произведена ЭПСТ, корзинкой литотриптора конкремент извлечь не удалось из холедоха из-за отёка БДС и холедоха, установлен стент</i>	1	10
<i>Всего больных</i>	10	100

У 8 (80 %) больных после эндоскопической папиллосфинктеротомии конкременты были удалены из холедоха с помощью корзинки Dormia и корзинкой литотриптора; у 1 (10 %) корзинкой литотриптора из холедоха извлечен густая масса; у 1 (10 %) больного корзинкой литотриптора конкремент из холедоха извлечь не удалось из-за отёка БДС и холедоха, в холедохах установлен стент, через 4 дня, после чего ликвидации отёка стент извлечен и была выполнена литоэкстракция.

Таким образом, в результате проводимого эндохирургического метода лечения состояние больных значительно улучшалось, явления эндотоксикоза и холестаза купировались, стабилизировалось состояние печени. Состояние больных

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оценивалось как клинически, так и с помощью общих и биохимических анализов.

Все это позволило для нас провести сравнительную оценку результатов лечения больных как контрольной, так и основной группы.

Послеоперационные осложнения в исследуемых группах представлены в таблице 6. Как видно из таблицы 6, послеоперационные осложнения в первой группе были - несостоятельность швов холедоха с послеоперационным перитонитом у 1 (2,12 %), несостоятельность наружного дренажа холедоха у 1 (2,12%), нагноение послеоперационной раны у 1 (2,12%). Послеоперационный период у 1 (2,12%) больного осложнился острой печеночно-почечной недостаточностью, у 1 (2,12 %) больного септическим шоком, у 2 (4,24%) послеоперационной пневмонией, у 1 (2,12%) больного тромбоэмболией легочной артерии и еще у 1 (2,12%) больного обострением хронического бронхита. У больных второй А отмечались следующие осложнения: желчеистечение из ложа пузыря у 1 (3,3%) больного, кровотечение из папиллотомных краев - у 1 (3,3%) больного. Во II-й группе подгруппе Б послеоперационный период протекал без осложнений.

Таким образом, при сравнении общего количества всех осложнений наибольшее их число отмечалось у 9 (19,1%) больных в 1-й группе. Во II-й группе подгруппе А - отмечалось 2 (6,6 %) осложнения.

Во II-й группе подгруппе Б осложнений не было.

Таблица 6.

Послеоперационные осложнения в исследуемых группах

Послеоперационные осложнения		I группа		II группа			
				Подгруппа А		Подгруппа Б	
		Абс.	%	Абс.	%	Абс.	%
Специфические	Несостоятельность швов холедоха, послеоперационный перитонит	1	2,12	-	-	-	-
	Несостоятельность наружного дренажа холедоха	1	2,12	-	-	-	-
	Кровотечение из папиллотомных краев	-	-	1	3,3	-	-
	Желчеистечение из ложа пузыря	-	-	1	3,3	-	-
	Острая печеночно-почечная недостаточность	1	2,12	-	-	-	-
	Септический шок	1	2,12	-	-	-	-

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	<i>Нагноение послеоперационной раны</i>	<i>1</i>	<i>2,12</i>	-	-	-	-
<i>Неспецифические</i>	<i>Послеоперационная пневмония</i>	<i>2</i>	<i>4,24</i>	-	-	-	-
	<i>Тромбоэмболия легочной артерии</i>	<i>1</i>	<i>2,12</i>	-	-	-	-
	<i>Обострение хронического бронхита</i>	<i>1</i>	<i>2,12</i>	-	-	-	-
	<i>Количество больных</i>	<i>9</i>	<i>19,1</i>	<i>2</i>	<i>6,6</i>	-	-

Различались также и сроки разрешения послеоперационного пареза кишечника у больных исследуемых групп. Говоря о продолжительности послеоперационного пареза кишечника, мы подразумевали время от момента операции до появления хорошей перистальтики кишечника и самостоятельного отхождения газов и кала. Сроки разрешения пареза кишечника в 1-й группе составили в среднем 3 дня. Во II -й группе, подгруппе А, парез кишечника разрешался в среднем через 2 дня. А после проведения эндоскопических манипуляций парез кишечника вообще не отмечался. Во всех группах использовали общепринятые методы послеоперационной стимуляции кишечника - церукал, прозерин, бисакодил свеча, очистительные клизмы. В связи с полученными данными, мы убедились в том, что эндоскопические манипуляции на БДС не вызывают пареза кишечника. Летальность и её причины в исследуемых группах отображена в таблице 7.

Таблица 7.

Летальность и её причины в исследуемых группах

<i>Причина смерти</i>	<i>Количество умерших, %</i>					
	<i>I группа</i>		<i>II А группа</i>		<i>II Б группа</i>	
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
<i>Острая печеночно-почечная недостаточность</i>	<i>1</i>	<i>2,12</i>	-	-	-	-
<i>Септический шок</i>	<i>1</i>	<i>2,12</i>	-	-	-	-
<i>Тромбоэмболия лёгочной артерии</i>	<i>1</i>	<i>2,12</i>	-	-	-	-
<i>Всего</i>	<i>3</i>	<i>6,36</i>	-	-	-	-

Как видно из таблицы 7, в 1-й исследуемой группе умерли 3 (6,36%) человек. Причиной смерти явилась: острая печеночно-почечная недостаточность у 1 (2,12%) больного, септический шок - у 1 (2,12%), тромбоэмболия лёгочной артерии у 1 (2,12%) больного. Во II-й группе летальных исходов не было.

Учитывая то, что во II -й группе летальных исходов не было следует отметить важную роль этапности лечения и подготовки больных к операции, а также роль эндоскопических операций на БДС в лечении больных с желчекаменной болезнью, осложненной механической желтухой и холангитом.

Таким образом, применение эндоскопических операции в целом при желчекаменной болезни осложненной механической желтухой и холангитом позволяют благоприятному течению послеоперационного периода, так как уже в ранние сроки у оперированных больных исчезают явления эндотоксикоза, холестаза, улучшается функциональное состояние печени и почек. Использование эндоскопических технологии позволили снизить послеоперационные осложнения на 2,8 раза по сравнению с традиционными оперативными вмешательствами на желчных путях. В целом эндоскопические операции оказывают положительное влияние на результаты лечения больных с желчекаменной болезнью осложненной холангитом и механической желтухой.

ВЫВОДЫ:

1. Наиболее информативными инструментальными методами, позволяющими на ранней стадии установить диагноз желчекаменной болезни, холедохолитиаз, осложненной механической желтухой и холангитом являются: ультразвуковое исследование в динамике, ЭРПХГ, ФГДС, КТ, МСКТ.
2. Больным с желчекаменной болезнью осложненной механической желтухой и холангитом с целью декомпрессии желчных путей купирования эндотоксикоза холестаза и печеночной недостаточности показано дренирование и санация желчевыводящих путей с помощью эндохирургических методов.
3. Предварительная эндоскопическая декомпрессия и санация желчных путей позволили по сравнению с традиционными оперативными вмешательствами снизить ранние послеоперационные осложнения с 19,1 до 6,6%.

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**СОХРАНЕНИЕ ИСТОРИКО-КУЛЬТУРНОГО НАСЛЕДИЯ В
УЗБЕКИСТАНЕ: ПРОБЛЕМЫ, МЕЖДУНАРОДНЫЙ ОПЫТ И
ИННОВАЦИОННЫЕ ПОДХОДЫ**

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Аннотация. В статье рассматриваются ключевые проблемы и перспективы системы охраны культурного наследия Узбекистана. На основе анализа нормативно-правовой базы, международного опыта и цифровых технологий показано, что, несмотря на принятые государственные программы и участие международных организаций, сохраняются сложности в реализации мер по защите объектов и вовлечении местных сообществ. Особое внимание уделено интеграции образовательных программ, подготовке специалистов и внедрению инновационных инструментов, включая цифровизацию и устойчивый туризм. Исследование подчеркивает необходимость перехода от фрагментарных мер к комплексной политике сохранения культурного наследия, сочетающей правовые реформы, современные технологии и активное участие общества, что позволит превратить культурное наследие страны в стратегический ресурс развития.

Ключевые слова: Узбекистан; культурное наследие; охрана памятников; международный опыт; цифровизация; устойчивый туризм; подготовка специалистов; STEAM; участие местных сообществ; инновационные технологии

Введение. Культурное наследие Центральной Азии, включая Узбекистан, является уникальным феноменом мировой цивилизации. На протяжении тысячелетий эта территория служила местом пересечения торговых путей, религиозных и культурных традиций, что сформировало богатое архитектурное и нематериальное наследие [1]. Города Самарканд, Бухара, Хива, Термез, Коканд и Ташкент вошли в мировую историю как центры науки, искусства и ремёсел, сохранив до наших дней памятники, имеющие ценность не только для национальной идентичности, но и для всего человечества [3]. В последние десятилетия в Узбекистане приняты законы и программы, направленные на охрану историко-культурных объектов, включая меры по реставрации, популяризации и использованию их в целях устойчивого туризма [5][7]. Созданы государственные структуры, разрабатываются проекты с участием

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международных организаций — ЮНЕСКО, ИКОМОС, Всемирного банка — что позволило усилить внимание к сохранению наследия [9][10][12]. Однако при всём этом сохраняется ряд проблем: недостаточная координация между ведомствами, слабый контроль за эксплуатацией объектов, ограниченные ресурсы, а также низкая вовлеченность местных сообществ [4][8][13].

Особое значение в современный период приобретает цифровизация. Геоинформационные системы, 3D-сканирование, цифровые архивы и виртуальные туры становятся частью практики исследований и реставрации, позволяя не только документировать состояние памятников, но и отслеживать динамику изменений [11][13]. Одновременно в стране развивается концепция устойчивого туризма, который рассматривается как инструмент социально-экономического развития регионов, однако чрезмерная коммерциализация и передача объектов частным инвесторам без должного контроля могут привести к утрате подлинности [6][10].

В мировой практике накоплен значительный опыт интеграции охраны культурного наследия с развитием местного самоуправления, образовательными инициативами и экономическим ростом. Исследования показывают, что устойчивое сохранение возможно только при учёте интересов местных сообществ и при комплексном подходе, включающем законодательство, финансирование, инновации и подготовку специалистов [2][14][15].

Таким образом, актуальность данного исследования обусловлена необходимостью системного анализа состояния охраны культурного наследия в Узбекистане, выявления успешных международных практик и разработки концептуальных предложений по их адаптации. В рамках статьи рассматриваются правовые, социально-экономические и технологические аспекты этой проблемы, а также роль образовательных программ и профессиональной подготовки специалистов в сфере сохранения культурного наследия.

Методы. Настоящее исследование основано на междисциплинарном подходе, сочетающем историко-культурный анализ, изучение нормативно-правовой базы, сопоставление национального и международного опыта, а также анализ цифровых инструментов и инновационных практик в сфере охраны наследия [1][2][5]. Для изучения состояния охраны культурного наследия в Узбекистане использованы материалы национальных программ и законодательных актов, научные публикации по истории и архитектуре, отчёты ЮНЕСКО, ИКОМОС и Всемирного банка, статистические данные и исследования о цифровизации процессов мониторинга памятников [3][6][9][10][11][13]. Такой подход позволил определить сильные и слабые стороны существующей системы охраны, оценить

динамику изменений в политике сохранения памятников и выявить успешные международные практики, которые могут быть адаптированы в национальный контекст [4][8][12][14][15]. В исследовании также учитывались данные о степени участия местных сообществ, факторы экономического и социального развития регионов, а также проблемы взаимодействия государственных структур с частными инвесторами. Все эти источники в совокупности обеспечили возможность комплексного анализа текущего состояния охраны культурного наследия в Узбекистане и сформулировать рекомендации по совершенствованию подготовки специалистов, правовых механизмов и внедрению инновационных подходов.

Результаты. Результаты исследования показали, что Узбекистан обладает уникальным культурным наследием, включающим десятки тысяч зарегистрированных объектов материальной и нематериальной культуры, среди которых более 8000 памятников архитектуры, археологии и искусства, находящихся под государственной охраной [1][3][5]. За последние годы усилия правительства и международных организаций позволили увеличить объём реставрационных работ, улучшить учёт памятников и создать ряд новых музеев и культурных центров [7][9][12]. Вместе с тем анализ законодательной базы выявил, что, несмотря на наличие законов и подзаконных актов, механизмы их реализации и межведомственного контроля остаются недостаточно эффективными [5][10]. В ряде случаев исторические объекты передаются в пользование частным инвесторам без строгих условий сохранения аутентичности, что приводит к утрате первоначального облика или разрушению памятников [4][8].

Существенным достижением стало внедрение цифровых технологий: геоинформационные системы, 3D-сканирование, цифровые архивы и виртуальные туры начинают использоваться для мониторинга состояния объектов культурного наследия [11][13]. Это позволяет повысить прозрачность управления, улучшить документацию и обеспечить долгосрочное хранение данных. Однако в ходе исследования выявлено, что цифровизация охватывает пока лишь ограниченное число проектов и нуждается в расширении на региональном уровне [6][14].

Особое внимание уделено участию местных сообществ. Результаты показали, что степень вовлечённости населения в процессы сохранения памятников остаётся низкой: общественные инициативы существуют, но не имеют устойчивой поддержки и механизмов взаимодействия с государственными структурами [2][15]. В регионах, где местные власти налаживают сотрудничество с общественными организациями и образовательными

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учреждениями, качество охраны объектов выше, а туристический поток приносит больший экономический эффект [9][10]. Сравнение с международным опытом показало, что успешные модели охраны наследия предполагают тесную интеграцию образовательных программ, подготовки специалистов и экономических стратегий, а также использование принципов устойчивого туризма [1][12][15]. В Узбекистане эти направления развиваются, но нуждаются в систематизации, усилении межведомственного взаимодействия и формировании новых компетенций у специалистов.

Таким образом, результаты исследования подтверждают необходимость комплексного подхода к охране культурного наследия, сочетающего правовые, организационные, образовательные и технологические меры. Это особенно важно в условиях растущего интереса к туризму, глобальных климатических и демографических изменений, а также в связи с переходом на цифровые формы управления культурными ценностями.

Обсуждение. Обсуждение полученных результатов позволяет выявить комплекс ключевых проблем и возможностей в системе охраны культурного наследия Узбекистана. Несмотря на серьёзные достижения в области реставрации и цифровизации, по-прежнему существует разрыв между нормативно-правовой базой и её реальной реализацией на местах [5][10]. Передача памятников частным инвесторам без прозрачных условий сохранения, недостаточный контроль и слабая вовлечённость местных сообществ приводят к риску утраты аутентичности объектов [4][8]. Эти тенденции характерны не только для Узбекистана, но и для других стран Центральной Азии, где процессы урбанизации и экономического давления вступают в противоречие с задачами охраны наследия [6][12].

Сопоставление с международным опытом показало, что устойчивые модели сохранения наследия формируются там, где обеспечена интеграция трёх элементов: правовой защиты, экономической заинтересованности и образовательной подготовки специалистов [1][9][15]. Например, проекты ЮНЕСКО и ИКОМОС в Самарканде, Бухаре и Хиве демонстрируют, что при участии международных экспертов, местных властей и населения можно повысить эффективность охраны памятников, создать новые рабочие места и стимулировать развитие туризма [3][7].

Отдельного внимания заслуживает роль цифровых технологий. Цифровизация позволяет решать сразу несколько задач: систематизировать данные о памятниках, повысить прозрачность их использования, расширить доступ исследователей и туристов к информации, а также создать инструменты для долгосрочного мониторинга состояния объектов [11][13]. Однако использование

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этих технологий пока не носит массового характера, что требует новых инвестиций и программ обучения кадров [14].

Важным фактором, выявленным в ходе исследования, является необходимость усиления подготовки специалистов по сохранению культурного наследия. Традиционные учебные программы недостаточно учитывают современные требования, включая устойчивое развитие, STEAM-подходы, участие местных сообществ и управление проектами [2][9]. В результате у молодых специалистов отсутствует достаточный набор компетенций для работы в условиях, когда охрана наследия тесно связана с экономическими, экологическими и социальными вопросами.

Таким образом, обсуждение результатов подчёркивает, что будущее системы охраны культурного наследия в Узбекистане зависит от способности сочетать правовые реформы, организационное укрепление, цифровизацию, подготовку кадров и участие населения. Только при комплексном подходе можно обеспечить долгосрочную устойчивость, повысить международный имидж страны и превратить культурное наследие в источник развития регионов [10][12][15].

Заключение. Проведённое исследование позволило комплексно оценить текущее состояние системы охраны культурного наследия в Узбекистане и выявить ключевые тенденции её развития. Анализ историко-культурных объектов, нормативно-правовой базы, международного опыта и цифровых технологий показал, что страна располагает значительным потенциалом для сохранения своего уникального наследия, однако этот потенциал реализуется не полностью. Несмотря на наличие государственных программ, законодательных актов и участия международных организаций, сохраняются проблемы недостаточной координации, слабого контроля за использованием памятников и низкой вовлечённости местных сообществ.

В то же время исследование подтвердило, что интеграция правовых, организационных, образовательных и технологических мер может существенно повысить эффективность охраны культурного наследия. Опыт международных проектов демонстрирует, что при активном участии местных властей, частного сектора и населения возможно создание устойчивых моделей управления памятниками, способных приносить социально-экономическую пользу регионам.

Отдельное значение приобретает подготовка специалистов. Необходимы новые образовательные программы, ориентированные на STEAM-подходы, цифровизацию, устойчивое развитие и участие местных сообществ, а также на формирование у студентов навыков проектного управления, экологического мышления и креативных педагогических компетенций. Таким образом,

стратегическая задача Узбекистана заключается в переходе от фрагментарных мер к системной политике сохранения культурного наследия, где сочетаются правовые реформы, цифровые инструменты, международное сотрудничество и активное участие общества. Только при таком комплексном подходе культурное наследие страны сможет стать не только источником исторической памяти, но и устойчивым ресурсом развития, укрепляя национальную идентичность и международный имидж республики.

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**PEDAGOGICAL FOUNDATIONS OF USING HISTORICAL AND
CULTURAL HERITAGE IN THE TRAINING OF ENGINEERING
PEDAGOGUES**

13.00.01 – Theory of Pedagogy. History of Pedagogical Doctrines

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Annotation.

This article examines the pedagogical foundations of using historical and cultural heritage in the process of training engineering pedagogues. The study explores the role of cultural heritage in education, its impact on strengthening national identity, fostering moral and ethical values, and developing professional competencies. By analyzing Uzbekistan's experience in comparison with international practices, the article highlights practical mechanisms for integrating architectural monuments, the scientific legacy of great scholars, and ancient engineering achievements into the learning process. The findings demonstrate that the effective use of historical and cultural heritage serves as a bridge between theory and practice in higher education and contributes to the formation of engineering pedagogues as specialists who combine technical knowledge with national and cultural values.

Keywords: engineering pedagogue, historical and cultural heritage, educational process, national identity, moral and ethical education, professional competence, international experience, teaching methodology

Main Part

Training engineering pedagogues today is one of the key tasks of the higher education system. An engineering pedagogue is a specialist who not only possesses technical knowledge but also applies pedagogical approaches. Such a teacher does not merely deliver subject-specific knowledge but also influences the moral and social development of students (Sharipov F., Hasanboeva O., Yo'ldoshev J., 2010, «Pedagogika»).

In the educational system of Uzbekistan, the use of historical and cultural heritage in the preparation of engineering pedagogues is considered one of the important scientific and pedagogical directions. On the one hand, this process deepens the professional preparation of teachers; on the other, it strengthens students' loyalty to national and

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universal values. According to pedagogical psychology, the integration of cultural values into the learning process is viewed as a factor that enhances students' personal development (Zimnyaya I.A., 2002, «Pedagogicheskaya psikhologiya»).

In 2019, the President of the Republic of Uzbekistan emphasized the importance of widely incorporating historical and cultural heritage into the educational process within the framework of the "Concept for the Development of National Spirituality and Ideology." This policy document also serves as a methodological basis for training engineering pedagogues (Decree of the President of the Republic of Uzbekistan, 2019). Central Asia, particularly Uzbekistan, is rich in historical and cultural heritage. Architectural monuments, written sources, and the scientific legacy of great scholars are not only historical values but also valuable modern educational resources. For example, the ancient architectural monuments of Khiva, Bukhara, and Samarkand can be used as visual tools in teaching the history of engineering and technology. Avloni, in his work «Turkiy Guliston yoki Axloq» (1913), emphasized that national heritage plays a vital role in the moral education of youth.

The first fundamental reason for utilizing historical and cultural heritage in the training of engineering pedagogues is «the formation of national identity». National identity is the recognition of oneself as a member of a community through shared history, culture, language, and traditions. When students become familiar with their nation's history, culture, and scientific achievements, their professional responsibility increases, and their sense of belonging is reinforced.

The second reason is «moral and ethical education». An engineering pedagogue should not only teach technical knowledge but also instill values such as honesty, responsibility, discipline, and patriotism. I.A. Karimov, in his book «High Spirituality – an Invincible Force» (2008), stated that applying national heritage in education is one of the main factors in shaping well-rounded individuals.

The third reason is «the development of professional competencies». Engineering education requires both theoretical knowledge and practical skills. The use of historical monuments, ancient engineering achievements, and the scientific works of great scholars in teaching helps students master technical sciences more effectively. For instance, ancient water systems, architectural monuments, and Ulugbek's observatory serve as real examples of the historical development of engineering. Integrating these resources into education fosters engineering thinking among students (Zimnyaya I.A., 2002, «Pedagogicheskaya psikhologiya»).

Theoretical sources in pedagogy emphasize that the integration of theory and practice is crucial for effective learning (Sharipov F., Hasanboeva O., Yo'ldoshev J., 2010, «Pedagogika»). For engineering pedagogues, such integration is particularly important since they must not only transfer technical knowledge but also contribute to students'

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moral and ethical development. Therefore, the use of historical and cultural heritage in engineering education supports the development of social responsibility, national identity, and civic awareness among students.

International experiences confirm this approach. For example, IGIP (International Society for Engineering Pedagogy) emphasizes in its publications that modern engineering pedagogues should possess not only professional competencies but also communication, cultural, and social skills (IGIP, 2020, «Engineering Pedagogy – International Perspectives»). In European countries, the inclusion of soft skills and cultural competencies in engineering education ensures not only professional but also personal development of students.

I.A. Karimov also stressed in his book «High Spirituality – an Invincible Force» (2008) that preserving and applying national heritage in education is the foundation of state development. This idea is relevant to the preparation of engineering pedagogues as well, since they are not only knowledge transmitters but also mentors shaping students' worldview.

Conclusion

The use of historical and cultural heritage in the training of engineering pedagogues integrates the theoretical and practical aspects of education. This process strengthens students' national identity, promotes moral and ethical qualities, and deepens professional competencies. Engineering pedagogues should not limit themselves to technical knowledge but must also build pedagogical perspectives rooted in cultural traditions. If teachers themselves value national heritage, they will be able to apply it in education, thereby fostering patriotism, historical memory, and national pride among students. Therefore, utilizing historical and cultural heritage is not just a methodological tool but an essential factor in shaping engineering pedagogues as specialists who educate based on national values.

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ORGANIZATION OF PROTECTION AND LIFE SUPPORT OF THE POPULATION FOR EMERGENCY SITUATIONS

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ABSTRACT

This article addresses the comprehensive framework for the organization of protection and life support for populations during emergency situations. It examines various strategies and methods to ensure safety, timely evacuation, provision of basic needs, and medical assistance in times of crisis. Emphasizing preparedness, coordination among agencies, and community involvement, this paper proposes actionable recommendations to enhance emergency response effectiveness and resilience.

Keywords: Emergency preparedness, population protection, life support, crisis management, emergency response, evacuation, coordination, resilience, disaster management.

Introduction

The rapid increase in natural disasters, technological accidents, and conflicts has underscored the need for robust emergency response systems worldwide. The primary goal of such systems is to safeguard human lives, reduce harm, and provide essential life support during emergencies. Proper organization of protection and life support for the population during emergencies involves a set of preplanned activities and protocols, often executed in collaboration between government agencies, non-governmental organizations, and community groups. This article seeks to analyze the structure, challenges, and methodologies involved in population protection and life support during emergency situations.

This study employs a mixed-methods approach, combining qualitative and quantitative data collection methods. Qualitative data were gathered through interviews with emergency management officials and community leaders, focusing on their experiences and perceptions regarding the effectiveness of current emergency support systems. Quantitative data were obtained from reports and statistical analyses of response times, resource allocation, and population survival rates in past emergencies. Additionally, a systematic review of emergency protocols from various regions was conducted to identify best practices.

In emergency situations, the organization of protection and life support for the population is essential to ensure safety, minimize harm, and provide necessary resources and support. This process typically includes:

Risk Assessment and Preparedness:

- Identify potential hazards (natural disasters, industrial accidents, etc.) and assess the population's vulnerability.
- Develop emergency response plans, evacuation routes, and procedures for different scenarios.
- Conduct training and simulations to prepare emergency personnel and educate the public on safety measures.

Early Warning Systems :

Early Warning Systems play a crucial role in disaster preparedness by ensuring timely alerts and enabling preventive action. Here are the key components:

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Monitoring and Detection :

- Use advanced technologies like sensors, satellite data, and AI-driven analytics to monitor environmental changes and detect threats.
- Set up automated alerts when certain thresholds are reached, such as seismic activity for earthquakes or rainfall levels for potential flooding.

Communication of Alerts :

- Disseminate alerts quickly to the public and relevant authorities through multiple channels, including sirens, TV and radio broadcasts, mobile notifications, social media, and direct SMS alerts.
- Tailor the message to include specific protective instructions (e.g., evacuation routes, shelter locations, or lockdowns).
- Ensure that alert systems reach vulnerable populations, possibly using multilingual messages or visual aids for better accessibility.

Training and Public Awareness :

- Conduct regular public awareness campaigns to educate people on how to respond to various alerts.
- Include emergency drills and simulations in communities, so people are better prepared and understand what to do in case of an actual emergency.

Coordination with Local Authorities

- Ensure close coordination with local emergency services and organizations for a swift response.
- Establish clear protocols for how agencies should act based on the alert level and threat type.

These elements combined can greatly enhance community resilience and reduce the impact of disasters by ensuring that people are informed and prepared to act in a timely manner.

Evacuation and Shelter Operations

These points outline key considerations for effective evacuation and shelter operations in emergency management. Here's a breakdown of how to approach each one:

Evacuation Logistics and Route Management

- **Transportation:** Coordinate with local transportation agencies, public and private transport providers to arrange buses, ambulances, and other vehicles as needed.
- **Traffic and Route Management:** Develop route plans to minimize congestion, avoid hazards, and ensure timely evacuation. Utilize GPS and traffic data to update routes in realtime.
- **Communication:** Establish clear communication channels to inform evacuees of evacuation routes, timelines, and any changes during the process.

Shelter Identification and Preparation

- **Location Selection:** Identify safe, accessible buildings for shelter locations in advance. Ensure they meet health and safety regulations.
- **Resource Stocking:** Stockpile essential supplies such as food, water, medical kits, bedding, and sanitation supplies. Partner with suppliers to maintain a reliable chain for quick restocking.
- **Staff Training:** Train shelter staff in managing crowds, first aid, and supporting individuals with various needs.

Accessibility and Accommodation for Vulnerable Populations

- **Facility Accessibility:** Ensure shelters have ramps, elevators, and accessible bathrooms

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for individuals with mobility impairments.

- Medical and Psychological Support: Set up areas with medical staff for those with chronic health conditions, and provide psychological support for trauma-affected individuals.
- Communication Aids: Provide interpreters, braille resources, and signage to assist nonnative speakers, visually impaired, or deaf evacuees.

This structured approach can greatly improve the efficacy of evacuation and shelter operations, especially during large-scale emergencies.

Medical and Psychological Support:

- Provide first aid, medical care, and emergency services at the disaster site and in shelters.
- Ensure the availability of medical staff, equipment, and medicines.
- Offer psychological support to help individuals cope with trauma and stress during and after the emergency.

Provision of Basic Needs:

- Ensure the supply of clean water, food, clothing, and other essential resources.
- Set up temporary facilities for sanitation, hygiene, and waste management in shelters and affected areas.
- Organize logistics to transport and distribute supplies effectively.

Public Information and Communication :

- Maintain continuous communication with the population to provide updates on the situation and safety instructions.
- Use multiple platforms to reach a wide audience and address language or accessibility barriers.
- Dispel misinformation and keep the public informed about safety measures and resources available.

Coordination Among Agencies:

- Involve governmental and non-governmental organizations, local authorities, health services, and emergency response teams in coordinated efforts.
- Develop a unified command structure to streamline decision-making and response actions.
- Engage with local communities to strengthen response capacity and resilience.

Post-Emergency Recovery :

- Provide support for housing, employment, and rebuilding efforts to help individuals and communities recover.
- Conduct debriefings and review response effectiveness to identify areas for improvement in future preparedness and response plans.
- Offer ongoing mental health support and assistance for long-term recovery and reintegration.

Effective organization of protection and life support in emergencies requires thorough planning, resource allocation, and coordination to minimize the impact on the population and expedite recovery.

The results align with previous research underscoring the importance of preparedness and interagency cooperation. However, unique challenges persist, including the need for better training among emergency responders and improved public awareness programs. The research further suggests that community-based approaches, involving training citizens in basic first aid and evacuation protocols, can significantly enhance response effectiveness. Developing sustainable

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funding models and increasing investments in emergency infrastructure are essential steps for improving overall resilience.

Conclusions

In conclusion, a well-organized emergency response system significantly enhances population protection and life support during crises. The following suggestions aim to strengthen emergency response frameworks:

1. Establish regular training and simulation exercises for both emergency personnel and the general public.
2. Implement community-level emergency response teams equipped with first aid and communication skills.
3. Increase funding for emergency preparedness initiatives, including the development of early warning systems and evacuation plans.
4. Enhance communication between local, regional, and national emergency response agencies.
5. Promote public awareness and education programs on emergency preparedness.

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O'QUVCHILARDA SINERGETIK TAFAKKURNI RIVOJLANTIRISHNING PEDAGOGIK-PSIXOLOGIK MEXANIZMLARI

Masharipova Farog'at Matrasulovna
Urganch davlat universiteti mustaqil izlanuvchisi

Annotatsiya: Ushbu maqolada o'quvchilarda sinergetik tafakkurni rivojlantirishning pedagogik-psixologik mexanizmlari tahlil qilinadi. Sinergetik tafakkur - bu turli bilim sohalarini birlashtirish, tizimli yondashuv asosida muammolarni hal qilish va ijodiy fikrlash qobiliyatidir. Tadqiqot natijalarida sinergetik tafakkurni shakllantirishning asosiy bosqichlari, pedagogik usullari va psixologik omillari aniqlangan.

Kalit so'zlar: sinergetik tafakkur, pedagogik mexanizmlar, psixologik yondashuv, o'quvchi shaxsiyati, ijodiy faollik, tizimli yondashuv, kognitiv rivojlanish

Аннотация: В данной статье анализируются педагогико-психологические механизмы развития синергетического мышления у учащихся. Синергетическое мышление представляет собой способность интегрировать знания из различных областей, решать проблемы на основе системного подхода и творческого мышления. В результате исследования определены основные этапы формирования синергетического мышления, педагогические методы и психологические факторы.

Ключевые слова: синергетическое мышление, педагогические механизмы, психологический подход, личность учащегося, творческая активность, системный подход, когнитивное развитие

Annotation: This article analyzes the pedagogical-psychological mechanisms of developing synergetic thinking in students. Synergetic thinking is the ability to integrate knowledge from various fields, solve problems based on a systematic approach and creative thinking. The research results identify the main stages of synergetic thinking formation, pedagogical methods and psychological factors.

Keywords: synergetic thinking, pedagogical mechanisms, psychological approach, student personality, creative activity, systematic approach, cognitive development

Kirish. XXI asr ta'lim tizimida o'quvchilarning ijodiy va tanqidiy tafakkurini rivojlantirish muhim vazifalardan biri hisoblanadi. Zamonaviy dunyoda bilimlarning tez o'zgarishi, texnologik taraqqiyot va globallashuv jarayonlari ta'lim mazmuni va metodikasiga yangicha yondashuvni talab qilmoqda. Bu kontekstda sinergetik tafakkur kontseptsiyasi alohida ahamiyat kasb etadi.

Sinergetik tafakkur - bu turli fan sohaları, bilim turlari va tajribalarni bir-biri bilan bog'lab, yangi g'oyalar va yechimlar yaratish qobiliyatidir. Bu tafakkur turi o'quvchilarda tizimli dunyoqarashni shakllantirish, muammolarni kompleks yondashuvda hal qilish va ijodiy potentsialini ro'yobga chiqarishga yordam beradi.

Sinergetik tafakkurning nazariy asoslari

Sinergetika nazariyasi 1970-yillarda nemis fizigi Hermann Haken tomonidan ishlab chiqilgan bo'lib, murakkab tizimlarning o'z-o'zini tashkil etish jarayonlarini o'rganadi. Pedagogik kontekstda sinergetik yondashuv o'quvchi shaxsiyatini ochiq, dinamik va o'z-o'zini rivojlantiruvchi tizim sifatida ko'radi. [2,5,12]

Sinergetik tafakkurning asosiy xususiyatlari:

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Tizimlilik va yaxlitlik, interdisiplinarlik, ijodiylik va innovatsiyalik, adaptivlik va moslashuvchanlik, refleksivlik va o'z-o'zini tahlil qilish

Pedagogik mexanizmlar

1. Interdisiplinar yondashuv

Sinergetik tafakkurni rivojlantirishda eng muhim pedagogik mexanizmlardan biri turli fanlar orasidagi bog'lanishlarni o'rnatishdir. Bu yondashuv:

Fanlararo integratsiyani ta'minlaydi

O'quvchilarning bilimlarini sistemalashtirishga yordam beradi

Real hayotdagi muammolarni hal qilishga tayyorlaydi

Kognitiv faollikni oshiradi

2. Muammoli ta'lim

Muammoli ta'lim usuli sinergetik tafakkurni rivojlantirishning asosiy vositalaridan biridir:

Ijodiy va tanqidiy tafakkurni rivojlantiradi

Mustaqil izlanish faolligini rag'batlantiradi

Analitik qobiliyatlarni shakllantiradi

Yangi bilimlarni qidirish motivatsiyasini oshiradi

3. Loyiha usuli

Loyiha faoliyati sinergetik tafakkurning amaliy shakllanishiga xizmat qiladi:

Nazariy bilimlarni amaliyotga tatbiq etish imkoniyatini beradi

Guruh ishida hamkorlik ko'nikmalarini rivojlantiradi

O'quvchilarning ijodiy salohiyatini ochib beradi

Natijaga yo'naltirilgan faoliyatni tashkil etadi [3,6]

Psixologik mexanizmlar

1. Motivatsion omillar

Sinergetik tafakkurni rivojlantirishda motivatsiya muhim rol o'ynaydi:

- Ichki motivatsiyani uyg'otish
- Muvaffaqiyatga erishish istagi
- Yangi bilimlar olishga intilish
- O'z-o'zini takomillashtirishga harakat

2. Kognitiv jarayonlar

Sinergetik tafakkur kognitiv faoliyatning maxsus shakllarini talab qiladi:

Assosiativ bog'lanishlarni o'rnatish

Analiz va sintez jarayonlarini birlashtirish

Abstrakt va konkret tafakkurni muvofiqlashtirish

Xotira va tasavvur imkoniyatlarini kengaytirish

3. Shaxsiy xususiyatlar

Sinergetik tafakkur shaxsiyatning quyidagi xususiyatlari bilan bog'liq:

Ochiqlik va yangilikka moyillik

Risklarni qabul qilish qobiliyati

Moslashuvchanlik va o'zgarishlarga tayyor bo'lish

Tanqidiy munosabat va mustaqil fikrlash

Rivojlanish bosqichlari

1-bosqich: Tayyorgarlik

Bu bosqichda o'quvchilarda sinergetik tafakkur asoslari shakllaniadi:

Turli fanlar bo'yicha bazaviy bilimlarni o'zlashtirish
Bog'lanishlarni ko'ra olish qobiliyatini rivojlantirish
Ijodiy faoliyatga qiziqishni uyg'otish

2-bosqich: Shakllanish

Ushbu bosqichda sinergetik tafakkur elementlari faol rivojlanadi:

Fanlararo bog'lanishlarni o'rnatish
Muammoli vaziyatlarni hal qilish tajribasini to'plash
Ijodiy yondashuvlarni qo'llash

3-bosqich: Rivojlanish

Bu bosqichda sinergetik tafakkur barqaror shakl oladi:

Mustaqil tadqiqot faoliyatini amalga oshirish
Ijodiy loyihalar ustida ishlash
Innovatsion g'oyalar yaratish

Amaliy tavsiyalar

Sinergetik tafakkurni rivojlantirish uchun:

1. **O'quv dasturlarida fanlararo integratsiyani kuchaytirish**
2. **Dars jarayonida ijodiy va muammoli vazifalardan foydalanish**
3. **Baholash tizimida jarayonli baholashni joriy etish**
4. **O'qituvchilar tayyorlashda zamonaviy pedagogik texnologiyalarni o'rgatish**
5. **Ta'lim muhitida ijodiy va erkin fikr almashish sharoitlarini yaratish**

Xulosa. O'quvchilarda sinergetik tafakkurni rivojlantirish zamonaviy ta'lim tizimining muhim vazifalaridan biridir. Bu jarayon pedagogik va psixologik mexanizmlarning o'zaro ta'siri natijasida amalga oshadi. Interdissiplinar yondashuv, muammoli ta'lim, loyiha usuli kabi pedagogik mexanizmlar bilan birga, motivatsion omillar, kognitiv jarayonlar va shaxsiy xususiyatlar sinergetik tafakkurning muvaffaqiyatli rivojlanishini ta'minlaydi.

Sinergetik tafakkurga ega o'quvchilar kelajakda murakkab masalalarni hal qilishda, ijodiy faoliyat yuritishda va o'zgaruvchan dunyoga moslashishda ustunlikka ega bo'ladilar. Shuning uchun ta'lim tizimida ushbu yondashuvni joriy etish va rivojlantirish muhim ahamiyat kasb etadi.

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C M R T

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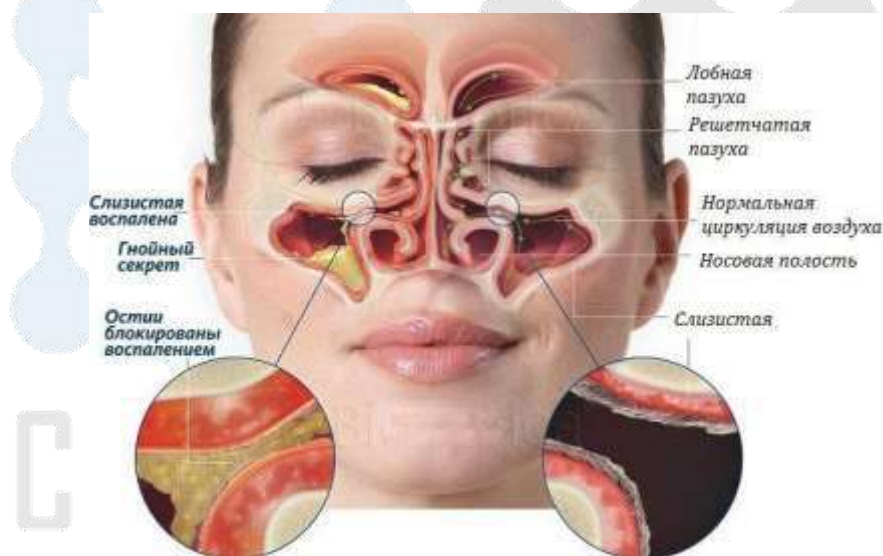
Abstract: This article provides detailed information on the causes, clinical manifestations, diagnostic methods, and modern treatment strategies for sinusitis. Sinusitis is one of the most common nasal cavity diseases and can lead to various complications if left untreated. Differences between acute and chronic forms of the disease, patient recommendations, and preventive measures are discussed in detail.

Keywords: sinusitis, rhinosinusitis, nasal infections, antibiotics, physiotherapy, nasal polyps.

INTRODUCTION

Sinusitis is the inflammation of the maxillary sinuses located in the nasal cavity. This condition often develops after influenza, colds, or other upper respiratory tract infections. The causes of sinusitis are not limited to infections but also include anatomical abnormalities, weakened immunity, and allergic reactions.

If not properly diagnosed or treated, sinusitis can affect other organs and lead to severe



complications. This article examines the causes, symptoms, diagnostic methods, and effective treatments for sinusitis.

Causes of Sinusitis

Sinusitis may develop due to several internal and external factors:

1. Infections: Viral (influenza, ARVI) and bacterial (streptococcus, staphylococcus). These infections often spread to the maxillary sinuses, causing inflammation.
2. Allergic Reactions: Allergic rhinitis or asthma can lead to swelling of the sinus cavities. This blocks sinus drainage and promotes infection development.
3. Dental Issues: Infections or improper fillings in the upper jaw teeth can damage the maxillary sinuses.
4. Anatomical Abnormalities: Deviated nasal septum, polyps, or tumors obstruct sinus drainage.

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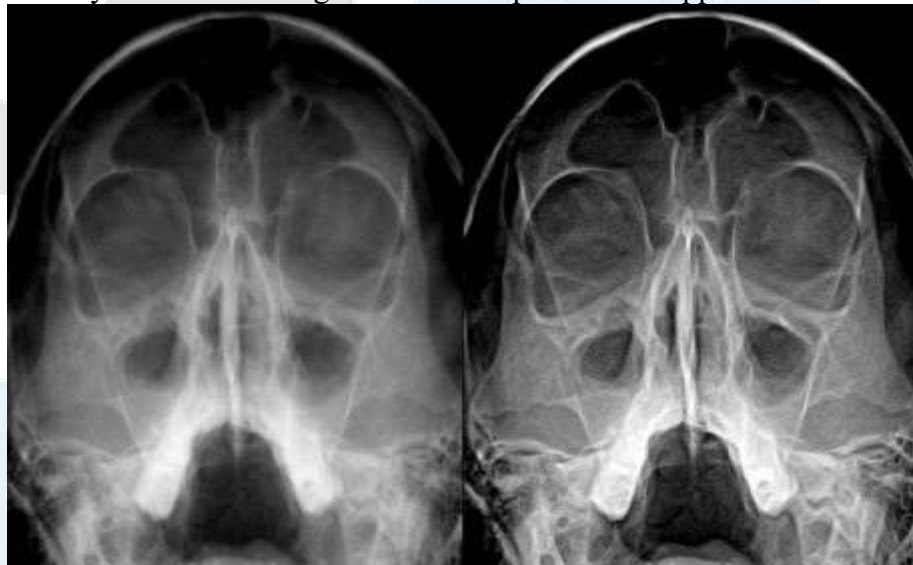
5. Trauma: Injuries to the nasal area activate inflammatory processes.
6. Weakened Immunity: Chronic diseases or general weakness increase susceptibility to infections.

Symptoms of Sinusitis in Adults and Children

The symptoms of sinusitis vary depending on the stage and causes of the disease.

In adults: Thick, purulent, or mucous nasal discharge. Nasal congestion and difficulty breathing. Pain or pressure around the face and eyes. Severe headaches in the forehead or occipital area. Fever, weakness, and general malaise. Dry mouth due to mouth breathing.

In children: Breathing difficulties and frequent coughing. Irritability and sleep disturbances. Rarely, pain in the cheeks and eyes. Nasal discharge of mucus or pus. Loss of appetite and decreased activity



levels.

Diagnosis of Sinusitis; The following methods are used to diagnose sinusitis:

1. Clinical Examination: Inspection of the nose and facial area by a physician.
2. Instrumental Investigations: X-ray imaging: Detects inflammation and fluid accumulation in the sinuses. CT scans: Provides a detailed view of the sinuses.

Endoscopy: Direct observation of obstructions and inflammation in the sinus cavity.

3. Laboratory Tests: Inflammatory markers: CRP, ESR.

Antistreptolysin O (ASO) levels to confirm streptococcal infections.

Treatment Methods for Sinusitis; Effective treatment requires accurate identification of the cause and proper treatment planning.

1. Medications: Antibiotics (for bacterial infections): Amoxicillin, cephalosporins. Anti-inflammatory drugs: Ibuprofen, paracetamol. Nasal sprays (corticosteroid-based). Nasal irrigation with saline solutions.
2. Physiotherapy: Warming the nasal area and inhalation therapy. Cleaning the nasal cavity with special saline solutions.
3. Surgical Treatment: If conservative treatment fails, surgical methods are used to drain the maxillary sinuses.

Removal of nasal polyps.

Risks of Untreated Sinusitis

If not treated promptly, sinusitis can lead to the following complications:

1. Orbital Complications: Inflammation spreading to the eye area.
2. Meningitis: Spread of inflammation to the brain membranes.
3. Chronic Sinusitis: Recurrence of the condition.

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4. Septic Conditions: Spread of infection to other organs via the bloodstream.

Prevention

1. Protect against upper respiratory tract infections.
2. Get vaccinated against influenza.
3. Maintain nasal hygiene.
4. Use anti-allergic medications when needed.
5. Strengthen immunity through a healthy lifestyle.

Conclusion

Sinusitis is not only a source of discomfort but also a disease that can cause serious complications. Timely diagnosis and effective treatment can improve a patient's quality of life and prevent complications. Preventive measures play an essential role in reducing the risk of sinusitis development. Consultation with a Specialist:
If symptoms of sinusitis are observed, contact an ENT specialist immediately. Timely medical assistance is crucial for recovery.

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«BUXOROLIK ENGIL VA MAHALLIY SANOAT AHLINING FRONTGA KO'RSATGAN
YORDAMI.»

Sirojov Qilich Sirojovich. BDU, Mustaqil izlanuvchisi .

ANNOTATSIYA

Fashizmga qarshi urush yillarida, ya'ni Ikkinchi jahon urushi davrida, O'zbekistonda sanoatning harbiy izga ko'chirilishi muhim tarixiy jarayonlardan biri bo'ldi. Urushning boshlanishi bilan, Sovet Ittifoqi frontga zarur qurol-yarog' va materiallarni yetkazib berish uchun sanoatni va ishlab chiqarishni o'zgartirishga majbur bo'ldi. O'zbekiston ham bu jarayonga o'z hissasini qo'shdi. 1941-yilning iyunida urush boshlangach, frontdagi sanoatni saqlab qolish maqsadida ko'plab sanoat korxonalari, zavodlar va fabrikalar, ayniqsa, og'ir sanoat va qurollanish bilan bog'liq ishlab chiqarish ob'ektlari, urush zonasidan chetga ko'chirildi. O'zbekistonning Toshkent, Samarqand, Buxoro, Farg'ona va boshqa shaharlariga juda ko'plab korxonalar, jumladan, qurol-yarog' ishlab chiqarish zavodlari va boshqa strategik sanoat tarmoqlari ko'chirildi. Bu hududlar frontga yaqin bo'lib, Sovet Ittifoqining o'zining xavfsiz hududi hisoblangan.

O'zbekistonning engil sanoat sohalarida ham o'zgartirishlar yuz berdi. Misol uchun, matolar va poyabzal ishlab chiqarish, turli xil kiyim-kechak va boshqa mahsulotlar harbiy ehtiyojlarga moslashtirildi. Mahalliy sanoat tarmoqlari, masalan, paxta sanoati va kimyo sanoati, urush davrida harbiy maqsadlar uchun qayta tashkil etildi. Paxtadan olingan turli xom ashyolar (masalan, kimyoviy moddalar) va boshqa resurslar, qurollar ishlab chiqarish uchun ishlatildi. Urush davrida tashqi iqtisodiy aloqalar o'zgardi. O'zbekistonda yangi qurollar, aviatsiya motorlari, tanklar, artilleriya uchun qismlar ishlab chiqarildi. Buning uchun yangi korxonalar tashkil etildi.

Toshkentda aviatsiya motorlari zavodi ochildi, bu zavod frontga zarur bo'lgan barcha texnikalarni ishlab chiqarishga ixtisoslashgan edi. Shuningdek, navbatdagi yengil sanoat korxonalari ham harbiy izga ko'chirildi, ya'ni kiyim-kechak, ovqatlanish va boshqa mahsulotlar ishlab chiqarilishi va frontdagi askarlarga ta'minot qilindi. Paxta O'zbekiston uchun muhim resurs bo'lib, bu mahsulotlar ham urush davrida harbiy maqsadlar uchun ishlatildi. O'zbekiston paxta tolasini ishlab chiqarish va qayta ishlashda katta ahamiyatga ega edi, va bu jarayonlar urush uchun zarur bo'lgan materiallar ishlab chiqarishda ham yordam berdi.

Urush yillarida O'zbekiston frontga militsiya, harbiy maxsus bo'linmalar va inson resurslarini taqdim etgan bo'lsa, shuningdek, harbiy sanoat uchun zarur materiallar, qurollar va boshqa vositalarni ishlab chiqishda katta rol o'ynadi. O'zbekistonning engil va mahalliy sanoati ko'plab ishlov berish va ishlab chiqarish jarayonlarida faol qatnashdi.

Ikkinchi jahon urushi yillarida O'zbekiston nafaqat inson resurslari, balki sanoat tarmoqlarining ham muhim qo'llab-quvvatlashini ko'rsatdi. Harbiy izga ko'chirilgan sanoat, shu jumladan engil va mahalliy sanoat, urushning harbiy ehtiyojlarini ta'minlashda katta rol o'ynadi.

Kalit so'zlar

Ikkinchi jahon urushi, front, qahramon, fashizm, harbiy sanoat Buxoro, Toshkent, Samarqand mehnatkashlari, sanoat, engil sanoat, mahalliy sanoat, aviatsiya, harbiy kiyim-kechak, qurol-yaroq, paxta sanoati, kimyo sanoati, harbiy bo'linmalar, aviatsiya, tank, tank motorlari, snaryad, artilleriya o'qlari.

Abstract

During the years of the war against fascism, that is, during the Second World War, the transfer of industry to the military path in Uzbekistan was one of the important historical processes. With the

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beginning of the war, the Soviet Union was forced to transform industry and production in order to supply the front with the necessary weapons and materials. Uzbekistan also made its contribution to this process. When the war began in June 1941, in order to preserve industry at the front, many industrial enterprises, plants and factories, especially heavy industry and production facilities related to armaments, were relocated from the war zone. A large number of enterprises, including arms factories and other strategic industries, were relocated to Tashkent, Samarkand, Bukhara, Fergana and other cities of Uzbekistan. These territories were close to the front and were considered a safe zone for the Soviet Union.

Changes also occurred in the light industry of Uzbekistan. For example, the production of fabrics and shoes, various types of clothing and other products were adapted to military needs. Local industries, such as the cotton industry and the chemical industry, were reorganized for military purposes during the war. Various raw materials (for example, chemicals) and other resources obtained from cotton were used to produce weapons. Foreign economic relations changed during the war. New weapons, aircraft engines, tanks, and artillery parts were produced in Uzbekistan. New enterprises were created for this.

An aircraft engine plant was opened in Tashkent, which specialized in the production of all equipment needed for the front. Other light industry enterprises were also transferred to the military path, that is, to the production of clothing, food and other products and supplies for soldiers at the front. Cotton was an important resource for Uzbekistan, and these products were also used for military purposes during the war. Uzbekistan was of great importance in the production and processing of cotton fiber, and these processes also helped in the production of materials necessary for the war.

During the war years, Uzbekistan provided the front with militia, military special units and human resources, and also played a major role in the development of materials, weapons and other means necessary for the military industry. Light and local industry of Uzbekistan actively participated in many processing and production processes.

During the Second World War, Uzbekistan provided significant support not only in human resources, but also in industrial sectors. The industry transferred to the military path, including light and local industry, played a major role in ensuring the military needs of the war.

Keywords

World War II, front, hero, fascism, military industry, workers of Bukhara, Tashkent, Samarkand, industry, light industry, local industry, aviation, military uniforms, weapons, cotton industry, chemical industry, military units, aviation, tank, tank engines, projectile, artillery shells.

Аннотация

В годы войны с фашизмом, то есть в годы Великой Отечественной войны, перевод промышленности Узбекистана на военные рельсы был одним из важных исторических процессов. С началом войны Советскому Союзу пришлось трансформировать промышленность и производство, чтобы обеспечить фронт необходимым вооружением и материалами. Узбекистан также внес свой вклад в этот процесс. С началом войны в июне 1941 года многие промышленные предприятия, заводы и фабрики, особенно предприятия тяжелой промышленности и производства вооружений, были выведены из зоны боевых действий, чтобы сохранить промышленность на фронте. Многие предприятия, в том числе оружейные заводы и другие стратегические отрасли промышленности, были переведены в Ташкент, Самарканд, Бухару, Фергану и другие города Узбекистана. Эти районы находились близко к линии фронта и считались безопасными зонами для Советского Союза.

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Изменения произошли и в легкой промышленности Узбекистана. Например, производство тканей и обуви, различных видов одежды и других изделий было адаптировано к военным нуждам. Местные отрасли промышленности, такие как хлопчатобумажная и химическая, во время войны были реорганизованы в военных целях. Различное сырье (например, химикаты) и другие ресурсы, полученные из хлопка, использовались для производства оружия. Внешнеэкономические связи изменились во время войны. В Узбекистане производились новые виды оружия, авиадвигатели, танки, детали для артиллерии. Для этой цели были созданы новые предприятия.

В Ташкенте был открыт завод авиадвигателей, специализирующийся на производстве всей необходимой фронту техники. Также следующее поколение предприятий легкой промышленности было переведено на военный путь, то есть на производство одежды, продуктов питания и других товаров и снабжение солдат на фронте. Хлопок является важным ресурсом для Узбекистана, и эта продукция также использовалась в военных целях во время войны. Узбекистан имел большое значение в производстве и переработке хлопкового волокна, и эти процессы также способствовали производству материалов, необходимых для войны.

В годы войны Узбекистан обеспечивал фронт милицией, воинскими спецподразделениями, людскими ресурсами, а также играл большую роль в создании необходимых для военной промышленности материалов, вооружения и других средств. Легкая и бытовая промышленность Узбекистана активно участвовала во многих процессах переработки и производства.

Во время Второй мировой войны Узбекистан оказывал значительную поддержку не только в людских ресурсах, но и в промышленных секторах. Промышленность, в том числе легкая и кустарная, переведенная на военный лад, сыграла важную роль в обеспечении военных нужд войны.

Ключевые слова

Вторая мировая война, фронт, герой, фашизм, военная промышленность, рабочие Бухары, Ташкента, Самарканда, промышленность, легкая промышленность, местная промышленность, авиация, военная форма, оружие, хлопчатобумажная промышленность, химическая промышленность, воинские части, авиация, танк, танковые двигатели, снаряд, артиллерийские снаряды.

KIRISH

Urush keng ko'lamda yengil va oziq-ovqat sanoati korxonalarini qurish resurslarini jiddiy ravishda qisqartirib yubordi. Ana shu tarmoqlarga kapital mablag' sarflash urushdan oldingi davrdagiga nisbatan umuman mamlakat buyicha urush yillarida taxminan 60 foizga qisqardi. 1942 yilda yengil sanoat buyumlari chiqarish topshirigi ancha kupaydi. Bu topshirik Uzbekistonga ko'chirib keltirilgan barcha korxonalarning to'la quvvatini xisobga olgan xolda ishlab chikilgan edi. Maxsulot ishlab chikarish hajmining ortishi tegishli moddiy-texnika bazasini vujudga keltirish va tarmoqni xom ashyo, yokilgi, elektr energiya bilam ta'minlashni talab qildi. Uzbekiston yengil sanoati urushgacha bo'lgan davrda yordamchi xo'jaliklarga mutlaqo ega emas edi. Metallfurnitura, metiz, poyabzal qoliplari, ximikatlari, namat, arqon- bularning xammasi tashkaridan keltiriladi edi. Mamlakatning markaziy qismidan maxsulot yetkazib berish qariyb butunlay tuxtab qolgan urushning dastlabki paytlaridanoq zarur materiallar ishlab chikarishni shu joyning uzida tashkil etish kerak edi.

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Respublika partiya va sovet organlari kuchirib keltirilgan uskunalarini zudlik bilan ishga solib yuborish va mavjud korxonalar ishini yaxshilash yuzasidan katta ishlarni, qildilar. 1942 yil 2-sentyabrda Uzbekiston KP (b) Markaziy Komitetining VI Plenumi bo'lib o'tdi. Plenum yengil va maxalliy sanoat korxonalari ishini yaxshilash yuzasidan konkret tadbirlar belgilab berdi. Uzbekiston KP (b) Markaziy Komiteti va Xalk Komissarlar Soveti oblast partiya komitetlari va oblast ijroiya komitetlari zimmasiga ko'chirib keltirilgan korxonalarning to'la quvvat bilan ishlashini taminlash majburiyatini yuklab ,ularga ishchi kuchi ,qurilish materiallari ,elektr energiya ,transport ajratib berdi. 1943 yil oktyabrigacha 10 tadan ko'proq korxona tashkil etildi. Bir yil ichida maxalliy sanoat quvati 117 million sumlik ,respublika sanoati bo'yicha 94 million so'mlik ko'paydi.

Urush yillarida respublika maxalliy sanoatida axoli uchun xilma-xil maxsulotlar: temir krovat, setkalar, quyilmalar, pechka quymasi, elektr plitkalar, elektr dazmollari, primus ignalari, osh va choy qoshiklar, turli qaychilar ,tunuka buyumlar, bolalar aravalari, velosipedlar ,chanalar, metall va yogoch uyinchoqlar, myasorubkalar qoliplar, bochkalar, mebel, turli rangli siyoxlar , yelim, poyafzal uchun krem, «chistol» poroshogi va boshqa malsulotlar ishlab chiqarildi. Ayni vaqtda ana shu korxonalar front uchun granatalar, minomyotlarning detallari, motorlar uchun isitgichlar, bronza detallari va boshqa malsulotlar ishlab chiqardilar. Masalan, Chkalov nomli metall buyumlar zavodi urushgacha turli xil keng iste'mol mollari — chelak, togora, kurakcha duxovka, myasorubka, metall uyinchoqlar, bolalar velosipedlari va aravachalari, chanalar va shu singarilarni ishlab chiqarar edi. Urush boshlaridanoq esa korxona xarbiy anjomlar, turli detallar, minomyotlar va boshqa buyumlar ishlab chikarishga kirishdi. Bu maxsulot kuchirib keltirilgan korxonalar bilan kooperatsiya tarzida chiqarildi. Zavod yalpi malsulot xajmi 1940 yildagi 1,8 million sumdan 1943 yilda 5,8 million sumga ko'paydi, yoki 322,2 foiz ortdi. Ayni vaqtda korxona urush vaqti sharoitlarida keng iste'mol buyumlari: osh va choy qoshiklari, vilkalar, manqallar, zajigalkalar, poyabzal nagallari xam ishlab chiqardi. Toshkentdagi yogoch. ishlash zavodi urushgacha xilma-xil uy-ruzugor mebellari ishlab chiqargan bulsa, endilikda maxsus buyurtmani bajarishga kirishdi. Ayni vaktida zavod kollektivi chikitlardan bolalar uyinchoqlari, shuningdek kulolchilik idishlari tayyorladi. Buning uchun qipiqdan yokilgi sifatida foydalanildi. Zavod yalpi maxsulot 1940 yildagi 1,2 million sumdan 1943 yilda 5 million so'mga etdi.

Urush yillarida zavod qo'shimcha uskunalar bilan ta'minlandi. Bu esa tayyorlash sexini tashkil etish va potok usulida maxsulot chiqarishga o'tish imkonini berdi. Chuyandan xo'jalik buyumlari tayyorlaydigan zavod urushgacha chuyan buyumlar, elektr plitkalar, elektr dazmollar, kulflar chiqarar edi, shuningdek qozon qurish ishlarini bajarar edi. Urush yillarida zavod ishchilari Uzbekistonga ko'chirib keltirilgan korxonalarni tiklashda katta yordam berdilar, remont mexanika va qozon sistemasi bajarishni, vagrankalar tayyorlashni o'rganib oldilar. Bundan tashqari, zavod xalq qurilishlari — Fargona kanali, Bekobod metallurgiya zavodi, Angrenugol», «Farxadstroy» uchun turli detallar tayyorlash topshirigini bajardi. Korxona yalpi maxsuloti 1940 yildagi 0,6 million so'mlikdan 1943 yilda 1,7 million so'mlikka yetdi. Aravaszlik zavodi juda qiyin axvolda edi. U qariyb ikki yil rekonstruksiya qilindi, uskunalar bilan jixozlandi. Bu zavod Armiya uchun qo'sh otli o'n mingta aravalar tayyorlab chiqarish mumkin edi. Birok zavod butun urush davomida maxsus yog'och va ayrim profildagi metallga katta extiyoj sezib keldi. Odatda bu maxsulotlar ilgari ittifoqning boshqa oblastlaridan keltirilardi. Bularning xammasi ko'sh otli aravalar ishlab chiqarishga salbiy ta'sir ko'rsatdi. Shuni aytish kifoyaki, 1943 yilda atigi mingta arava tayyorlandi. Zavod zarur xom ashyoning keskin yetishmasligi oqibatida boshqa maxsulotlar ishlab chiqarishga, remont ishlari bilan shugullanishga majbur bo'ldi.

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Respublika maxalliy sanoatining boshqa ko'pgina korxonalarida xam ana shunday manzarani ko'rish mumkin edi. Urush yillarida sovun tayyorlash sanoati, ip gazlama, piyma, poyabzal, junni qayta ishlash, mineral o'g'itlar, galantereya buyumlari sanoati, shuningdek tuz qazib chiqarish rivojlandi. Arava remonti ustaxonalari, metall buyumlar va maishiy xizmat ustaxonalari tarmogi ancha kengaydi. Uzbekiston yengil va malalliy sanoat mexnatkashlari ning mexnat qaxramonligi, fidokorligi front va mamlakat ichkarisi uchun maxsulot yetishtirishni yil sayin ko'payтира orish, oldimizda turgan boshqa muxim va zifalarni bajarish imkonini berdi.

Shunday qilib, 1945 yilda Uzbekiston kattik charm buyumlar ishlab hiqarish bo'yicha O'rta Osiyo respublikalari o'rtasida birinchi o'rinni, ichki trikotaj, poyabzal ishlab chiqarish bo'yicha esa ikkinchi o'rinni egalladi. Ma'lumotlar yana shundan xam dalolat beradiki, yukorida tilga olingan malsulot turlari faqat Uzbekistondagina ishlab chiqarildi. Vaxolanki, boshqa respublikalarda ayrim tarmoqlar bo'yicha maxsulot ishlab chiqarish kamayib ketganligini ko'ramiz.

Urush yillarida Uzbekiston yengil sanoati nemis-fashist bosqinchilar ustidan —galabani ta'minlash ishiga salmoqli xissa qo'shdi. Yengil sanoatning yigiruv, trikotaj, ip yigiruv va boshqa yangi tarmoqlari vujudga keldi. Bir qancha tikuvchilik fabrikalari qayta tashkil etilganligi tufayli Uzbekiston rivojlangan tikuvchilik markazi bo'lib qoldi, jumladan, tikuvchilik buyumlari chiqarish 1944 yilda 1940 yildagiga nisbatan 1,5 baravar ko'paydi. Respublika yengil sanoat xalq komissariati ixtiyorida 1943 yilda 37 korxona bo'lgan bo'lsa, 1945 yilda 50 dan ko'proq, maxalliy sanoatda esa 10 dan ko'proq korxona bor edi. Urush yillarida toshkentliklar Armiya uchun 800 mingta gimnasterka, 2 million 636 mingta telogreyka, soldatlar uchun 2 million 221 ming 200 juft poyafzal berdilar. Uzbekistonning mamlakat yengil sanoati umumiy potensialidagi xissasi ortdi. Bu xissa 1940 yildagi 0,63 foizdan 1941 yilda 9,3 foizga ko'paydi. Uzbekiston yengil sanoati urush yillarida nemis-fashist bosqinchilar ustidan galabani ta'minlash ishiga salmoqli xissa qo'shdi. Bu yerda yengil sanoatning yangi tarmoqlari: yigiruv, trikotaj, ip-yigiruv va boshqa tarmoqlari tashkil etildi. Uzbekistonda bir qancha tikuvchilik fabrikasining qayta tashkil etilganligi tufayli respublikamiz rivojlangan tikuvchilik sanoati markazi bo'lib qoldi, jumladan, tikuvchilik malsuloti 1940 yildagiga nisbatan 1944 yilda 107 million kvadrat ditsimetrga yetdi yoki 1,5 baravar ko'paydi. Yuqorida aytilganlardan quyidagicha xulosa chikarish zarur: yengil sanoat ishchilarining urush davridagi mexnatiga ularning davlat planini bajarganligi yoki bajarmaganligiga qarab baxo berib bo'lmaydi. Ularning mexnatiga yengib o'tishga to'g'ri kelgan obyektiv sharoitlarni shuningdek bergan maxsulotlarning miqdorini xisobga olgan xolda baxo berish kerak. Bu— yengil va malalliy sanoat mexnatchilari nemis-fashist bosqinchilari ustidan umumxalk galabasiga qo'shgan xissasiga, ularning Vatanimiz ozodligi va mustaqilligi uchun galabaga erishish yo'lida qilingan fidokorona mexnati, kuch-gayratiga berilgan munosib baxo bo'ladi.

ADABIYOTLAR TAHLILI VA METODOLOGIYASI

Ikkinchi jahon urushi yillarida O'zbekiston nafaqat inson resurslari, balki sanoat tarmoqlarining ham muhim qo'llab-quvvatlashini ko'rsatdi. Harbiy izga ko'chirilgan sanoat, shu jumladan engil va mahalliy sanoat, urushning harbiy ehtiyojlarini ta'minlashda katta rol o'ynadi.

Urush yillarida O'zbekiston sanoati haqida gapirganda, Ikkinchi jahon urushi davri O'zbekiston sanoatining rivojlanishiga katta ta'sir ko'rsatganini aytish mumkin. Sanoat rivojlanishi va iqtisodiyotni qo'llab-quvvatlash uchun ko'plab o'zgarishlar amalga oshirilgan.

Ikkinchi jahon urushi boshlanishi bilan, ko'plab sanoat korxonalari va zavodlar Ukrainadan, Rossiyadan va boshqa frontga yaqin hududlardan O'zbekistonga ko'chirilgan. Bu yerda ularga yangi ishlab chiqarish quvvatlari yaratildi, va bu ko'chirish sanoatning tez rivojlanishiga olib keldi. Urush

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davrida paxta yetishtirish O'zbekistonda asosiy sanoat tarmog'i bo'lib qolgan, ammo sanoat sektorining boshqa sohalari ham rivojlandi. Masalan, kimyo sanoati, paxta tozalash zavodlari, metallurgiya va to'qimachilik sanoati kengaygan.

O'zbekiston sanoati, asosan, urush ehtiyojlarini qondirishga yo'naltirilgan edi. Urush paytida O'zbekistonga ko'plab harbiy texnikalar ishlab chiqarish, kiyim-kechak va oziq-ovqat mahsulotlari ishlab chiqarish vazifasi yuklatilgan edi. Urush davrida O'zbekistonning energetika sektori ham kuchli rivojlanishga yuz tutdi. Bu davrda yangi energetika manbalari va ishlab chiqarish zavodlari qurildi. Urush yillarida sanoat O'zbekistonda tez rivojlanib, yangi ishlab chiqarish tarmoqlari va texnologiyalar paydo bo'ldi. Bu rivojlanish, ayniqsa, urushning oxiriga kelib, mintaqaning iqtisodiy salohiyatini oshirdi.

Urush yillarida Uzbekiston yengil sanoati nemis-fashist bosqinchilar ustidan —galabani ta'minlash ishiga salmoqli xissa qo'shdi. Yengil sanoatning yigiruv, trikotaj, ip yigiruv va boshqa yangi tarmoqlari vujudga keldi. Bir qancha tikuvchilik fabrikalari qayta tashkil etilganligi tufayli Uzbekiston rivojlangan tikuvchilik markazi bo'lib qoldi, jumladan, tikuvchilik buyumlari chiqarish 1944 yilda 1940 yildagiga nisbatan 1,5 baravar ko'paydi. Respublika yengil sanoat xalq komissariati ixtiyorida 1943 yilda 37 korxona bo'lgan bo'lsa, 1945 yilda 50 dan ko'proq, maxalliy sanoatda esa 10 dan ko'proq korxona bor edi. Urush yillarida toshkentliklar Armiya uchun 800 mingta gimnasterka, 2 million 636 mingta telogreyka, soldatlar uchun 2 million 221 ming 200 juft poyafzal berdilar. Uzbekistonning mamlakat yengil sanoati umumiy potensialidagi xissasi ortdi. Bu xissa 1940 yildagi 0,63 foizdan 1941 yilda 9,3 foizga ko'paydi. Uzbekiston yengil sanoati urush yillarida nemis-fashist bosqinchilar ustidan galabani ta'minlash ishiga salmoqli xissa qo'shdi. Bu yerda yengil sanoatning yangi tarmoqlari: yigiruv, trikotaj, ip-yigiruv va boshqa tarmoqlari tashkil etildi. Uzbekistonda bir qancha tikuvchilik fabrikasining qayta tashkil etilganligi tufayli respublikamiz rivojlangan tikuvchilik sanoati markazi bo'lib qoldi, jumladan, tikuvchilik mahsuloti 1940 yildagiga nisbatan 1944 yilda 107 million kvadrat ditsimetrga yetdi yoki 1,5 baravar ko'paydi. Yuqorida aytilganlardan quyidagicha xulosa chikarish zarur: yengil sanoat ishchilarining urush davridagi mehnatiga ularning davlat planini bajarganligi yoki bajarmaganligiga qarab baxo berib bo'lmaydi. Ularning mehnatiga yengib o'tishga to'g'ri kelgan obyektiv sharoitlarni shuningdek bergan mahsulotlarning miqdorini xisobga olgan holda baxo berish kerak. Bu — yengil va mahalliy sanoat mehnatchilari nemis-fashist bosqinchilari ustidan umumxalk galabasiga qo'shgan xissasiga, ularning Vatanimiz ozodligi va mustaqilligi uchun galabaga erishish yo'lida qilingan fidokorona mehnati, kuch-gayratiga berilgan munosib baxo bo'ladi.

MUXOKAMA VA NATIJALAR

1941 yil 22 iyun. Bu kunni butun insoniyat shu'm kun sifatda esga keladi. Xuddi kun nemis-fashist bosqinchilari dasturiy SSSRning yuqori chegaralariga xatkora bostirib kirdi. Oqibatda xalqimizning fashist bosqinchilariga qarshi kurashdi.

Mamlakatimiz bu urushga tayyorgarlikni to'la amalga oshiq emas edi. Bundan foydalanilgan dushman chegara xududlarini qisqa mahkamalarda ishg'ol qilib, mamlakat ichkariga qarab siljiy boshladi. Ana shunday ogir damda Hukumat ne-fashist bosqinchilariga qarshi umumiy xalk kurashini tashkil qildi va kurashning haqiqat ekaniga, bu urushda biz albatta, galabamizga xalqimizda ishonch ruhini tugdira oldi. 1941-yil 30-yil Davlat Mudofaa Qo'mitasi tuzilib, unga katta rejalar berildi. Davlat Mudofaa Qo'mitasi o'ziga berilgan huquqlardan foydali bo'lib, ichda mamlakat xalq xo'jaligini harbiy izga ko'chirish, mahnatkashlar ommasini safarbar qilish va jips ishlab chiqarish bo'yicha samarali ishlarni amalga oshirish, bular buyuk g'alabani ta'minlashdagi asosiy omili bo'ldi.

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Fashizmga qarshi urush yillarida, ya'ni Ikkinchi jahon urushi davrida, O'zbekistonda sanoatning harbiy izga ko'chirilishi muhim tarixiy jarayonlardan biri bo'ldi. Urushning boshlanishi bilan, Sovet Ittifoqi frontga zarur qurol-yarog' va materiallarni yetkazib berish uchun sanoatni va ishlab chiqarishni o'zgartirishga majbur bo'ldi. O'zbekiston ham bu jarayonga o'z hissasini qo'shdi. 1941-yilning iyunida urush boshlangach, frontdagi sanoatni saqlab qolish maqsadida ko'plab sanoat korxonalari, zavodlar va fabrikalar, ayniqsa, og'ir sanoat va qurollanish bilan bog'liq ishlab chiqarish ob'ektlari, urush zonasidan chetga ko'chirildi. O'zbekistonning Toshkent, Samarqand, Buxoro, Farg'ona va boshqa shaharlariga juda ko'plab korxonalar, jumladan, qurol-yarog' ishlab chiqarish zavodlari va boshqa strategik sanoat tarmoqlari ko'chirildi. Bu hududlar frontga yaqin bo'lib, Sovet Ittifoqining o'zining xavfsiz hududi hisoblangan.

O'zbekistonning engil sanoat sohalari ham o'zgartirishlar yuz berdi. Misol uchun, matolar va poyabzal ishlab chiqarish, turli xil kiyim-kechak va boshqa mahsulotlar harbiy ehtiyojlarga moslashtirildi. Mahalliy sanoat tarmoqlari, masalan, paxta sanoati va kimyo sanoati, urush davrida harbiy maqsadlar uchun qayta tashkil etildi. Paxtadan olingan turli xom ashyolar (masalan, kimyoviy moddalar) va boshqa resurslar, qurollar ishlab chiqarish uchun ishlatildi. Urush davrida tashqi iqtisodiy aloqalar o'zgardi. O'zbekistonda yangi qurollar, aviatsiya motorlari, tanklar, artilleriya uchun qismlar ishlab chiqarildi. Buning uchun yangi korxonalar tashkil etildi.

Toshkentda aviatsiya motorlari zavodi ochildi, bu zavod frontga zarur bo'lgan barcha texnikalarni ishlab chiqarishga ixtisoslashgan edi. Shuningdek, navbatdagi yengil sanoat korxonalari ham harbiy izga ko'chirildi, ya'ni kiyim-kechak, ovqatlanish va boshqa mahsulotlar ishlab chiqarilishi va frontdagi askarlarga ta'minot qilindi. Paxta O'zbekiston uchun muhim resurs bo'lib, bu mahsulotlar ham urush davrida harbiy maqsadlar uchun ishlatildi. O'zbekiston paxta tolasini ishlab chiqarish va qayta ishlashda katta ahamiyatga ega edi, va bu jarayonlar urush uchun zarur bo'lgan materiallar ishlab chiqarishda ham yordam berdi.

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EKSPRESSIV LEKSIKA VA EMOTSIONAL BIRLIKLARNING ITALYAN TILIDAN O'ZBEK TILIGA TARJIMADA IFODALANISHI

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Annotatsiya

Maqolada italyan tilidan o'zbek tiliga tarjimada ekspressiv leksika va emotsional birliklarning ifodalanishi masalalari tahlil qilinadi. Bunday birliklarning tarjima jarayonida semantik noziklik va emotsional rang-baranglikni saqlab qolish zarurati alohida ta'kidlanadi. Alda Merini she'rlari va zamonaviy italyan adabiyotidan olingan misollar asosida ekspressivlikni o'zbek tilida qayta yaratishning lingvopoetik usullari ko'rsatib beriladi. Tadqiqot natijalari tarjimashunoslikda emotsional qatlamni yetkazishning nafaqat semantik, balki pragmatik yondashuv ham muhimligini ko'rsatadi.

Kalit so'zlar: ekspressiv leksika, emotsional birliklar, tarjimashunoslik, semantik ekvivalentlik, pragmatik moslashuv, Alda Merini.

RENDERING EXPRESSIVE LEXIS AND EMOTIONAL UNITS IN TRANSLATION FROM ITALIAN INTO UZBEK

Annotation

The article analyzes the challenges of conveying expressive vocabulary and emotional units in translation from Italian into Uzbek. It highlights the importance of preserving semantic nuances and emotional coloring during the translation process. Drawing on examples from Alda Merini's poetry and contemporary Italian literature, the study explores linguopoetic strategies for reproducing expressiveness in Uzbek. The findings demonstrate that in translation studies, rendering emotional layers requires not only semantic equivalence but also pragmatic adaptation.

Keywords: expressive vocabulary, emotional units, translation studies, semantic equivalence, pragmatic adaptation, Alda Merini.

ПЕРЕДАЧА ЭКСПРЕССИВНОЙ ЛЕКСИКИ И ЭМОЦИОНАЛЬНЫХ ЕДИНИЦ ПРИ ПЕРЕВОДЕ С ИТАЛЬЯНСКОГО ЯЗЫКА НА УЗБЕКСКИЙ

Аннотация

В статье рассматриваются проблемы передачи экспрессивной лексики и эмоциональных единиц при переводе с итальянского языка на узбекский. Подчёркивается необходимость сохранения семантической тонкости и эмоциональной окраски в процессе перевода. На примере поэзии Альды Мерини и других текстов современной итальянской литературы анализируются лингвопоэтические приёмы воссоздания экспрессивности в

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узбекском языке. Результаты исследования показывают, что для адекватного перевода эмоционального слоя требуется не только семантический, но и прагматический подход.

Ключевые Слова: экспрессивная лексика, эмоциональные единицы, переводоведение, семантическая эквивалентность, прагматическая адаптация, Альда Мерини.

Kirish. Tarjima jarayoni nafaqat til birliklarini bir tildan ikkinchisiga o'tkazish, balki ularning emotsional, madaniy va estetik qatlamlarini ham saqlab qolishni taqozo etadi. Ayniqsa, ekspressiv leksika va emotsional birliklarning tarjimasi tarjimashunoslikda eng murakkab masalalardan biri hisoblanadi. Chunki so'zning nafaqat lug'aviy, balki hissiy va stilistik qimmati ham mavjud bo'lib, bu qimmat ko'pincha milliy madaniyat va tilga xos bo'lgan jihatlar bilan belgilanadi.

Italiya adabiyotida, xususan, she'riyatda ekspressiv birliklarning ko'pligi kuzatiladi. Alda Merini, Salvatore Quasimodo, Giuseppe Ungaretti singari shoirlar ijodida emotsional qatlam poetik ifoda kuchini oshirishga xizmat qiladi. Masalan, Merining "Sono nata il 21 a primavera..." satrlarida "follia" (telbalik) so'zi oddiy klinik tushuncha emas, balki poetik va falsafiy ramz sifatida ishlatiladi. Uni o'zbek tiliga "telbalik", "jinnilik", "ruhiy og'ish" kabi turli variantlarda tarjima qilish mumkin, biroq har bir variantning ekspressiv yuklamasi turlicha bo'ladi.

Mazkur tadqiqotning dolzarbligi shundaki, italyan tilidan o'zbek tiliga badiiy matn tarjima qilish jarayonida ekspressiv leksika va emotsional birliklarni to'g'ri va ta'sirchan ifodalash nafaqat semantik, balki pragmatik ekvivalentlikni ham talab qiladi. Tarjimon faqat lug'aviy ma'noga emas, balki muallifning hissiy ohangiga, poetik uslubiga va matnning umumiy estetik ta'siriga e'tibor qaratishi zarur.

Shuningdek, o'zbek tilshunosligida ekspressiv leksika masalasi ko'proq ichki til tizimi nuqtayi nazaridan o'rganilgan bo'lsa-da, tarjimashunoslik kontekstida bu hodisaga yetarli e'tibor qaratilmagan. Shu bois, italyan badiiy matnlaridagi emotsional birliklarning tarjimada qay tarzda ifodalanishini tahlil qilish ilmiy va amaliy ahamiyat kasb etadi. Ushbu maqolada quyidagi masalalar yoritiladi: 1. Ekspressiv leksika va emotsional birliklarning lingvistik xususiyatlari. 2. Ularning italyan adabiyotidagi qo'llanishi (Merini, Quasimodo va boshqa shoirlar misolida). 3. O'zbek tiliga tarjimada duch kelinadigan qiyinchiliklar va ularning sabablari. 4. Pragmatik moslashuv va lingvopoetik vositalar orqali ekspressivlikni qayta yaratish usullari.

Shunday qilib, maqola ekspressiv birliklarning tarjimada qanday talqin qilinishi va ularning semantik-pragmatik qatlamlari qanchalik darajada saqlanib qolishini ilmiy asosda o'rganishga qaratilgan.

-Adabiyotlarning tahlili (Literature review). Ekspressiv leksika va emotsional birliklarning tarjimasi masalasi tilshunoslik va tarjimashunoslikda eng ko'p muhokama qilinadigan mavzulardan biridir. Bu masala bo'yicha ko'plab mahalliy va xorijiy tadqiqotchilar ilmiy izlanishlar olib borgan. Avvalo, umumiy lingvistika doirasida J. Lyonsning *Semantics* (1981) asarida ekspressiv birliklarning semantik yuklamasi va ularning konnotativ qiymati alohida ta'kidlangan. Uning fikricha, so'zning faqat denotativ ma'nosini tarjima qilish yetarli emas, balki uning konnotativ va ekspressiv qimmatini ham hisobga olish zarur.

Tarjimashunoslikda P. Newmarkning *Approaches to Translation* (1988) asari alohida ahamiyatga ega. Muallif ekspressiv birliklarni tarjima qilishda "semantic translation" va "communicative translation" metodlarini taqqoslaydi. Unga ko'ra, emotsional birliklarni so'zma-so'z tarjima qilish ko'pincha ularning stilistik ta'sirini yo'qotadi, shu bois tarjimon pragmatik moslashuv orqali asl matnning emotsional ohangini qayta yaratishi kerak.

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O'zbek tilshunosligida ham ekspressiv leksika masalalari ko'tarilgan. Masalan, Sh. Safarov (2008)ning pragmatolingvistika bo'yicha tadqiqotlarida so'zning emotsional-semantik qatlamini o'quvchi yoki tinglovchi qabul qilishi muhim omil sifatida qayd etiladi. Bu yondashuv tarjimada ham dolzarb bo'lib, o'zbek tilidagi ekvivalent tanlash jarayonida o'quvchi ongidagi assotsiatsiyalar hisobga olinishi lozimligini ko'rsatadi.

Italiya adabiyotida, xususan, Alda Merini ijodida ekspressiv birliklarning ahamiyati ko'plab adabiyotshunoslar tomonidan o'rganilgan. Eugenio Borgna (2002) Merining ruhiy kechinmalarni ifodalashda ekspressiv leksikaga tayanishini tahlil qiladi. Uning fikricha, Merining "follia", "silenzio", "urlo" kabi so'zlari oddiy leksik birlik emas, balki poetik va diniy-metaforik ramzdir. Pierangela Di Lucchio (2008) esa Merini asarlarida ekspressivlikni ko'proq metafora va antonimiya orqali yuzaga kelishini ko'rsatadi.

Qiyosiy nuqtayi nazardan qaraganda, italyan va o'zbek tillarida ekspressiv birliklarning qo'llanishida ayrim farqlar kuzatiladi. Masalan, italyan tilida "follia" so'zi ko'p hollarda poetik-estetik ramz bo'lsa, o'zbek tilida "telbalik" ko'proq salbiy ma'no bilan qabul qilinadi. Shu bois tarjimada konnotativ tafovutlarni yengib o'tish tarjimon uchun muhim vazifa hisoblanadi.

Xulosa qilib aytganda, mavjud ilmiy manbalar ekspressiv leksika va emotsional birliklarning tarjimada o'ziga xos yondashuvni talab qilishini ko'rsatadi. Ularning tahlili shuni ko'rsatadiki, tarjimon nafaqat semantik, balki pragmatik, lingvopoetik va madaniy jihatlarni ham hisobga olishi lozim.

-Tadqiqot metodologiyasi (Research methodology). Ushbu tadqiqot italyan tilidan o'zbek tiliga tarjimada ekspressiv leksika va emotsional birliklarning ifodalanishini lingvopoetik va tarjimashunoslik nuqtayi nazaridan o'rganishga qaratilgan. Shu bois bir nechta metodlardan foydalanildi: *Lingvopoetik tahlil metodi*. Bu metod orqali italyan she'riyatidagi ekspressiv birliklar (masalan, "follia", "silenzio", "urlo", "passione") poetik kontekstdagi vazifasi va ularning badiiy ifoda kuchi o'rganildi. So'zlarning semantik va konnotativ qatlamlari aniqlanib, ular o'zbek tilida qanday ekvivalentlar bilan berilishi mumkinligi tahlil qilindi. *Qiyosiy tahlil metodi*. Italyan va o'zbek tillarida ekspressiv birliklarning semantik va stilistik xususiyatlari solishtirildi. Masalan, italyan tilidagi "urlo silenzioso" (sukunatdagi faryod) iborasining o'zbekchadagi "sukunat faryodi" bilan qanday pragmatik tafovutlarga ega ekanligi ko'rsatildi. *Tarjimashunoslik yondashuvi*. Tarjima jarayonida ekvivalent tanlash, ekspressiv birliklarni so'zma-so'z o'tkazish yoki pragmatik moslashtirish masalalari ko'rib chiqildi. Bu borada Newmark (1988), Nida (1964) va Catford (1965) nazariyalaridan foydalanildi. *Biografik va kontekstual yondashuv*. Alda Merining shaxsiy hayoti va ijodiy tajribasi uning ekspressiv leksikasiga bevosita ta'sir ko'rsatgani uchun, biografik omillar ham tahlil qilindi. Shuningdek, matnlar yaratilgan tarixiy va madaniy kontekst hisobga olindi. *Amaliy material*. Tadqiqot materiali sifatida Alda Merining *La Terra Santa* (1984), *Vuoto d'amore* (1991), *Ballate non pagate* (1995) to'plamlaridan, shuningdek, boshqa italyan adiblari (Quasimodo, Ungaretti) she'rlaridan namunalar tanlab olindi. Ularning o'zbek tiliga tarjimalari mavjud hollarda qiyosiy o'rganildi, mavjud bo'lmagan hollarda muallif tarjimalari ishlab chiqildi.

Metodologiya asosida olingan natijalar italyan tilidan o'zbek tiliga ekspressiv leksika va emotsional birliklarni tarjima qilish jarayonida semantik aniqlik, pragmatik moslashuv va estetik ta'sirni uyg'unlashtirish muhimligini ko'rsatishga xizmat qiladi.

-Tahlil va natijalar (Analysis and results). Ekspressiv leksika va emotsional birliklar badiiy matnning ruhini, poetik ohangini va muallifning ichki kechinmalarini ifodalashda eng muhim vositalardan biri hisoblanadi. Tarjima jarayonida bunday birliklarning semantik va pragmatik

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qatlamini to'liq yetkazish katta mahorat va lingvopoetik sezgirlik talab etadi. Tadqiqot davomida italyan tilidan o'zbek tiliga tarjimada uchraydigan bir qator xususiyatlar aniqlangan. *Ekspressiv birliklarning semantik qatlami* - ekspressiv leksika odatda konnotativ ma'no yukiga ega bo'ladi. Masalan, Alda Merining mashhur satrlaridan biri:

*“Sono nata il 21 a primavera,
ma non sapevo che nascere folle
aprire le zolle
potesse scatenar tempesta.”*

Bu misrada “folle” (telba) so'zi klinik ma'nodan ko'ra poetik ma'noda ishlatilgan. Uni o'zbekchaga “telba”, “jinni”, “aqlidan ozgan” tarzida tarjima qilish mumkin. Ammo “telba” so'zida ko'proq dramatik, “jinni”da esa kinoya ohangi seziladi. Shunday qilib, tarjimon ekspressivlikni to'liq yetkazish uchun kontekstdan kelib chiqib variant tanlaydi. *Metaforik ekspressivlik* - Merini ijodida ekspressiv birliklar ko'pincha metafora vositasida yuzaga chiqadi:

*“Scrivo con il sangue delle mie lacrime,
parole che urlano e poi scompaiono.”
(Men ko'z yoshlarim qoni bilan yozaman,
qichqirgan so'zlarim keyin g'oyib bo'ladi.)*

Bu yerda “sangue delle lacrime” (ko'z yoshlarning qoni) giperbolik va emotsional metafora bo'lib, oddiy tarjimada o'z kuchini yo'qotishi mumkin. O'zbek tilida uni “ko'z yoshlarim qoniday” tarzida berish ekspressivlikni asrashga yordam beradi. *Sinonimiya orqali emotsional rang-baranglik* - ekspressiv birliklarning sinonimik qatlamlari tarjimada muhim rol o'ynaydi. Masalan, italyan tilidagi “amore”, “passione”, “tenerezza”, “dedizione” kabi so'zlarning barchasi “sevgi” atrofida shakllanadi, lekin ularning emotsional yuklamasi turlicha. Tarjimada ularni bir xil so'z bilan berish (“sevgi”) poetik ohangni susaytiradi. Shu sababli, kontekstdan kelib chiqib “sevgi”, “ehtiros”, “mehr”, “bag'ishlanish” kabi so'zlarni farqlab qo'llash zarur. *Antonimiya orqali kontrast* - Merinida ekspressivlik ko'pincha antonimik qarama-qarshiliklar orqali yuzaga chiqadi:

*“Ho cantato l'amore nel mezzo dell'odio,
ho acceso una luce nel cuore dell'ombra.”*

Bu satrlarda “amore–odio” (sevgi–nafrat), “luce–ombra” (yorug'lik–soya) juftliklari dramatik kuch beradi. O'zbek tilida ularni “sevgi–nafrat”, “nur–soya” yoki “yorug'lik–zulmat” tarzida berish mumkin. Tarjimonning tanlovi ohangni kuchaytirishi yoki yumshatishi mumkin. *Pragmatik moslashuv zarurati* - ba'zi ekspressiv birliklar to'g'ridan-to'g'ri o'zbek tilida mavjud bo'lmaganligi uchun, tarjimonda pragmatik moslashuv zarur bo'ladi. Masalan, italyan tilida “urlo silenzioso” (sukunatdagi faryod) paradoksal ifoda bo'lsa, o'zbek tilida uni “sukunat faryodi” deb berish poetik ohangni saqlaydi va o'quvchi uchun tushunarliroq bo'ladi. *O'zbek adabiy tilida ekvivalent topish muammosi* - o'zbek tilida ekspressiv birliklarning ko'p hollarda milliy-madaniy konnotatsiyasi italyan tilidagidan farq qiladi. Masalan, “madre” (ona) so'zining italyan adabiyotida diniy-ramziy ma'nosi kuchliroq, Merinida esa “ilohiy hadya” ramzi sifatida ko'rinadi. O'zbek tilida esa ona ko'proq mehr va fidoyilik bilan bog'lanadi. Shu bois tarjimon ikki madaniyat o'rtasidagi semantik tafovutlarni hisobga olishi lozim.

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Demak, tahlil natijalari shuni ko'rsatadiki, italyan tilidan o'zbek tiliga ekspressiv leksika va emotsional birliklarni tarjima qilishda *semantik aniqlik*, *emotsional rang-baranglik* va *pragmatik moslashuv* uyg'unlashgan holda qo'llanilishi zarur.

-Xulosa va takliflar (Conclusion/Recommendations). Yuqorida olib borilgan tahlillar asosida quyidagi xulosalarga kelish mumkin: 1. *Ekspressiv leksika va emotsional birliklarning tarjimasi murakkab jarayon* bo'lib, nafaqat so'zning lug'aviy ma'nosini, balki uning konnotativ, stilistik va pragmatik yuklamasini ham saqlashni talab qiladi. 2. *Alda Merini ijodi* italyan adabiyotida ekspressivlikning yorqin namunasidir. Uning "folia", "silenzio", "urlo", "amore" kabi birliklari oddiy semantik birlik emas, balki poetik va falsafiy ramzlardir. 3. *Sinonimiya va antonimiya* ekspressivlikni oshirishda muhim rol o'ynaydi. Tarjimada ularni bir xil so'z bilan berib yuborish badiiy ohangni susaytiradi, shu bois tarjimon sinonimik qatlamlarni farqlab qo'llashi lozim. 4. *Pragmatik moslashuv* tarjimada eng muhim usullardan biridir. Chunki italyan tilidagi ayrim ekspressiv iboralar o'zbek tilida bevosita mavjud emas. Shu holatda tarjimon o'zbek o'quvchisiga tushunarli va ta'sirchan ekvivalentni yaratishi kerak. 5. *Tarjimonning ijodiy yondashuvi* zarur. Ekspressiv birliklarni so'zma-so'z tarjima qilish ularning poetik kuchini yo'qotadi. Shu sababli tarjimon matnning umumiy estetik va hissiy ta'sirini qayta yaratishga e'tibor berishi lozim. Takliflar esa quyidagilardan iborat: 1. Ekspressiv leksika va emotsional birliklarni italyan tilini o'qitishda alohida mavzu sifatida o'qitish zarur, chunki bu ularning poetik va pragmatik imkoniyatlarini chuqur anglashga yordam beradi. 2. Tarjima jarayonida ekspressiv birliklarni *kontekstual tahlil* asosida tanlab ishlatish, ularni so'zma-so'z tarjimadan ko'ra *semantik va pragmatik ekvivalent* orqali ifodalash lozim. 3. O'zbek tarjimashunosligida italyan adabiyoti, xususan Alda Merini ijodi asosida ekspressiv leksikaning tarjimadagi o'rni bo'yicha maxsus qo'llanmalar yaratish maqsadga muvofiqdir. 4. Kelgusida ekspressiv leksika tarjimasining qiyosiy tadqiqotlari kengaytirilishi, boshqa tillar (masalan, ingliz va rus tillari) bilan ham taqqoslanishi foydali bo'ladi. 5. Tarjimonlar tayyorlashda ekspressiv leksikaning lingvopoetik xususiyatlariga alohida e'tibor qaratilishi kerak, chunki bunday birliklar badiiy tarjimaning estetik qiymatini belgilab beradi.

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YURAK-QON TOMIR TIZIMINING FIZIOLOGIYASI VA ARTERIAL GIPERTENZIYA MEXANIZMLARI

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Аннотация

Ushbu maqolada yurak-qon tomir tizimining asosiy fiziologik mexanizmlari va arterial gipertenziyaning rivojlanish sabablari tahlil qilinadi. Yurak va qon tomirlarining o'zaro bog'liqligi, qon bosimini tartibga soluvchi neyrogumoral omillar, shuningdek, gipertenziya rivojlanishining patofiziologik asoslari yoritiladi. Shuningdek, zamonaviy tashxislash usullari va samarali davolash yondashuvlari ko'rib chiqiladi. Maqola arterial gipertenziyaning erta oldini olish, uning xavf omillarini kamaytirish va yurak-qon tomir sog'lig'ini saqlashda muhim nazariy va amaliy ahamiyatga ega.

Калит so'zlar

Yurak-qon tomir tizimi, Arterial gipertenziya, Qon bosimi, Sistolik bosim, Diastolik bosim, Patofiziologiya, Neyrogumoral regulatsiya, Renin-angiotenzin tizimi, Endotelial disfunktsiya, Tomir tonusi, Tashxis, Farmakoterapiya, Profilaktika

Аннотация

В статье рассматриваются ключевые физиологические механизмы сердечно-сосудистой системы и патогенез артериальной гипертензии. Особое внимание уделено взаимодействию сердца и сосудов, роли нейрогуморальной регуляции артериального давления, а также патофизиологическим основам гипертензии. Анализируются современные методы диагностики и эффективные подходы к лечению. Работа представляет собой значимый вклад в профилактику, раннюю диагностику и терапию сердечно-сосудистых заболеваний.

Ключевые слова

Сердечно-сосудистая система, Артериальная гипертензия, Артериальное давление, Систолическое давление, Диастолическое давление, Патофизиология, Нейрогуморальная регуляция, Ренин-ангиотензиновая система, Эндотелиальная дисфункция, Тонус сосудов, Диагностика, Фармакотерапия, Профилактика.

Abstract

This article explores the fundamental physiological mechanisms of the cardiovascular system and the pathogenesis of arterial hypertension. The interplay between the heart and blood vessels, the role of neurohumoral regulation of blood pressure, and the underlying pathophysiological factors contributing to hypertension are thoroughly examined. In addition, modern diagnostic techniques and effective treatment strategies are discussed. The study provides theoretical and practical insights into the prevention and management of cardiovascular diseases.

Keywords

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Cardiovascular system, Arterial hypertension, Blood pressure, Systolic pressure, Diastolic pressure, Pathophysiology, Neurohumoral regulation, Renin-angiotensin system, Endothelial dysfunction, Vascular tone, Diagnosis, Pharmacotherapy, Prevention.

Arterial gipertenziya butun dunyo bo'yicha o'lim va nogironlikning yetakchi sabablaridan biri hisoblanadi. Jahon sog'liqni saqlash tashkiloti (JSST) ma'lumotlariga ko'ra, har uchinchi kattada qon bosimi me'yordan yuqori bo'lib, bu yurak xurujlari, insult va buyrak yetishmovchiligi xavfini keskin oshiradi. Ayniqsa, bu kasallik ko'pincha simptomsiz kechishi sababli, bemorlar gipertenziyaning asoratlari bilan shifokorga murojaat qiladilar. Shuning uchun yurak-qon tomir tizimining fiziologik asoslarini chuqur o'rganish va arterial gipertenziyaning rivojlanish mexanizmlarini aniqlash nafaqat nazariy, balki klinik ahamiyatga ham ega. Bu mavzu bo'yicha chuqur tadqiqotlar kasallikning erta aniqlanishi, xavf omillarining oldini olish va davolash strategiyalarini optimallashtirishda muhim rol o'ynaydi.

Yurak-qon tomir tizimi inson organizmida asosiy hayotiy funksiyalarni ta'minlovchi muhim fiziologik tizimlardan biridir. Uning asosiy vazifasi to'qimalar va a'zolari kislorod hamda oziq moddalar bilan ta'minlash, metabolitlarni chiqarish va qon bosimini barqaror saqlashdan iborat. Ushbu tizimda yuzaga keladigan har qanday buzilish, xususan arterial gipertenziya, yurak va qon tomir kasalliklarining rivojlanishiga olib keladi. Arterial gipertenziya – bu arterial qon bosimining surunkali ravishda yuqoriligi bilan xarakterlanuvchi klinik holat bo'lib, hozirgi kunda global sog'liqni saqlash muammosiga aylangan. So'nggi yillarda arterial gipertenziyaning etiologiyasi va patogenezini chuqur o'rganish, shuningdek, yurak-qon tomir tizimi faoliyatini nazorat qiluvchi fiziologik mexanizmlarni aniqlash bo'yicha keng ko'lamli ilmiy izlanishlar olib borilmoqda. Ushbu maqolada yurak-qon tomir tizimining fiziologik asoslari, qon bosimini tartibga soluvchi omillar va arterial gipertenziyaning rivojlanish mexanizmlari tahlil qilinadi. Shuningdek, gipertenziyaning tashxislash va davolash yo'nalishlari, shuningdek, uning oldini olish muammolari muhokama qilinadi.

Yurak-qon tomir tizimi inson organizmidagi eng muhim hayotiy tizimlardan biri hisoblanadi. Uning asosiy vazifasi to'qimalar va a'zolariga kislorod va oziq moddalarini yetkazib berish, metabolitlarni chiqarib yuborish va gemodinamik muvozanatni saqlab turishdan iborat. Bu tizimning optimal ishlashi yurakning nasos funksiyasi, qon tomirlarining tonusi va qon aylanish tizimining umumiy qarshiligi bilan bevosita bog'liqdir.

So'nggi yillarda yurak-qon tomir kasalliklari, xususan, arterial gipertenziya (AG) butun dunyoda o'sish tendensiyasiga ega bo'lib, yetakchi epidemiologik muammolardan biriga aylangan. JSST ma'lumotlariga ko'ra, har yili 10 milliondan ortiq inson gipertenziyaga bog'liq yurak-qon tomir asoratlari oqibatida vafot etadi. Gipertenziya uzoq muddat davomida simptomsiz kechishi mumkinligi sababli, u "sokin qatillik" deb ham ataladi. Bu holat uning erta aniqlanishi, tushunilishi va oldini olish choralari ishlab chiqishni dolzarb muammoga aylantirmoqda.

Ushbu maqolada yurak-qon tomir tizimining fiziologiyasi, qon bosimini boshqaruvchi markaziy va periferik mexanizmlar, arterial gipertenziyaning patofiziologik asoslari va uning rivojlanishiga sabab bo'luvchi omillar tahlil qilinadi. Shuningdek, gipertenziyani aniqlashda qo'llaniladigan diagnostik yondashuvlar va zamonaviy davolash prinsiplari haqida ham ma'lumot beriladi.

Yurak-qon tomir tizimining fiziologiyasi

Yurak-qon tomir tizimi yurak (nasos organi) va tomirlar (arteriyalar, venalar va kapillyarlar) dan iborat. Yurakning asosiy vazifasi — qon aylanishni ta'minlab, kislorod va oziq moddalarni organizm

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bo'ylab taqsimlashdir. Har bir yurak qisqarishi (sistolasi) vaqtida qon aorta orqali katta qon aylanish tizimiga chiqariladi va keyin organizm bo'ylab tarqatiladi.

Qon bosimi yurak chiqishi hajmi (sistolik chiqish) va periferik tomirlar qarshiligining ko'paytmasi orqali belgilanadi. Qon bosimini boshqarishda ishtirok etuvchi asosiy omillar quyidagilardir:

Neyrogen regulyatsiya: simpatik va parasimpatik asab tizimi orqali yurak tezligi va tomir tonusi boshqariladi.

Gumoral regulyatsiya: renin-angiotenzin-aldosteron tizimi, vazopressin, natriyuretik peptidlar kabi gormonlar qon bosimini tartibga soladi.

Lokal regulyatsiya: endotelin, azot oksidi (NO), prostaglandinlar kabi moddalar tomirlar kengayishi va qisqarishini boshqaradi.

Arterial gipertenziyaning patofiziologiyasi

Arterial gipertenziya — bu sistolik qon bosimi ≥ 140 mmHg yoki diastolik qon bosimi ≥ 90 mmHg bo'lishi bilan tavsiflanadi. Uning rivojlanish mexanizmlarini quyidagilarga bo'lish mumkin:

Neyrogumoral mexanizmlar:

Simpatik asab tizimining faolligi oshishi yurak tezligini va periferik tomirlar qarshiligini kuchaytiradi.

Renin-angiotenzin-aldosteron tizimining faollashuvi natijasida natriy va suyuqlik organizmda ushlanib qoladi, bu esa qon hajmining ortishiga va bosimning ko'tarilishiga olib keladi.

Endotelial disfunktsiya:

Qon tomirlari endoteliyining azot oksidi sintezi kamayadi, bu tomirlarning kengayish qobiliyatini pasaytiradi.

Endotelin va boshqa vazokonstriktor moddalar miqdori ortadi.

Tuz va suyuqlik muvozanatining buzilishi:

Tuzni haddan ziyod iste'mol qilish suyuqlikni ushlab qoladi, bu qon hajmining ortishiga olib keladi.

Genetik va epigenetik omillar:

Ayrim genlar va ularning ekspressiyasi qon bosimi regulyatsiyasiga bevosita ta'sir ko'rsatadi.

Tashqi muhit va turmush tarzi:

Stress, notog'ri ovqatlanish, jismoniy faollik yetishmovchiligi, chekish va alkohol iste'moli gipertenziya rivojlanish xavfini oshiradi.

Arterial gipertenziyaning klinik tasnifi va darajalari

JSST va Yevropa gipertenziya jamiyati (ESH/ESC) tomonidan ishlab chiqilgan tasnifga ko'ra arterial gipertenziya quyidagi darajalarga bo'linadi:

I daraja: SBP 140–159 mmHg va/yoki DBP 90–99 mmHg

II daraja: SBP 160–179 mmHg va/yoki DBP 100–109 mmHg

III daraja: SBP ≥ 180 mmHg va/yoki DBP ≥ 110 mmHg

Shuningdek, gipertenziya birlamchi (idiopatik) va ikkilamchi (aniqlanadigan sabablarga bog'liq) turlarga ajratiladi.

Gipertenziya bilan bog'liq asoratlari

Arterial gipertenziya yurak-qon tomir tizimi faoliyatiga salbiy ta'sir ko'rsatadi va quyidagi asoratlarni keltirib chiqarishi mumkin:

Yurak gipertrofiyasi, yurak yetishmovchiligi

Miokard infarkti

Ishemik yoki gemorragik insult

Buyrak yetishmovchiligi

Ko'z tubidagi retinopatiya

Zamonaviy tashxis va davolash yondashuvlari

Tashxis:

Gipertenziya tashxisida muntazam qon bosimini o'lchash, laborator tekshiruvlar (qon, siydik), elektrokardiografiya (EKG), ekokardiyografiya, buyrak funksiyasini baholash va angiografik usullar qo'llaniladi.

Davolash:

Davolash turmush tarzini o'zgartirish (ovqatlanishni tartibga solish, jismoniy faollik, stressni kamaytirish) hamda farmakologik terapiyani o'z ichiga oladi. Asosiy dori guruhlari:

Diuretiklar (gidroxlortiazid, furosemid)

Beta-blokatorlar (bisoprolol, atenolol)

ACE-ingibitorlar (enalapril, ramipril)

ARB (losartan, valsartan)

Kalsiy kanal blokatorlari (amlodipin, verapamil)

Tadqiqot maqsadi

Ushbu tadqiqotning asosiy maqsadi — yurak-qon tomir tizimining fiziologik asoslarini chuqur tahlil qilish va arterial gipertenziyaning patofiziologik mexanizmlarini aniqlash orqali ushbu kasallikni erta tashxislash, samarali davolash va profilaktika qilish imkoniyatlarini ilmiy asoslashdir.

Tadqiqot vazifalari

Yurak-qon tomir tizimining normal fiziologik faoliyatini tashkil etuvchi asosiy omillarni o'rganish;

Arterial gipertenziya shakllanishida ishtirok etuvchi neyrogumoral va endotelial mexanizmlarni tahlil qilish;

Gipertenziya rivojlanishiga olib keluvchi asosiy xavf omillarini aniqlash va tasniflash;

Arterial gipertenziyaning klinik darajalari va tasniflarini ko'rib chiqish;

Gipertenziya bilan bog'liq asoratlar va ularning patogenezi baholash;

Zamonaviy tashxis va davolash usullarini tahlil qilish, ularning samaradorligini baholash;

Kasallikning erta oldini olish va yurak-qon tomir sog'lig'ini saqlash bo'yicha ilmiy asoslangan tavsiyalar ishlab chiqish.

Davolash usullari

Arterial gipertenziyani davolash kompleks yondashuvni talab qiladi va u ikkita asosiy yo'nalishni o'z ichiga oladi: dori vositalari yordamida davolash (farmakoterapiya) va dori vositalarisiz muolajalar (hayot tarzini o'zgartirish orqali). Davolashning asosiy maqsadi — qon bosimini maqsadli darajagacha pasaytirish, yurak-qon tomir asoratlarning oldini olish hamda bemorning umr davomiyligi va hayot sifatini yaxshilashdan iborat.

Farmakologik davolash

Arterial gipertenziyani dori-darmonlar yordamida davolashda bir nechta dori guruhlari qo'llaniladi.

Dorilar tanlanayotganda bemorning yoshi, hamroh kasalliklari, gipertenziya darajasi va asoratlar xavfi hisobga olinadi.

Diuretiklar (siydik haydovchi vositalar)

Tiazid va tiazidga o'xshash diuretiklar: gidroxlortiazid, indapamid

Loop diuretiklar: furosemid (og'ir holatlarda)

Mexanizmi: organizmdan natriy va suyuqlikni chiqarish orqali qon hajmini kamaytiradi va qon bosimini pasaytiradi.

Beta-blokatorlar

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Masalan: bisoprolol, atenolol, metoprolol

Mexanizmi: yurak tezligini va zarb hajmini kamaytirish orqali qon bosimini pasaytiradi; yurak kasalliklari bilan og'rikan bemorlarda afzal.

Angiotenzin konvertatsiya qiluvchi ferment (ACE) ingibitorlari

Masalan: enalapril, ramipril, perindopril

Mexanizmi: renin-angiotenzin-aldosteron tizimini bloklay, tomir kengayishini ta'minlaydi.

Angiotenzin II retseptor blokatorlari (ARB)

Masalan: losartan, valsartan, telmisartan

ACE ingibitorlariga muqobil bo'lib, yo'tal kabi nojo'ya ta'sirlar kamroq uchraydi.

Kalsiy kanallari blokatorlari

Masalan: amlodipin, verapamil, diltiazem

Mexanizmi: tomirlarning silliq mushaklarini bo'shashtirib, ularning kengayishini ta'minlaydi.

Alfa-blokatorlar (kam hollarda)

Masalan: doksazosin

Prostata bezining gipertrofiyasi bilan birga kechadigan gipertenziyada foydali bo'lishi mumkin.

Ko'pgina holatlarda kombinatsiyalangan terapiya (ikki yoki undan ortiq dori vositalari) tavsiya etiladi. Kombinatsiyalar bemorning klinik holatiga qarab tanlanadi.

Nofarmakologik (hayot tarzini o'zgartirish) usullar

Tuz iste'molini cheklash

Kunlik tuz miqdori 5 grammdan oshmasligi kerak.

Tana vaznini kamaytirish

Ortiqcha vaznli bemorlar uchun 5–10% vazn yo'qotish qon bosimini sezilarli pasaytiradi.

Jismoniy faollikni oshirish

Haftasiga kamida 150 daqiqa o'rtacha intensivlikdagi aerobik mashqlar (yugurish, yurish, suzish) tavsiya etiladi.

Sog'lom ovqatlanish

DASH (Dietary Approaches to Stop Hypertension) dietasi: ko'proq sabzavot, meva, to'liq donli mahsulotlar, kaliy, kalsiy, magniyga boy mahsulotlar tavsiya etiladi.

Spirтли ichimliklar iste'molini cheklash

Chekishni to'xtatish

Tamaki yurak-qon tomir tizimiga mustaqil zarar yetkazadi.

Stressni boshqarish

Psixologik maslahatlar, dam olish texnikalari, meditatsiya yoki yurak ritmi bo'yicha biofeedback usullari yordamida.

Individual yondashuv va monitoring

Davolash natijalari muntazam kuzatib borilishi kerak.

Qon bosimi ko'rsatkichlari uy sharoitida ham muntazam o'lchanadi.

Dori-darmonlarga bo'lgan individual javob, nojo'ya ta'sirlar va asoratlarning rivojlanish xavfi baholanadi.

Davolash natijalarini baholash

Maqsad: qon bosimini <140/90 mmHg (ba'zi xavfli guruhlar uchun <130/80 mmHg) darajasiga tushirish.

Yurak, buyrak, ko'z va miya faoliyatining holatini monitoring qilish zarur.

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Yurak-qon tomir tizimi organizmning hayotiy faoliyatida markaziy o‘rin tutadi va uning funksional holati sog‘liqning barqarorligini belgilovchi muhim omillardandir. Arterial gipertenziya esa ushbu tizimning eng keng tarqalgan va xavfli kasalliklaridan biri bo‘lib, yurak xurujlari, insult, buyrak yetishmovchiligi kabi og‘ir asoratlarning asosiy sababchisidir. Tadqiqot natijalari shuni ko‘rsatadiki, gipertenziya ko‘p omilli, polietiologik kasallik bo‘lib, uning shakllanishida neyrogumoral, endotelial, genetik, ekologik va turmush tarzi bilan bog‘liq omillar muhim rol o‘ynaydi.

Yurak-qon tomir tizimining fiziologiyasi, ayniqsa qon bosimini boshqaruvchi markaziy va periferik mexanizmlarni chuqur tahlil qilish arterial gipertenziya patogenezi to‘liq anglash, uni erta aniqlash va samarali davolash strategiyalarini ishlab chiqishda muhim ilmiy asos bo‘lib xizmat qiladi. Gipertenziyani davolashda kompleks yondashuv – hayot tarzini o‘zgartirish, farmakoterapiya va individual monitoring – eng samarali yo‘l sifatida e‘tirof etiladi.

Takliflar

Aholi o‘rtasida arterial gipertenziya profilaktikasiga oid muntazam sog‘lomlashtirish va tarbiyaviy tadbirlarni kuchaytirish lozim.

Birlamchi sog‘liqni saqlash tizimlarida qon bosimi monitoringini yo‘lga qo‘yish va erta diagnostikani joriy etish orqali gipertenziya erta bosqichlarida aniqlanishi ta‘minlanishi zarur.

Shifokorlar va tibbiy xodimlar uchun arterial gipertenziyani davolash bo‘yicha zamonaviy protokollarga asoslangan doimiy malaka oshirish kurslari tashkil etilishi kerak.

Farmakologik davolashda bemor holatiga mos ravishda individual yondashuvni tanlash va dori vositalarining samaradorligi bilan birga ularning nojo‘ya ta‘sirini ham hisobga olish muhimdir.

Ilmiy-tadqiqot institutlari va oliy ta‘lim muassasalari tomonidan arterial gipertenziyaning yangi patofiziologik mexanizmlari va innovatsion davolash yondashuvlarini o‘rganishga qaratilgan amaliy tadqiqotlar olib borilishi tavsiya etiladi.

Raqamli texnologiyalar (masalan, mobil ilovalar orqali qon bosimi monitoringi, masofaviy maslahatlar) orqali gipertenziya bilan yashovchi bemorlarni uzoq muddatli kuzatuvga olish va ularni sog‘lom turmush tarziga undash mumkin.

O‘zbekistonda gipertenziyaga qarshi milliy dastur doirasida ijtimoiy xavf guruhlarini aniqlash va ularni tibbiy dispanser nazoratiga olish mexanizmlarini mustahkamlash lozim.

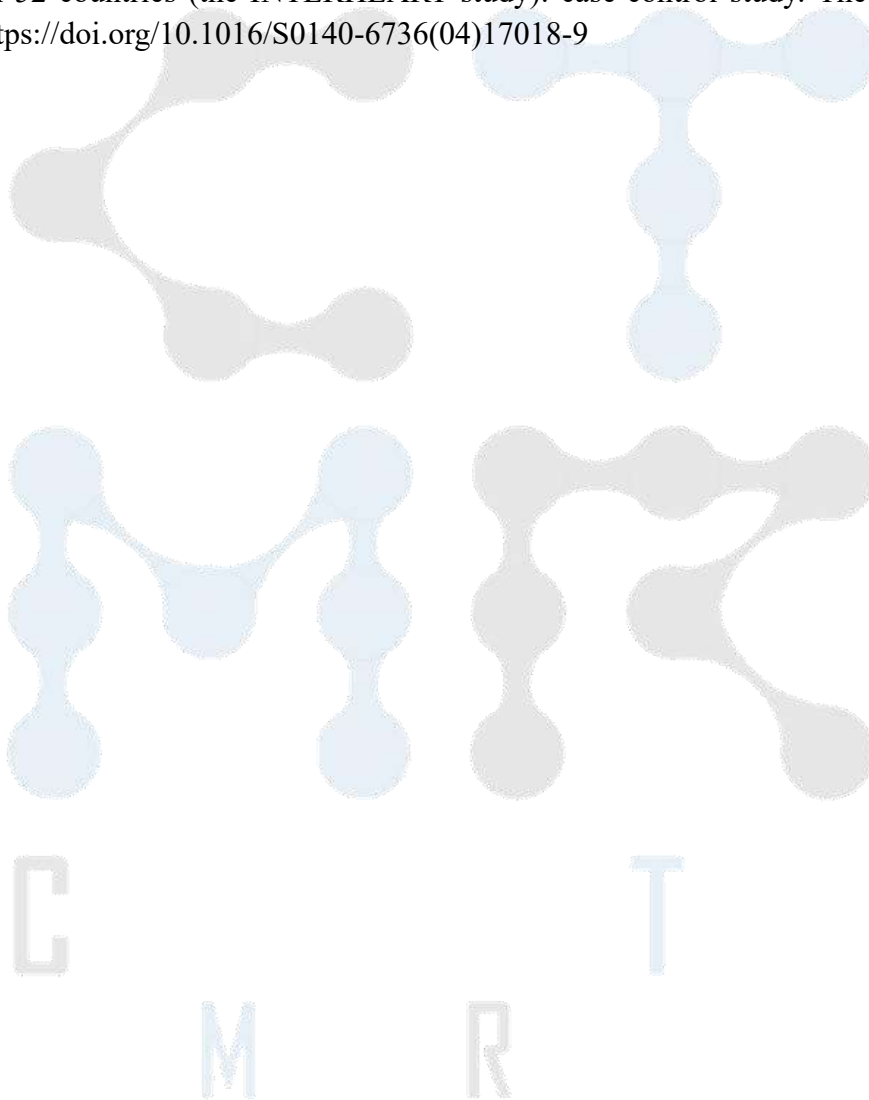
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MODERN APPROACHES TO TERMINOLOGY

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Аннотация

Данная статья рассматривает интенсивные процессы неологизации в русском языке, обусловленной появлением новых объектов и реалий, на которое влияют глобализация, развитие науки и техники и интернационализация.

Annotation

This article examines the intensive processes of neologization in the Russian language, caused by the emergence of new objects and realities, influenced by globalization, the advancement of science and technology, and internationalization

Ключевые слова

Значимость, лексикограф, фиксирование, изменение, социокультурный, фармакология, модульное образование, тенденция

Keywords

Significance, lexicographer, fixation, change. Sociocultural, pharmacology, modular education, trend

Появление новых лексических единиц или расширение семантики уже существующих слов свидетельствует о трансформациях, происходящих в окружающей действительности. Это может быть связано как с возникновением принципиально новых объектов и явлений, так и с повышением значимости уже известных реалий, что обуславливает необходимость их номинации в языке. В последние десятилетия русский язык демонстрирует интенсивные процессы неологизации: количество новых слов столь велико, что лексикографы не всегда успевают фиксировать их в словарях, а рядовые носители языка нередко испытывают затруднения в их понимании. Новая лексика может появляться как отдельными единицами, так и сериями, иногда весьма многочисленными. Особенно интересен последний случай, поскольку он отражает масштабные изменения в социокультурной среде, своеобразные «волны» языковых инноваций. На рубеже XX–XXI вв. можно выделить несколько таких волн, которые продолжают оказывать влияние на современный русский язык. Терминообразование в XXI веке уже не ограничивается только классическими способами (аффиксация, словообразование на основе греческо-латинских корней). Сегодня на него влияют глобализация, развитие науки и техники, а также языковая интернационализация. Вот несколько основных современных подходов к нему:

Заимствование и интернационализация. Активное использование английских (а ранее латинских и греческих) корней. Например: *scanner* → *сканер*, *chip* → *чип*. В медицине и фармакологии — преимущественно латинские и греческие элементы: *cardio-*, *neuro-*, *bio-*, *oto-*, *cephalo-*, *stomato-*, *nephro-*, *glycol-*, *hydro-*, *myco-*, *poly-*.

Междисциплинарное терминологическое образование.

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Появление терминов на стыке наук. Например: *биоинформатика* (использование ИТ для анализа биологических данных), *наномедицина* (применение нанотехнологий в диагностике и терапии), *нейромаркетинг* (изучение поведения потребителей с помощью методов нейрофизиологии), *геномика* (комплексное исследование геномов), *протеомика* (исследование белков с применением технологий), *синтетическая биология* (создание новых биологических систем), *кибербезопасность* (область знаний и практической деятельности, направленная на защиту компьютерных систем, сетей, программного обеспечения и данных от несанкционированного доступа, атак, повреждений или кражи) *протеомика* (исследование белков с применением технологий), *синтетическая биология* (создание новых биологических систем), *телероботохирургия* (дистанционная операция с использованием роботов) *телеонкология* (дистанционные консультации и лечение онкобольных), *нейропротезирование* (искусственное восстановление функций нервной системы), *нейроэкономика* (исследование принятия решений на стыке экономики и нейробиологии), *нейропедагогика* (использование знаний о мозге в образовательных технологиях), *когнитивная робототехника* (создание роботов с элементами искусственного интеллекта), *зелёная экономика* (экономическое развитие с учётом экологической устойчивости), *социобиология* (объяснение социальных процессов биологическими факторами), *экосоциология* (изучение взаимодействия общества и природы), *климатическая политика* (управление экономикой и обществом в условиях изменения климата), *киберправо* (регулирование отношений в цифровой среде), *медицинское право* (правовое обеспечение здравоохранения), *биоправо* (регулирование биоэтических и генетических вопросов).

Модульное и комбинированное образование.

Модульное образование – это создание термина из готовых стандартных элементов, то есть это образование новых терминов путём соединения **готовых морфемных элементов** (модулей), которые могут использоваться в разных комбинациях. Чаще всего модулями выступают **интернациональные корни** (греческие, латинские), приставки и суффиксы. Каждый «модуль» имеет своё значение и легко комбинируется с другими. Например:

геронто - (старик, старческий) + *логия* (наука) = **геронтология**;

энцефало - (головной мозг) + *графия* (описание, запись) = **энцефалогграфия**;

нейро- (нерв) + *психология* = **нейропсихология**.

. Комбинированное образование - это совмещение разных способов терминообразования или создание терминов на основе **смешения разных способов** словообразования, что делает новые слова более гибкими и удобными.:

1.использование морфемных «модулей» (корни, аффиксы);

2.заимствование готовых слов;

3.акронимы (сокращения);

4.калькирование (перевод частей слова).

Например: *биотехнология* (лат./греч. корни + новое комбинирование); *геополитика* (греч. «гео» + лат. «политика»); *COVID-19* (акроним + цифры); *флеш-драйв* (заимствование + комбинирование).

Конструирование термина из готовых «блоков» (морфем или целых слов: *гео+политика* = *геополитика*; *авто+иммунный* = *аутоиммунный*).

Аббревиация и акронимы

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Создание терминов из сокращений.

Пример: ВИЧ (вирус иммунодефицита человека), MRT (магнитно-резонансная томография), ЭКМО (экстракорпоральная межмембриональная оксигенация), ИБС (ишемическая болезнь сердца), ДМТ (дефицит массы тела), ЗОЖ (здоровый образ жизни), ПЭТ (позитронная эмиссионная томография), ЦНС (центральная нервная система).

Современная тенденция — сохранение английской аббревиатуры в других языках (*DNA, HIV, AI*).

Унификация и стандартизация

Международные организации (ISO, IUPAC, ВОЗ) вводят единые правила и термины.

Пример: химическая номенклатура IUPAC; фармакопейные стандарты.

Семантическое терминообразование

Переосмысление уже существующих слов для обозначения нового понятия.

Мышь — животное → компьютерное устройство

облако (в IT) — вирус (микроорганизм → вредоносная компьютерная программа.),

окно — отверстие в стене → графический элемент интерфейса компьютера

корзина — ёмкость для мусора → место удаления файлов в компьютере.

заяц — животное → пассажир без билета.

ёжик — животное → причёска с короткими торчащими волосами.

почка — орган растения → выступ на дереве (метафорическое значение).

лента — полоска ткани → информационная новостная лента.

троль — мифологическое существо → человек, намеренно провоцирующий споры в интернете.

Примеры семантического переосмысления в медицинской и фармакологической терминологии:

Язык — орган речи → «*язык лекарства*» (в фармакологии — вкусовые качества препарата).

Ступня — часть тела → «*ступня пипетки*» (рабочая часть лабораторного инструмента)

Голова — часть тела → «*головка бедренной кости*», «*головка препарата*» (у лекарственных форм).

Шея — часть тела → «*шейка матки*», «*шейка зуба*», «*шейка пузырька*».

Сердце — орган → «*сердце таблетки*» (ядро лекарственной формы), «*сердце ампулы*» (центральная часть).

Корень — часть растения → «*корень зуба*», «*корень языка*».

Капсула — оболочка растения или предмета → *лекарственная форма (capsula gelatinosa)*.

Ампула — маленькая колба (от лат. *ampulla* — «бутылочка») → сосуд для лекарственных растворов.

Порошок — мелкодисперсное вещество → в фармацевтической терминологии обозначает лекарственную форму (*pulvis*).

Суспензия — «подвешенное состояние» в физике → в фармакологии — жидкая лекарственная форма с взвешенными частицами.

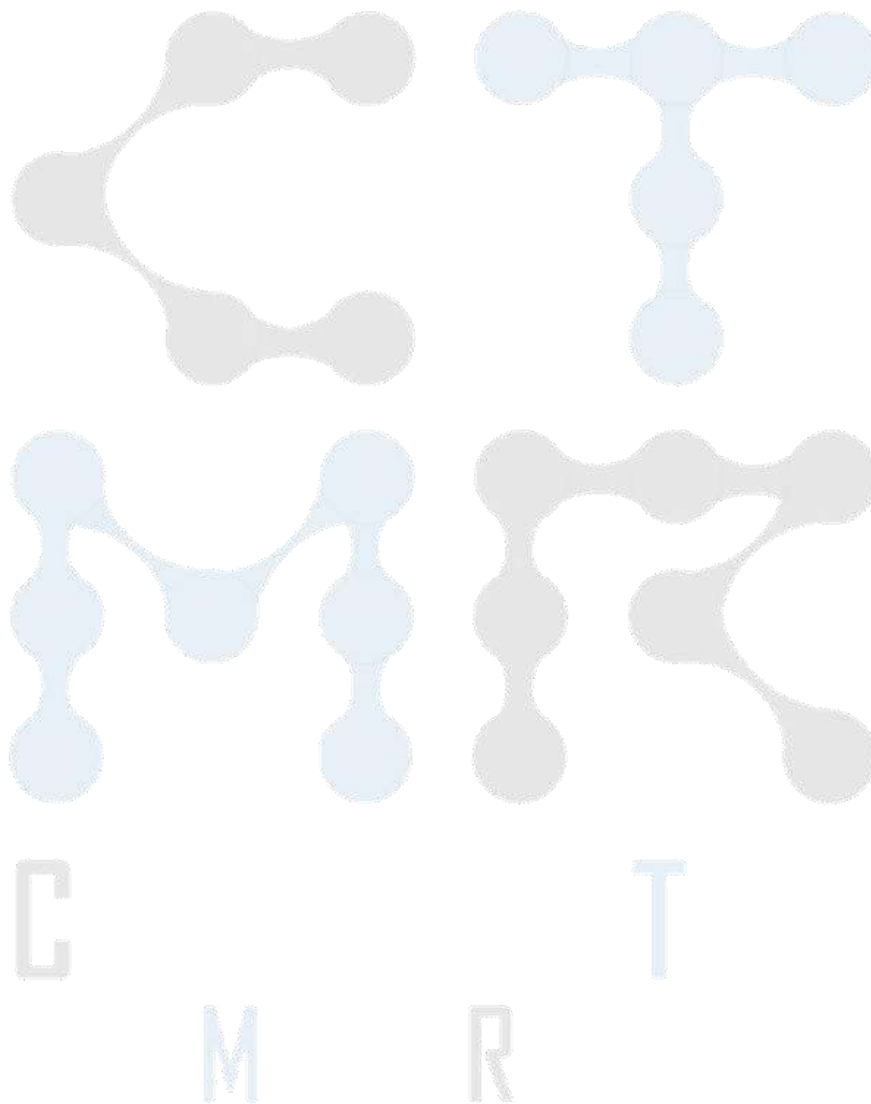
Современное терминообразование сочетает классические (морфологические) и новые (заимствования, акронимы, междисциплинарные комбинации) способы. Главная тенденция — интернационализация, стандартизация и ориентация на удобство использования.

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LARINGOFARINGEAL REFLYUKS – ZAMONAVIY LOR AMALIYOTIDA TASHXIS VA
DAVOLASHNING DOLZARB MASALALARI

Diniqulova Sitora Abdulla qizi

Zomin Abu Ali ibn Sino nomli jamoat salomatligi texnikumi
Otorinolariningologiya fani o'qituvchisi

Annotatsiya. Mazkur maqolada laringofaringeal reflyuks (LFR) zamonaviy otorinolariningologiyada uchraydigan dolzarb muammo sifatida ko'rib chiqiladi. LFR etiologiyasi, patogenez mexanizmlari, klinik ko'rinishlari, tashxislash usullari va davolash strategiyalari tahlil qilinadi. Xususan, endoskopik tekshiruv, pH-metriya va zamonaviy tasviriy diagnostika usullarining ahamiyati yoritiladi. Shuningdek, farmakoterapiya va jarrohlik yondashuvlari bilan bir qatorda profilaktik choralarining samaradorligi ham ko'rsatib o'tiladi. Maqolada xalqaro klinik tadqiqotlar, tajribalar va mahalliy sharoitdagi kuzatishlar tahlili asosida LFRni erta aniqlash va samarali davolash muammolari ilmiy asosda o'rganilgan.

Kalit so'zlar: Laringofaringeal reflyuks, otorinolariningologiya, tashxis, davolash, pH-metriya, endoskopiya, farmakoterapiya, jarrohlik yondashuvlari, zamonaviy diagnostika, profilaktika.

Аннотация. В статье рассматривается ларингофарингеальный рефлюкс (ЛФР) как актуальная проблема современной оториноларингологии. Проанализированы этиология, механизмы патогенеза, клинические проявления, методы диагностики и тактика лечения ЛФР. В частности, отмечена важность эндоскопического исследования, pH-метрии и современных методов визуализационной диагностики. Показана эффективность профилактических мер, фармакотерапии и хирургических методов. В статье на основе анализа международных клинических исследований, экспериментов и наблюдений в местных условиях научно обоснованы проблемы раннего выявления и эффективного лечения ЛФР.

Ключевые слова: ларингофарингеальный рефлюкс, оториноларингология, диагностика, лечение, pH-метрия, эндоскопия, фармакотерапия, хирургические методы, современная диагностика, профилактика.

Kirish. So'nggi yillarda yuqori nafas yo'llari va halqum kasalliklari orasida laringofaringeal reflyuks (LFR) muammosi dolzarbliigi ortib bormoqda. Klinik kuzatuvlar shuni ko'rsatadiki, bu patologiya ko'plab LOR kasalliklarining (laringit, faringit, ovoz bog'lamlari disfoniyasi va boshqalar) rivojlanishida muhim omil bo'lib xizmat qiladi. LFRning klinik belgilari ko'pincha noaniq bo'lib, boshqa kasalliklar bilan adashtirilishi mumkin. Shu bois, to'g'ri tashxis qo'yish va davolash yondashuvlarini tanlash otorinolariningologlar amaliyotida katta ahamiyat kasb etadi. Zamonaviy ilmiy tadqiqotlar LFRni aniqlashda endoskopik tekshiruv, ko'p kanalli pH-metriya, manometriya va kompyuter tomografiyasi kabi usullarni samarali qo'llash imkonini beradi. Biroq, mavjud tashxis va davolash usullarida qator cheklovlar saqlanib qolmoqda. Shu sababli, LFRning patogenezini chuqur o'rganish, yangi tashxis mezonlarini ishlab chiqish va davolashning kompleks yondashuvlarini joriy etish zamonaviy LOR amaliyoti oldidagi eng muhim vazifalardan biridir. Laringofaringeal reflyuks (LFR) – bu oshqozon tarkibining (kislota, pepsin, safro) yuqori qismga, ya'ni laringofaringeal (halqum va hiqildoq) sohalarga orqaga oqib chiqishi natijasida yuzaga keladigan kasallikdir. LFR gastroezofageal reflyuks (GERD) bilan bog'liq bo'lsa-da, u mustaqil

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klinik birlik hisoblanadi. GERD asosan qizilo'ngachga ta'sir qiladi va ko'pincha qorin og'rig'i va qizilo'ngachda achishish bilan namoyon bo'ladi, LFR esa ko'pincha "jimjit reflyuks" deb ataladi, chunki ko'plab bemorlarda klassik achishish belgisi bo'lmaydi

Patofiziologiya. LFRda asosiy zarar oshqozon tarkibining yuqori nafas yo'llariga chiqib, u yerdagi nozik shilliq qavatni bevosita (kislota, pepsin, safro orqali) yoki bilvosita (vagal reflekslar orqali) shikastlashi bilan bog'liq. Laringeal shilliq qavat qizilo'ngachga nisbatan ancha sezgir, shuning uchun kam sonli reflyuks epizodlari ham jiddiy zarar yetkazishi mumkin. Pepsin va safro kislotalari, hatto neytral pHda ham, to'qimalarga zarar yetkazishi mumkin

LFR zamonaviy LOR amaliyotida keng tarqalgan bo'lib, surunkali yo'tal, ovoz bo'g'ilishi, tomoqda g'alati tuyg'u (globus), doimiy tomoq tozalash, tomoq og'rig'i, postnazal oqim va disfoniyaga olib keladi. Bu simptomlar ko'plab boshqa LOR kasalliklari bilan ustma-ust tushadi, bu esa tashxisni murakkablashtiradi. LFR surunkali kechsa, laringeal shilliq qavatda o'zgarishlar, granulomalar, vokal kord shishlari va hatto laringeal karsinoma xavfini oshiradi.

Tashxisning zamonaviy yondashuvlari va muammolari

Tashxisda asosiy yondashuvlar

- **Klinik simptomlar va so'rovnomalar.** Reflux Symptom Index (RSI) va Reflux Finding Score (RFS) kabi so'rovnomalar keng qo'llaniladi, ammo ularning sezgirligi yuqori (60–90%) bo'lsa-da, o'ziga xosligi past (ko'pincha <60%), chunki simptomlar boshqa kasalliklarda ham uchraydi
- **Laringoskopiya.** Laringeal shilliq qavatda qizarish, shish, granuloma va boshqa o'zgarishlar aniqlanadi. Biroq, bu belgilar LFRga xos emas va boshqa yallig'lanish yoki irritativ kasalliklarda ham uchraydi
- **24 soatlik pH-monitoring.** Oltin standart hisoblanadi, ayniqsa ikki zondli (qizilo'ngach va faringeal) monitoring. Sezgirligi 50–80%, o'ziga xosligi 70–90% atrofida. Biroq, invaziv va bemor uchun noqulay
- **Impedans-pH monitoring.** Kislota va no-kislota reflyuksni aniqlaydi, sezgirligi yuqori (70–90%), lekin fiziologik reflyuksni ham aniqlab, soxta ijobiy natijalar berishi mumkin
- **Pepsin aniqlash.** So'lak yoki faringeal sekretsialarda pepsin aniqlash – zamonaviy, noinvaziv usul. Sezgirligi 60–85%, o'ziga xosligi 60–90% atrofida. Tez va bemor uchun qulay, biroq natijalar vaqt va usulga bog'liq.

Tashxisda dolzarb muammolar

- **Simptomlarning o'ziga xos emasligi.** LFR simptomlari allergik rinit, surunkali sinusit, vokal kord disfunktsiyasi, postnazal oqim va boshqa kasalliklar bilan ustma-ust tushadi
- **Laringoskopik belgilar yetarlicha o'ziga xos emas.** Qizarish va shish boshqa yallig'lanishlarda ham uchraydi.
- pH-monitoring va impedans testlari har doim ham mavjud emas, ayniqsa resurs cheklangan hududlarda.
- **Ko'p kasalliklar birga kechishi.** LFR ko'pincha boshqa LOR kasalliklari bilan birga uchraydi, bu esa tashxisni yanada murakkablashtiradi.
- Turli klinik markazlarda turlicha mezonlar va usullar qo'llaniladi, bu esa tashxisda farqlarga olib keladi

LPR tashxisida "oltin standart" yo'qligi asosiy muammo: alomatlar boshqa kasalliklar (masalan, atrof-muhit allergiyasi yoki funktsional tomoq buzilishlari) bilan o'xshash bo'lib, bu noto'g'ri tashxisga olib keladi. San-Diego konsensusiga ko'ra (2023-2024 yillarda yangilangan), LPR alomatlari (LPR

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semptomatlari) kasallikning isboti emas – faqat ob'ektiv dalillar (reflyuks monitoringi) bilan tasdiqlanishi kerak

Dolzarb masalalar (2023-2025):

- Anqlik muammosi. PPI (proton nasos inhibitörlari) empirik terapiyasi (8-12 hafta davomida) tashxis vositasi sifatida ishlatiladi, ammo 40-86% bemorlarda samara bermaydi, chunki non-kislotali reflyuks (pepsin ta'sirida) ustunlik qiladi.
- Boshqa kasalliklar bilan bog'liqlik. Yaqinda o'tkazilgan tadqiqotlarda LPR vokal sim polipozlari va laringeal gipereaktivlik bilan bog'langan, ammo mustaqil xavf omili ekanligi aniq emas. Bu LOR va gastroenterologiya o'rtasida hamkorlikni talab qiladi.
- Kelajak istiqbollari. 2025 yilda reflyuks monitoringining yangi modalitlari (masalan, endoskopik va non-invaziv sensorlar) sinovdan o'tkazilmoqda, ammo yuqori sifatli RCT (randomizatsiyalangan nazoratli sinovlar) zarur.

Dolzarb masalalar va yangiliklar (2023-2025):

- PPI cheklovlari. 86% LPR bemorlarida samara bermaydi, chunki pepsin (kislotasiz ham zarar keltiruvchi) asosiy sabab.
- Yangi yondashuv – pepsinni bloklash. 2025 yilda N-Zyme Biomedical kompaniyasi tomonidan Fosamprenavir (HIV inhibitori) ni pepsin uchun qayta ishlatish loyihasi. U pepsinni bog'lab, yallig'lanishni to'xtatadi. Foyda: PPI ga qaramay, ildiz sababni bartaraf etadi; 2-faza klinik sinovlari (LPR uchun 104 ishtirokchi, 400+ ro'yxatdan o'tgan) 2025 yilda boshlanmoqda. Bu millionlab bemorlar uchun inqilobiy bo'lishi mumkin.
- Tizimli muammolar. Yuqori sifatli tadqiqotlar etishmasligi, dori qarshiligi va individual farqlar. LOR amaliyotida gastroenterologlar bilan hamkorlik va bemor ta'limi muhim.

Asosiy tashxis usullari va ularning cheklovlari:

Usul	Tavsif	Afzalliklar	Cheklovlar va masalalar
Klinik baholash va RSI (Reflyuks semptom indeksi)	Bemor shikoyatlari (tomoq to'planishi, ovoz qichqirishi, batqil to'planishi) bo'yicha so'rovnoma (RSI >13 ball – shubha).	Oddiy, invaziv emas, tez.	Sub'ektiv; boshqa kasalliklar bilan chalkashishi mumkin. 2024-2025 yillarda RSI ni RSI va RFS (Reflyuks topografik topishmoq indeksi) bilan birlashtirish tavsiya etilmoqda.
Laringoskopiya	Tomoq va atrofidagi to'qimalarning qizarishi, shishishi va bo'rtib chiqishini ko'rish.	Vizual baholash, LOR amaliyotida standart.	Faqat 50-70% hollarda seziladi; pepsin ta'siri ko'rinmas bo'lishi mumkin.
pH va impedans monitoringi	24-96 soatlik oziq-ovqat trubasini orqali reflyuks hodisalarini o'lchash.	Ob'ektiv dalil beradi; non-asid reflyuksni aniqlaydi.	Invaziv, qimmat, bemorlar uchun noqulay; 2025 yilda mobil kapsula monitoringi (masalan, Bravo kapsulasi) yangi variant sifatida sinovdan o'tmoqda, ammo hali keng tarqalmagan.

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Usul	Tavsif	Afzalliklar	Cheklovlar va masalalar
Pepsin aniqlash (tuprik yoki tomoq yuvish suvi orqali)	Pepsin fermentini o'lchash (Peptest kabi testlar).	Non-kislotali reflyuksni erta aniqlaydi.	Hali standart emas; sezgirlik 80% atrofida, ammo klinik amaliyotda kam qo'llaniladi.

Zamonaviy diagnostika texnologiyalari va innovatsiyalar

3.1. Yangi texnologiyalar

- **Biosensorlar va point-of-care testlar.** Soʻlakda pepsin aniqlash uchun biosensorlar yordamida tez va noinvaziv tashxis qoʻyish mumkin. Bu usul tezkor va bemor uchun qulay;
- **Molekulyar diagnostika.** Mass-spektrometriya va PCR yordamida molekulyar markerlar aniqlanadi, bu esa kasallik faolligini aniq baholash imkonini beradi;
- **Mikrofluidika va lab-on-a-chip qurilmalari.** Kichik hajmdagi namunalar bilan tez va koʻp markerli tahlil qilish imkonini beradi;
- **Sunʼiy intellekt (AI).** Laringoskopik tasvirlarni avtomatik tahlil qilish, simptomlar va biomarkerlarni integratsiyalash orqali tashxis aniqligini oshiradi;
- **Kengaytirilgan lateral flow testlar.** Salivary pepsin va boshqa markerlarni tez aniqlash uchun zamonaviy, arzon va tezkor testlar ishlab chiqilmoqda;
- **Uzoqdan monitoring va “wearable” qurilmalar:** pH va impedans monitoringini real vaqtda, ambulator sharoitda olib borish imkonini beradi.

Innovatsion yondashuvlar

- **CRISPR asosidagi diagnostika.** Tez va yuqori aniqlikda nuklein kislotalarni aniqlash imkonini beradi, hozircha asosan infeksiyon va onkologik kasalliklarda, lekin LFRda ham istiqbolli yoʻnalish sifatida koʻrilmoqda
- **Likvid biopsiya.** Soʻlak yoki qon orqali biomarkerlarni aniqlash, bemor uchun noinvaziv va qulay

Adabiyotlar tahlili va metodologiya

Tashxis va diagnostika: Soʻnggi yillarda laringofaringeal reflyuks (LFR/LPR)ni aniqlashda **hypopharyngeal-esophageal multichannel intraluminal impedance-pH (HEMII-pH / MII-pH)** monitoringi eng ishonchli usul sifatida koʻrib chiqilmoqda; u proximal oshqozon refluks epizodlarini aniqlash va PPIga javobsiz bemorlarni ajratishda foydali.

Tashxis mezonlari va klinik skorslash. LFR diagnostikasi klinik aniq belgilar (Reflux Symptom Index — RSI) va laringoskopik Reflux Finding Score (RFS) bilan birgalikda qoʻllanadi, ammo bularning oʻz-oʻzidan diagnostik aniqligi cheklangan.

Davolash strategiyalari. Farmakoterapiya (proton pump inhibitorlar — PPI), parhez va hayot tarzini oʻzgartirish, alginatlar/magaldrat singari antasid kombinatsiyalari, va baʼzida jarrohlik (anti-reflux surgery) qoʻllanadi. Biroq PPIlarning LPRda samaradorligiga oid randomize qiyosiy tadqiqotlarning natijalari aralash: baʼzi meta-tahlillar PPIni placebo bilan solishtirganda aniq foyda koʻrsatmaganini qayd etadi.

Konsensus va amaliy yoʻriqnomalar. Yaqin yillardagi Yevropa konsensuslari va San Diego konsensus kabi hujjatlar boshqaruvning multidisiplinar modelini, tashxisda MII-pH monitoringi va individualizatsiyalangan davolashni taklif qiladi.

Metodologiya

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LFRning tashxis mezonlari va zamonaviy davolash usullarining samaradorligini bemorlarda baholash hamda LOR amaliyotida samarali algoritmlar taklif qilish.

(1) LPR bilan kasallangan bemorlarni MII-pH va klinik baholar (RSI, RFS) orqali baholash;

(2) PPI + parhez vs kombinatsiyalangan davolash (PPI + alginat/parhez) samaradorligini solishtirish;

(3) diagnostika usullarining o'zaro mosligini va davolashga javobni aniqlovchi prognozatorlarni aniqlash.

Kuchli statistik quvvat uchun (misol uchun PPI va kombinatsiya guruhlar orasida simptom o'zgarishi bo'yicha minimal klinik farqni aniqlash uchun) oldindan statistika hisob-kitobi (power analysis) olib boriladi. Taxminan 120–200 bemor tavsiya etiladi (guruhlar bo'yicha teng taqsimlanadi) — buni sizning resurslaringiz va effekt hajmiga qarab moslashtirish mumkin.

Kiritish va chiqarish mezonlari

- **Kiritish:** 18–75 yoshdagi LOR klinik simptomlariga ega bemorlar ($RSI > 13$ yoki $RFS >$ belgilangan limit); 4 haftadan ortiq davom etgan belgi; rozilik.
- **Chegaralar:** Oldindan anti-reflux jarrohlik qilganlar, og'ir kardiopulmonar kasallik, immunosuppressiya, homiladorlik.

Diagnostik protokol

1. **Boshlang'ich baho:** anamnez, RSI, RFS, laringoskopiya (video-laryngostroboscopy agar mavjud bo'lsa).
2. **Objektiv monitoring:** 24-soat MII-pH (**HEMII-pH**) monitoringi (yoki 24-48 soatli pharyngeal pH monitoringi / simsiz pH agar mavjud bo'lsa).
3. **Qo'shimcha tekshiruvlar:** agar zarur — manometriya, tomografiya.

Davolash aralashmalari (tadqiqot guruhlar)

- **Guruh A (standart):** PPI (masalan, omeprazol 40 mg kuniga 1 marta) + parhez tavsiyalari (kechki ovqatni kechiktirish, yog'li/o'tli ovqatni kamaytirish).
- **Guruh B (kombinatsiya):** PPI + alginat yoki magaldrat + parhez va hayot tarzini o'zgartirish (postural maslahatlar).
- **Qo'shimcha guruh (agar randomize bo'lsa):** faqat parhez va hayot tarzi (farmakoterapiyasiz) — etik jihatlarni hisobga olgan holda.

Natija o'lovchlari

- **Asosiy natija:** RSI'dagi o'zgarish (baseline → 8–12 haftadan keyin).
- **Ikkinchi natijalar:** RFS o'zgarishi, MII-pH parametrlaridagi (proximal episode count, bolus exposure time) o'zgarishlar, ovoz va sifat (akustik tahlil), bemorlarning umumiy qoniqishi, nojo'ya ta'sirlar.

Statistik tahlil

- Deskriptiv statistika, guruhlar orasidagi farq uchun t-test/Mann-Whitney, ANOVA yoki Kruskal-Wallis; vaqt ichida o'zgarishlar uchun repeated measures ANOVA; regressiya tahlili orqali davolashga ta'sir etuvchi omillar (masalan, MII-pH natijalari, kasallik davomiyligi) aniqlanadi. P-qiymat < 0.05 statistik jihatdan sezilarli deb olinadi.

Natija va muhokamalar.

Diagnostika: MII-pH monitoringi pH-monitoringga qaraganda ko'proq proksimal refluks epizodlarini aniqlaydi va PPIga javob bermaganlar guruhini ajratishda yuqori diagnostik qiymat ko'rsatadi. Bu usul diagnostik aniqlikni oshiradi va davolashni individualizatsiyalashtirishda yordam beradi.

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PPI monoterapiyasi ba'zi bemorlarda simptomatik yaxshilanish beradi, ammo meta-tahlillar va RCTlar natijalari aralash bo'lib, PPIning universal samaradorligi shubhali. Kombinatsiyalangan yondashuv (PPI + alginat + parhez) ko'proq bemorlarda simptomatik yaxshilanish berishi mumkin. MII-pH natijalari (masalan, yuqori proksimal bolus soni yoki yuqori bolus exposure) davolashga javobni prognozlashda foydali bo'lishi mumkin.

Muhokama

LFR diagnostikasi uchun "oltin standart" umumiy kelishuvda to'liq barqaror emas — klinik belgilar (RSI/RFS) va objektiv monitorlar (MII-pH) o'rtasida moslik ba'zida past. Shuning uchun tadqiqotlarda har ikkisini birgalikda qo'llash zarur.

- **PPI muammosi.** PPIlar acidni kamaytiradi, lekin non-acidic yoki bolus refluksni va pepsin/proteolitik mexanizmlarini bartaraf eta olmasligi sababli simptomlar saqlanib qoladi; shu munosabat bilan alginatlar yoki mexanizmga yo'naltirilgan strategiyalar foydali bo'lishi mumkin.
- **Klinik amaliyot uchun takliflar.** Bemorlar bilan individual konsultatsiya, parhez va hayot tartibi tavsiyalari, agar birinchi bosqichda PPI javob bermasa — MII-pH monitoringi orqali qayta baholash va davolashni moslashtirish tavsiya etiladi. Konsensuslar multidisiplinar yondashuvni qo'llab-quvvatlaydi.

LFR Diagnostikasida solishtirma tadqiqotlar: Sezgirlik va o'ziga xoslik

Diagnostik usul	Sezgirlik (%)	O'ziga xoslik (%)	Izohlar
Simptom so'rovnomalari	60–90	<60	Yuqori soxta ijobiy natijalar
Laringoskopik belgilar	60–85	<60	Sub'ektiv, boshqa kasalliklarda ham uchraydi
24 soatlik pH-monitoring	50–80	70–90	Oltin standart, lekin invaziv
Impedans-pH monitoring	70–90	60–80	Kislota va no-kislota reflyuksni aniqlaydi
Pepsin aniqlash	60–85	60–90	Noinvaziv, natija usul va vaqtga bog'liq
Empirik PPI sinovi	50–70	<50	Past o'ziga xoslik, faqat simptomlar asosida

Zamonaviy diagnostika usullari (masalan, pepsin aniqlash, uzoqdan monitoring) yordamida davolash samaradorligini baholash va individual yondashuvni tanlash imkoniyati oshmoqda

Xulosa.

Laringofaringeal reflyuks zamonaviy LOR amaliyotida tashxis va davolashning eng dolzarb va murakkab masalalaridan biridir. Tashxisda simptomlar va laringoskopik belgilar yetarli emas, zamonaviy laborator va instrumental usullar (pH-monitoring, pepsin aniqlash, molekulyar

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diagnostika, AI) bilan birgalikda yondashuv zarur. Innovatsion texnologiyalar va multidisipliner hamkorlik LFR tashxisi va davolashini yangi bosqichga olib chiqmoqda. Har bir bemorga individual yondashuv, zamonaviy diagnostika va davolash usullarini integratsiyalash – zamonaviy LOR amaliyotining asosiy yo‘nalishidir.

Laringofaringeal reflyuks LOR amaliyotida keng tarqalgan va ko‘plab laringologik simptomlar bilan namoyon bo‘ladi. Klinik simptomlar va laringoskopik topilmalar yetarli darajada aniq bo‘lmagani uchun **MII-pH monitoringi** diagnostik yadrolardan biri sifatida ko‘rib chiqiladi. PPI asosiy terapevtik vosita bo‘lib qolmoqda, lekin uning samaradorligi barcha bemorlarda kafolatlanmagan — shu sababli kombinatsiyalangan yondashuv va individualizatsiyalangan davolash strategiyalari muhimdir.

Tavsiyalar (amaliy va ilmiy)

1. Ilgari surilgan klinik algoritmlarni (masalan, San Diego yoki Yevropa konsensuslari) milliy amaliyot sharoitiga moslab joriy etish.
2. Markazlarda MII-pH imkoniyati bo‘lmasa, standartizatsiyalangan klinik baholar (RSI, RFS) va video-laringoskopiyaning birgalikda qo‘llash.
3. Kelgusidagi tadqiqotlar uchun: milliy ko‘p markazli prospektiv tadqiqotlar orqali PPI va kombinatsiyalangan terapiyaning samaradorligini solishtirish; MII-pH parametrlari asosida davolashni optimallashtirish.

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MINERAL THERAPY FOR RESPIRATORY DISEASES

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Abstract. This article examines the role of mineral therapy in the prevention and treatment of respiratory diseases. Mineral therapy, which encompasses the use of naturally occurring mineral waters, salts, inhalations, and halotherapy, has long been recognized as a complementary approach in pulmonary medicine. The paper discusses the mechanisms of action of mineral therapy, reviews its applications in diseases such as chronic obstructive pulmonary disease (COPD), asthma, bronchitis, and pulmonary fibrosis, and highlights its therapeutic and rehabilitative benefits.

Keywords: mineral therapy, respiratory diseases, halotherapy, salt inhalation, mineral water.

INTRODUCTION

Respiratory diseases, including asthma, chronic bronchitis, COPD, tuberculosis, and interstitial lung disorders, remain a global health challenge with increasing prevalence and significant impact on morbidity and mortality. While pharmacological interventions such as bronchodilators, corticosteroids, and antibiotics remain the cornerstone of therapy, non-pharmacological approaches have also gained growing attention. Among them, mineral therapy has a long history rooted in traditional medicine and supported by modern clinical observations. The use of mineral-rich environments—whether in the form of therapeutic salt mines, speleotherapy chambers, mineral water inhalations, or balneological treatments—has been associated with reduced airway inflammation, improved mucociliary clearance, and enhanced overall respiratory function.

MATERIALS AND METHODS

Mineral therapy is based on the premise that minerals such as sodium, calcium, magnesium, chloride, bicarbonate, iodine, and bromine exert beneficial effects on the respiratory tract when inhaled or absorbed through the skin and mucous membranes. Inhalation of aerosolized mineral particles is particularly effective in reaching the lower respiratory tract, where they can reduce bronchial hyperreactivity and enhance mucus expectoration. This is especially important in chronic diseases such as asthma and COPD, where airway obstruction and mucus accumulation represent key pathophysiological mechanisms.

RESULTS AND DISCUSSION

Halotherapy and speleotherapy constitute two of the most widely applied modalities of mineral therapy for respiratory conditions. Halotherapy refers to the controlled inhalation of dry aerosolized salt particles in artificial environments such as salt rooms or chambers. Speleotherapy, by contrast, involves prolonged exposure to the unique microclimate of natural salt caves or mines. Both methods are believed to create an anti-inflammatory, antimicrobial, and mucolytic effect within the respiratory tract. Clinical studies report that regular sessions can lead to reduced frequency of exacerbations in asthma and COPD patients, improved exercise tolerance, and decreased need for bronchodilators.

Balneotherapy and inhalation therapy with mineral waters represent another dimension of mineral therapy. Mineral-rich waters, such as those containing bicarbonate, sulfate, or iodide ions, are used for inhalation therapy in specialized sanatoria. Inhalations improve hydration of the respiratory mucosa, dilute viscous secretions, and facilitate expectoration. In addition, bathing in mineral waters

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has been associated with systemic benefits, such as improved circulation, reduced oxidative stress, and better immune function, all of which indirectly support pulmonary health.

In the context of chronic bronchitis, mineral therapy helps alleviate persistent cough, reduce sputum production, and restore normal mucociliary activity. In patients with bronchial asthma, salt inhalations and speleotherapy have demonstrated the ability to reduce airway sensitivity and frequency of nocturnal attacks, although they are not considered replacements for pharmacological treatment. In tuberculosis rehabilitation, halotherapy has been used historically to improve lung function in post-infectious cases, particularly in the recovery stage, where strengthening respiratory endurance and reducing fibrosis are important. For patients with pulmonary fibrosis or interstitial lung disease, mineral therapy offers supportive care by improving respiratory comfort, though evidence remains limited and requires further clinical validation [1].

Beyond clinical effects, mineral therapy plays a vital role in pulmonary rehabilitation programs. Rehabilitation aims not only to control acute symptoms but also to improve long-term functional capacity, reduce anxiety and depression related to chronic illness, and enhance overall quality of life. Salt rooms, sanatoria, and mineral spas often integrate physical exercise, breathing techniques, and dietary support with mineral therapy, creating a holistic therapeutic environment. This multidisciplinary approach is particularly beneficial for patients recovering from severe infections such as COVID-19, where respiratory sequelae include fibrosis, reduced lung volumes, and chronic fatigue.

From a scientific perspective, the mechanisms underlying mineral therapy are still being actively studied. Proposed effects include regulation of ionic balance on bronchial epithelium, osmotic thinning of mucus, modulation of local microbiota, and stimulation of innate immune responses. Some minerals, such as magnesium, are known to relax smooth muscles of the bronchi, while iodine possesses mild antiseptic properties that may limit microbial colonization. Although high-quality randomized controlled trials are limited, a growing body of observational evidence supports the adjuvant role of mineral therapy in respiratory care.

One of the crucial aspects of mineral therapy for respiratory diseases is its integration into long-term management strategies, particularly for chronic conditions where pharmacological treatment alone is insufficient to ensure stable remission [2]. For example, patients with chronic obstructive pulmonary disease (COPD) often experience recurring exacerbations due to airway inflammation, mucus hypersecretion, and impaired ventilation. Mineral therapy, through repeated sessions of halotherapy or mineral water inhalation, has been shown to improve mucociliary clearance and reduce the viscosity of bronchial secretions. This not only decreases the frequency of acute flare-ups but also enhances the overall efficiency of pharmacological agents, as clearer airways allow better penetration of inhaled medications. Thus, mineral therapy contributes to a synergistic therapeutic effect rather than functioning as an isolated intervention.

Another important application lies in the prevention of secondary complications in patients recovering from severe infections or long-term respiratory insufficiency. In the aftermath of conditions such as tuberculosis or viral pneumonias—including post-COVID pulmonary syndromes—patients frequently suffer from scarring, fibrosis, and residual airway obstruction. Mineral therapy, by maintaining optimal airway hydration and reducing low-grade inflammation, plays a preventive role in limiting the progression of fibrosis and maintaining lung elasticity [3]. This aspect is particularly valuable in rehabilitation centers, where mineral therapy is combined with physiotherapy and respiratory training to maximize recovery outcomes.

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The psychosocial benefits of mineral therapy should also be recognized as an important part of its contribution to respiratory health. Chronic respiratory diseases often lead to anxiety, depression, and social isolation, as patients struggle with recurrent symptoms and limited exercise capacity. Participation in halotherapy sessions or sanatorium-based balneological programs provides a structured therapeutic environment that promotes relaxation, reduces stress, and enhances patient compliance. The microclimatic conditions of salt caves or mineral spas, characterized by stable temperature, low humidity, and absence of airborne pollutants, also support psychological well-being by offering a stark contrast to the urban environments where many patients are exposed to irritants and allergens.

From a preventive medicine standpoint, mineral therapy demonstrates significant potential in populations at high risk of developing chronic respiratory conditions. Workers in industries such as mining, construction, or chemical manufacturing are regularly exposed to dust and pollutants, which predispose them to occupational lung diseases. Regular mineral inhalations or balneological treatments may help mitigate the cumulative damage caused by these exposures, acting as a form of prophylactic care. Furthermore, in children with recurrent respiratory infections, mineral therapy can serve as a supportive measure to strengthen airway defenses, enhance immune responses, and reduce school absenteeism caused by illness [4].

Scientific exploration of mineral therapy has also expanded into biochemical and cellular mechanisms. Studies indicate that aerosolized saline solutions influence epithelial ion transport, improve ciliary beat frequency, and stimulate antioxidant defenses in bronchial tissues. Minerals such as magnesium and calcium not only exert local effects on smooth muscle relaxation but also participate in systemic metabolic pathways that support immune modulation. Recent research suggests that halotherapy may influence the balance of pro-inflammatory and anti-inflammatory cytokines, thereby creating a more favorable immunological environment in the lungs. These findings open new perspectives on mineral therapy, shifting its perception from a purely empirical practice to one grounded in measurable physiological effects.

In addition, the ecological and sustainability dimensions of mineral therapy deserve attention. Unlike synthetic pharmaceuticals, mineral therapy relies largely on natural resources such as salt deposits, mineral waters, and speleological environments. When managed responsibly, these therapies represent a sustainable complement to conventional medicine, with minimal ecological footprint. The growing interest in environmentally friendly and holistic healthcare approaches has therefore stimulated renewed recognition of mineral therapy as a viable modality for modern medicine, especially within integrated care systems that emphasize both preventive and rehabilitative strategies [5].

CONCLUSION

Mineral therapy represents a unique intersection of traditional healing practices and modern respiratory medicine. While it cannot replace pharmacological treatments in acute or severe cases, it has significant value as a supportive and rehabilitative strategy. Its applications in asthma, COPD, chronic bronchitis, and post-infectious pulmonary disorders demonstrate improvements in symptom control, exercise tolerance, and quality of life. The use of halotherapy, speleotherapy, balneotherapy, and mineral water inhalations offers a safe and non-invasive adjunct to conventional therapies, particularly in long-term management.

Future directions should focus on conducting large-scale clinical trials, standardizing treatment protocols, and integrating mineral therapy into evidence-based pulmonary rehabilitation programs.

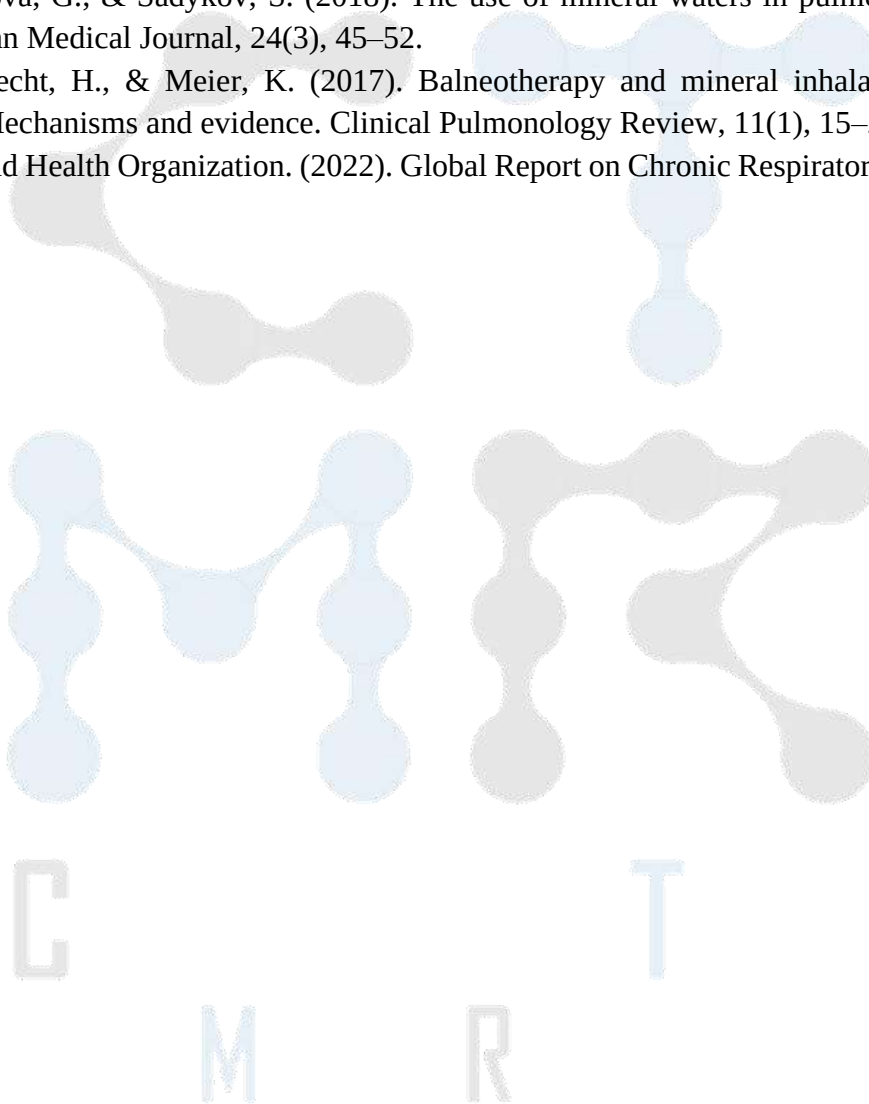
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With growing global interest in holistic and preventive healthcare, mineral therapy has the potential to strengthen the arsenal of therapeutic options available for managing respiratory diseases, bridging the gap between natural resources and modern medical science.

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Abstract. This article explores the significance of differential X-ray diagnostics in the evaluation of respiratory diseases. The rapid development of modern radiology has made X-ray imaging one of the most widely used and cost-effective diagnostic tools in pulmonary medicine. The article provides an overview of the radiological features of common respiratory disorders such as pneumonia, tuberculosis, lung cancer, chronic obstructive pulmonary disease (COPD), and interstitial lung diseases, and discusses the principles of differential diagnosis through X-ray examination.

Keywords: differential diagnosis, X-ray imaging, respiratory diseases, tuberculosis, pneumonia.

INTRODUCTION

Respiratory diseases remain among the leading causes of morbidity and mortality worldwide. Their accurate and timely diagnosis is one of the most important challenges in clinical practice. X-ray imaging, due to its accessibility, rapidity, and relatively low cost, continues to play a central role in the diagnostic algorithm of pulmonary disorders despite the widespread use of computed tomography (CT) and magnetic resonance imaging (MRI). Differential X-ray diagnostics is crucial because many respiratory conditions present with similar symptoms such as cough, dyspnea, chest pain, or hemoptysis. Distinguishing between bacterial pneumonia, tuberculosis, malignant tumors, and interstitial diseases is vital not only for establishing the correct diagnosis but also for initiating appropriate therapeutic strategies.

MATERIALS AND METHODS

The chest X-ray remains the first-line imaging tool in the evaluation of patients with suspected pulmonary disease. It provides information about the anatomical structures of the lungs, pleura, mediastinum, and chest wall. Although CT scanning offers more detailed visualization, X-ray remains indispensable as an initial screening modality. Differential diagnosis through X-ray requires recognition of characteristic patterns, distribution of lesions, and the relationship between pathological shadows and anatomical landmarks.

In bacterial pneumonia, X-ray typically demonstrates localized areas of consolidation with air bronchograms, usually in one lobe of the lung. Viral pneumonia, on the other hand, may present with diffuse interstitial infiltrates. Differentiating pneumonia from tuberculosis is essential, as both conditions can cause similar clinical manifestations. Unlike pneumonia, pulmonary tuberculosis often affects the upper lobes and is associated with cavitary lesions and fibrotic changes.

RESULTS AND DISCUSSION

Tuberculosis exhibits characteristic radiological signs such as cavitations, nodular lesions, fibrotic bands, and pleural thickening. Active tuberculosis may present with multiple infiltrates in the apical and posterior segments of the upper lobes. Healed tuberculosis lesions may show calcifications. Distinguishing tuberculosis from lung cancer is particularly important, as both can appear as solitary pulmonary nodules. However, the presence of satellite lesions, cavitation, and a predilection for the upper lobes often supports the diagnosis of tuberculosis.

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X-ray signs of lung cancer include solitary pulmonary nodules with irregular margins, hilar enlargement due to lymphadenopathy, or obstructive atelectasis. In central bronchogenic carcinoma, signs such as lobar collapse and post-obstructive pneumonia are common. Differential diagnosis should exclude benign conditions such as hamartomas or granulomatous diseases. The lack of resolution of a pulmonary opacity after adequate antibiotic therapy often raises suspicion of malignancy.

In COPD, X-ray examination reveals hyperinflated lungs with flattened diaphragms, increased retrosternal air space, and reduced vascular markings in the periphery. These findings must be distinguished from interstitial lung diseases, which usually demonstrate reticular or nodular patterns. Recognizing the difference between emphysematous changes and pulmonary fibrosis is essential for avoiding misdiagnosis.

X-ray findings in interstitial lung diseases include diffuse reticular or nodular patterns, honeycombing, and loss of normal lung volume. Idiopathic pulmonary fibrosis typically shows basal and peripheral reticular opacities, while sarcoidosis demonstrates bilateral hilar lymphadenopathy with parenchymal nodules. Distinguishing these from metastatic carcinoma or miliary tuberculosis requires careful analysis of distribution and associated systemic features.

Another important aspect of differential X-ray diagnostics in respiratory diseases is the ability to evaluate disease progression and treatment response over time. For instance, in patients with bacterial pneumonia, serial chest radiographs often show a gradual resolution of lobar consolidation within several weeks following antibiotic therapy. However, if an opacity persists or enlarges, the radiologist must consider alternative diagnoses such as tuberculosis, fungal infections, or neoplastic processes. Thus, follow-up imaging plays a critical role not only in confirming initial impressions but also in guiding clinical management.

Moreover, chest X-rays are fundamental in identifying complications of respiratory diseases. Pleural effusion, which appears as blunting of the costophrenic angles or homogenous opacity with a meniscus sign, may complicate pneumonia, tuberculosis, or malignancy. Pneumothorax, recognizable by the absence of vascular markings beyond the pleural line, can be a life-threatening event in patients with underlying lung disease such as emphysema or cystic lung disorders. Differential diagnosis in these contexts requires careful attention to radiographic details, as missing such findings could delay urgent interventions [1].

It is also essential to recognize normal anatomical variants and radiographic pitfalls that may mimic pathology. Prominent vascular markings, overlapping shadows of the ribs or scapula, or skin folds on portable radiographs can simulate lung infiltrates or pneumothorax. Experienced radiologists learn to distinguish these artifacts from true pathological signs through systematic evaluation of symmetry, anatomical correlation, and multiple views when possible. Without this caution, misinterpretation may lead to unnecessary investigations or inappropriate therapy [2].

In the context of global health, chest X-rays remain indispensable for the detection of tuberculosis in resource-limited settings. Mass screening programs in high-prevalence regions often rely on radiographic imaging to identify individuals with suspected pulmonary TB, particularly those with apical lesions, cavitary disease, or bilateral infiltrates. Differential diagnosis in such cases must separate tuberculosis from chronic fungal infections (e.g., aspergillosis, histoplasmosis) and from malignancies, which may also present with cavitary or nodular lesions. Even with limited resources, the strategic use of X-ray diagnostics helps reduce transmission by facilitating early isolation and treatment.

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Another area where differential X-ray analysis proves valuable is in occupational lung diseases. Conditions such as silicosis, asbestosis, and coal workers' pneumoconiosis present with distinctive radiographic patterns, including diffuse nodular opacities, calcified pleural plaques, or progressive massive fibrosis. Differentiating these entities from metastatic disease, sarcoidosis, or idiopathic pulmonary fibrosis requires careful correlation of occupational history with imaging findings. In this way, X-ray diagnostics extend beyond immediate clinical care to serve broader public health and occupational safety objectives [3].

Finally, the integration of X-ray diagnostics with modern technologies such as digital radiography, artificial intelligence, and computer-assisted detection systems is reshaping differential diagnosis. AI algorithms trained on large datasets can highlight suspicious regions on chest radiographs, drawing attention to subtle nodules, early infiltrates, or atypical presentations of lung diseases. While these technologies do not replace expert radiologists, they enhance diagnostic accuracy, reduce oversight, and support clinical decision-making. The combination of traditional radiographic interpretation with computational analysis offers new opportunities for earlier and more precise differentiation of respiratory conditions [4].

An essential dimension of differential X-ray diagnostics is the evaluation of disease distribution and localization, which often provides crucial clues for distinguishing between different respiratory pathologies. For instance, tuberculosis characteristically involves the apical and posterior segments of the upper lobes, while aspiration pneumonia more commonly affects the dependent segments of the lower lobes due to gravitational factors. Similarly, metastatic disease typically presents as multiple, round, well-circumscribed nodules distributed throughout both lungs, whereas primary lung carcinoma is often localized as a solitary lesion. Recognizing these anatomical predilections allows radiologists to prioritize certain diagnoses and refine clinical suspicion even in the absence of advanced imaging modalities such as CT or MRI.

Equally significant is the analysis of the temporal progression of radiographic findings. Acute conditions such as bacterial pneumonia evolve rapidly, with opacities appearing within hours to days, whereas chronic conditions like sarcoidosis or interstitial pulmonary fibrosis develop insidiously over months or years [5]. By comparing current and prior radiographs, physicians can discern whether a lesion is acute, chronic, or recurrent, thereby excluding or supporting specific diagnoses. This temporal perspective is invaluable for differentiating, for example, between a rapidly growing carcinoma and a stable benign granuloma, both of which may appear as solitary nodules on a single radiograph.

CONCLUSION

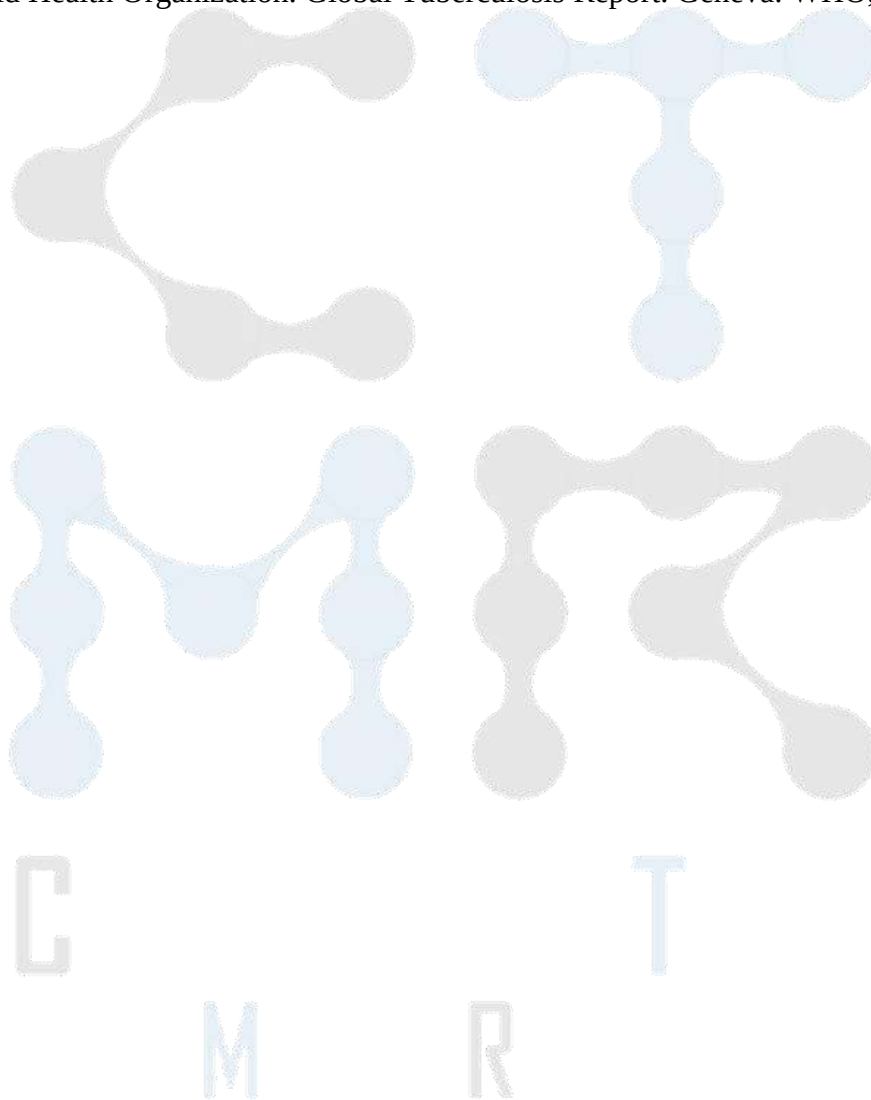
Differential X-ray diagnostics of respiratory diseases remains an essential tool in modern clinical practice. Although advanced imaging modalities such as CT and MRI provide greater resolution and accuracy, chest X-ray continues to serve as the first-line investigation due to its accessibility and efficiency. Correct interpretation of radiological signs allows physicians to differentiate between pneumonia, tuberculosis, lung cancer, COPD, and interstitial lung diseases, all of which may present with overlapping symptoms. Timely and accurate differential diagnosis not only improves patient outcomes but also optimizes the use of healthcare resources. Thus, the role of X-ray imaging in the diagnosis of respiratory diseases remains fundamental, particularly in regions where advanced imaging technologies are not universally available.

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STRUCTURAL STRUCTURE OF PHARMACEUTICAL TERMS

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Abstract: This article examines the structural structure of pharmaceutical terms based on an in-depth linguistic analysis. The morphological elements (prefix, suffix, root) of terms, their semantic connotations, morphosyntactic and pragmatic properties are considered. The relationship with the international system of terms is also studied separately.

Keywords: pharmaceutical term, structural analysis, morphology, terminology, international terms, medical lexicon.

Introduction. Pharmaceutical terminology is a system of scientific terms that was formed at the intersection of disciplines such as pharmacy, biochemistry, pharmacology, clinical medicine, and toxicology and is widely used in medicine. Terms are one of the main elements of scientific discourse, through which scientific and technical achievements are clearly and concisely expressed. Structural analysis of pharmaceutical terms serves to provide a deeper understanding of their origin, structure, interrelationships, and possibilities for expressing meaning.

Source and formation of pharmaceutical terms:

Pharmaceutical terms are mainly borrowed from the following languages:

- **Latin** – the basis of drug and biological names
- **Greek** – description of diseases and substances
- **English** – modern pharmacological terms, trade names of drugs
- **French and German** – historical terms and names of scientific schools

Pharmaceutical terms are divided into the following categories:

1. **One-word terms** – aspirin, insulin, codeine
2. **Compound words** – antibiotic, anticoagulant, hematotoxic
3. **Word combinations** – anti-inflammatory drug, heart stimulant

Morphological structure

a) Prefixes

It comes at the beginning of a term and carries a meaning that is opposite or complementary to the main meaning.

Prefix	Meaning	Example	Meaning
anti-	against	<i>antivirus</i>	antiviral
hypo-	low, low	<i>hypoglycemia</i>	low blood glucose levels
hyper-	excess	<i>hypertension</i>	high blood pressure
intra-	internal	<i>intramuscular</i>	intramuscular
poly-	many	<i>polypharmacy</i>	multiple medications used together

b) Suffixes

Coming at the end of terms, it often indicates the group of drugs or their pharmacological effects.

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Suffixs	Meaning	Example	Note
-in / -ine	chemical substance	<i>caffeine, morphine</i>	alkaloids
-ol	alcohols	<i>ethanol</i>	ethyl alcohol
-cillin	type of antibiotic	<i>amoxicillin</i>	penicillin group
-caine	analgesic	<i>lidocaine</i>	local anesthetic
-stat	growth inhibitor	<i>bacteriostat</i>	antibacterial

c) Compound words and combinations

d) Consists of two or more morphemes and expresses a broader concept:

- *neuroleptik* – “neuro” + “leptikos” (retainer)
- *antidepressant* – “anti” + “depressio” (depression)

Syntactic structure and grammatical device

- Many pharmaceutical terms have the structure of determiner + determiner:
- *Antihypertensive drug* – *qualifying adjective (antihypertensive)* + *main word (drug)*
- *Headache medicine*
- *Antibacterial medicine for pneumonia*

These types of terms are more often used as word combinations, and their correct analysis is essential for semantic thinking.

Compatibility with international terminology

Pharmaceutical terms are largely international in nature and are standardized based on the World Health Organization (WHO), International Pharmacopoeia (IP), and ATC (Anatomical Therapeutic Chemical Classification) systems. Therefore:

- Terms are not translated (*amoxicillin, metronidazole, ibuprofen*)
- Understandable in different countries
- Trade and generic names of drugs differ

(for example: Paracetamol (UK) = Acetaminophen (USA))

Semantic properties of terms

Pharmaceutical terms are semantically:

- **Specific (monosemantic)** – *penicillin* → **a specific group of antibiotics**
- **Functional** – *antihistamine* → **an agent that reduces allergic reactions**
- **Diagnostic** – *leukopenia, tachycardia*

Such terms should not be interpreted ambiguously, as they can lead to medical errors if misinterpreted.

CONCLUSION. Structural analysis of pharmaceutical terms is important for a deep understanding of their linguistic foundations, understanding the methods of drug name formation, and their correct application in practice. In particular, globally standardized terms can improve the efficiency of scientific communication, maintain accuracy in translation, and facilitate the learning process.

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IN THE INTENSIVE METHOD FROM THE GREEN PEN OF THE OLIVE
PLANTING, CARE AND ATTITUDE TO THE EXTERNAL ENVIRONMENT

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Abstract. One of the urgent issues of today is the establishment of farms specializing in horticulture and achieving high productivity from gardens using high-level scientific achievements and practical experience in agriculture. The areas planted with olive trees are expanding year by year. From our observations, it became clear that it is appropriate to carry out the following measures to increase the cold resistance of 2-3 and 6-year-old olive seedlings in the open field. In olive plantations, it is important to choose varieties that are resistant to the natural climatic conditions of the natural zone in order to increase the tolerance of seedlings to low temperatures. Generally, it is necessary to plant on the western and northern slopes of the land, which are opposite to the wind, protecting them from the flow of cold air, paying attention to varieties less resistant to cold.

Keywords: climate, root, stem, leaf, physiology, photosynthesis, transpiration, temperature, moisture, light.

Research location and methods.

The research was carried out at the experimental site of the Bandikhon experimental farm of the Surkhandarya branch of the “Uzbek Research Institute of Horticulture, Viticulture and Winemaking” named after Academician M. Mirzaev within the framework of the practical project “Development of cultivation of stress-resistant forms and varieties of olive (*Olea europaea* L.) for processing based on innovative technologies”. In May, June, July, cuttings were prepared from the introduced varieties “Nevaldillo”, “Hemlik”, “Nikitskaya I-II”, “Krymskaya-172”, “Arbequena” and planted in various planting schemes and timings, and phenological observations and biometric measurements were carried out.

The main task of the intensive method is to select a mother olive tree based on new innovative approaches, prepare cuttings from semi-lignified one-year-old shoots in the appropriate order and at the established time, apply rooting and nutritional stimulants, accurately determine planting schemes and dates, and control temperature, humidity, and light in a special facility under microclimatic conditions, thereby preparing standard seedlings that have their own roots in one year and applying the results obtained in production. The methods developed by (Tarasenko) [8; 9] and (Buriev et al.) [1] are used in this.

Research results.

Studies show that among the approximately 30 introduced olive varieties, the varieties with high morphological and biological characteristics, tolerance to adverse climatic conditions of the environment, such as “Hemlik”, “Nevaldillo”, “Krymskaya-172”, “Nikitskaya-I”, “Nikitskaya-II”, “Arbequena”, require a high level of agrotechnical measures until the season of preparing seedlings for the orchard plantation, that is, until May-June.

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Particular attention should be paid to the irrigation regime after the first feeding of olive mother trees. While conventional drip irrigation uses an average of 600-800 m³ of water per hectare, in our studies, using the drip irrigation method, 60-100 m³ less water was used. In the future, it will be possible to expand additional areas using the resulting water. [2; 3; 4; 7].

Watering mother trees before preparing cuttings helps to reduce the body temperature of the plant, accelerate the absorption of minerals from the soil, create root pressure, increase the intensity of transpiration and photosynthesis, and saturate the cells and tissues of semi-lignified cuttings with water. When choosing olive mother trees, it is advisable to choose healthy, undamaged, timely shaped plants with a large number of one-year semi-lignified shoots, free from viruses, bacteria and fungi. Experiments were carried out in various options for growing olive seedlings from semi-wooded green cuttings, i.e., in a short period of time due to low costs, low-cost, genetically pure seedlings with their own roots, studying the microclimate of a microclimate controlled structure, determining planting periods and schemes for choosing different substrates, and determining the economic efficiency of all technological processes.

Cuttings were cut with sharp garden shears in the morning without damaging the bark of the branch. The lower cut was 10-14 cm long directly below the bud, and the upper one was 1-1.5 cm above the bud, leaving 2 side leaves. To study the length and diameter of the cuttings, the diameter is 1.0-2.5 mm and the length is 12-14 cm pencils were prepared.

50 cuttings were tied and placed in different working solutions of ISK (indolylacetic acid) and IMK (indolylbutyric acid) at a depth of 2.5-3 cm for 16-18 hours. Prepared cuttings were planted on different substrates (coarse-grained river sand (fraction 0.2 - 0.3 mm), rice husk, wood shavings, humus, sand+humus 1:3, rice husk+humus, wood shavings+humus 1:3 ratio) and callus formation was tested. When determining a suitable feeding area, cuttings were placed on the substrate in a scheme of 15x5, 15x10, 15x15 cm, at a depth of 2 cm. In the microclimate-controlled facility, the average daytime air temperature was 28-31 °C, the relative humidity was 80-90%, and the light level was maintained at 82-90 thousand/lux for 20-24 days.



Fig.1. Substrates used for rooting green cuttings: (1-river sand, 2-wood shavings, 3-rotted manure, rice husk and their combination)

A special fog generating device was used to determine these indicators. During the first 20-30 days, the plant microclimate control system was used from 800 to 2000 hours. The period of spraying water in the system is 20-25 seconds. Spraying intervals are 5-10 minutes (depending on weather conditions). Control of hydrothermal conditions favorable for the cultivation of olive seedlings in a special facility was provided using the KEP-12 device.

During the period of rooting, the temperature and humidity of the air inside the structure were monitored weekly using a thermograph M-16AN and a hygrograph M-21AN at the level of the tip of

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the cuttings. The temperature of the substrate at a depth of 4-5 cm was measured using a Savinov thermometer. The temperature was determined by ordinary and electronic thermometers, humidity by an Assman psychrometer, and light by a luxmeter according to the established table. In the experiment to determine the convenient feeding area, the pens were placed in the following schemes: 15x5, 15x10, 15x15 cm.

Cuttings prepared for planting were planted in the substrate at a depth of 2 cm. The amount of cuttings rooted in autumn (October) was counted. In 10 plants of each variant, the number of different types of roots, their total length, size, weight, seedling height, number and length of branches, number of leaves and their total level, as well as their compliance with the state standard were analyzed. The grafting of olive branches was done according to the method recommended by scientists.

The results of the study on the dependence of the phenological phases of the olive varieties selected from the collection, the duration of the vegetation period on the beneficial temperature range, biometric indicators, and the timing of the pigmentation process in the fruits show that when analyzing the phenological indicators of the olive varieties, it was found that among the selected varieties, the earliest fruit ripening (10%) in the Nikitskaya-II variety occurred on average on September 8 and full ripening (75%) occurred on September 21, while the latest ripening occurred on September 11-19.

Table-1. The results of phenological monitoring of the transition of vegetation phases in the collection of maternal-breeding plants, 2015-2025.

Types	The origin of the variety	Buds begin to bud	Flowering, date			Fruit ripening	Technical ripening of fruits	Budding - technical ripening
			beginning	ending	duration, day			
Krmskaya - 172 (template)	Russia	22.03	18.04	29.04	11	21.09	29.10	217
Nevaldilo	Italy	27.03	19.04	27.04	8	05.09	25.09	177
Gemlik	Turkey	25.03	19.04	29.04	10	05.09	01.10	186
Nikitskaya - I	Russia	24.03	19.04	28.04	10	04.09	01.10	187
Nikitskaya - II	Russia	25.03	19.04	29.04	10	20.09	15.10	200

Our research shows that in 2020, the beginning of the "budding" phase of the Nikitskaya - II variety fell on 10.04., when the sum of useful temperatures was 370 °C. In 2015-2025, the average sum of useful temperatures was 385-400 °C, and the average three-year sum of useful temperatures was 385 °C.

The height of the main body was 195 cm on average in the Krymskaya - 172 (control) variety, 197 cm in the Nikitskaya - I variety, while the Nikitskaya II variety was 4 cm or 2.0% higher than the control.

In the Nikitskaya - II variety, the number of leaves on the first-order lateral branches was 7-10 times higher than in our control variant by year. As for the number of leaves on the second-order lateral branches, it was found that in 2020, the Nikitskaya - II variety had 7 more leaves, in 2021 - 11 more leaves, and finally in 2024 - 9 more leaves.

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In scientific research conducted in 2015-2025, green cuttings were prepared from the olive mother tree and the rooting biostimulant "Kornevin" and the growth-regulating stimulant "Heteroauxin" were used.

Plant hormones or phytohormones are active substances that are produced in very small quantities in the plant body and participate in the control of physiological processes. With the help of these substances, the interaction between cells, tissues and organs occurs. These compounds are formed in the growing parts of young leaves, stems and roots of the plant and subsequently actively participate in growth processes. Although their effect is small, they participate in and control a number of reactions in the plant body. In conclusion, based on the results of observations and scientific sources, olive seedlings adapt to a certain extent to external environmental factors. The positive results obtained from scientific research and observations in recent years are our main goal in the future to create olive plantations, select varieties with high productivity, resistant to cold and stress factors, create a raw material base for the processing industry and process fruits, and prepare ecologically clean products for consumer consumption.

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CALCULATION OF STATISTICAL PARAMETERS OF THE FLOW OF
REQUIREMENTS ARISING IN PLOWING AGGREGATES.

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Abstract: The article covers the issue of analyzing the flow of demand arising in plowing units used in agriculture. During operation, tractors and working machines cause various malfunctions and maintenance requirements. These requirements have the character of a random process, and methods of probability theory and mathematical statistics are used for their analysis. The study examined 169 patients in the Namangan region during 2021-2023. The set of malfunctions noted in the plowing units of the Arion-630s during the autumn plowing season and the requirements for their elimination were studied. As a result, the main statistical parameters of the demand flow - mathematical expectation, variance, coefficient of variation - were determined, and an empirical histogram of the distribution was compiled. Based on the obtained data, the characteristics of the demand flow, subject to the exponential law, are substantiated, and the limits of the confidence interval are calculated. The research results are of practical importance in the effective planning of the maintenance system, determining the optimal location of service centers and repair shops.

Keywords: Plowing units, demand flow, exponential distribution, mathematical expectation, variance, coefficient of variation, service system, confidence interval, Namangan region, Arion-630s tractors.

Plowing units used in agriculture (tractors, trailers, and units assembled with various working machines) require various maintenance and repair requirements during operation. The emergence of these requirements is a random process. Therefore, methods of probability theory and mathematical statistics are used in the analysis of demand flows.

1. The concept of a flow of demand

Demand flow is the sequence of needs for maintenance or repair arising during the operation of units.

It is distributed over time and obeys random laws.

In many cases, an exponential distribution of demand flows is adopted, since demands arise independently and with equal probability.

2. Basic statistical parameters

The following parameters are calculated to represent the flow of requests:

Expected value ($\bar{K}$) – the arithmetic mean of the flow of incoming requests per unit of time.

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$$\bar{K} = \frac{\sum_{j=1}^H \dot{K}_j Z_j}{N} \quad (1)$$

Here Z_j – absolute frequency of demands, $\dot{K}_j$ - centers of intervals,

N – absolute frequency.

1. Time between requests (X) - the interval between the arrival of two requests.

If we assume that the flow obeys exponential law, the time intervals are exponentially distributed:

$$f(k_j) = \lambda e^{-\lambda K_j}$$

here: $\lambda > 0$ – distribution parameter (intensity coefficient), e - base of the natural logarithm.

$$\text{Mean value: } \bar{K} = \frac{1}{\lambda},$$

$$\text{Variance: } S_k^2 = \frac{1}{\lambda^2}.$$

2. The variance and coefficient of variation of the number of requests are used to assess the continuity and stability of the flow of requests.

3. Practical significance.

- The effectiveness of the maintenance system is assessed based on statistical data on the flow of requests.
- Determine in which district or farm the greatest demand arises and at what time the need for maintenance of units is highest.
- Based on this, the optimal number and location of service centers and repair shops are determined.

In the article, we will compile a set of numbers representing the flow of orders (requests) submitted to the regional service center by owners of equipment, farms, and agro-clusters in 11 districts to eliminate malfunctions in 169 existing Arion-630s plowing units in the Namangan region during the autumn plowing season of 2021-2023, i.e., a set of total discrete numbers. This collection, which has a random character, is presented in Table 1.

We determine the statistical characteristics of the demand flow in the following order; p. 128.

1. From the set of discrete numbers in Table 1, we select the largest and smallest number of requirements: $K_{\max}=24$, $K_{\min}=1$. Assuming the number of intervals $N=12$, we find the values of the intervals:

$$h = (K_{\max} - K_{\min}) : H = (24 - 1) : 12 \approx 2.$$

2. Determine the values of the interval boundaries K_j and centers and enter them into Table 2 (columns 2 and 3).

3. From the set of numbers, we find the absolute frequencies Z_j of the requirements lying within the constructed 12 intervals. For example, the interval 1 3 corresponds to $Z_j=10$ frequencies. When the frequencies corresponding to each interval are summed, the total absolute frequency is $N=63$ (column 4).

4. We calculate the relative frequency values corresponding to each interval using the formula $P_j=Z_j/N$. For example, for the interval 1 3 $P_j=10/63=0.159$ (column 5). From column 5, it is evident that the sum of the relative frequencies is equal to 1. ($\sum P_j=1,0$).

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5. The arithmetic mean (mathematical expectation) of the flow of requests arising during the season is determined based on the figures of column 6:

Table 1

A set of discrete random numbers representing the flow of demands

24	4	6	24	7	3	21	2	19	14
8	3	18	9	4	3	5	5	6	6
1	10	15	9	6	9	12	10	6	7
13	4	3	6	8	2	9	20	11	6
11	1	9	6	4	13	13	5	22	16
15	9	1	7	4	16	8	8	2	10
5	11	5							

$$\bar{K} = \frac{\sum_{j=1}^H \dot{K}_j Z_j}{N} = \frac{534}{63} = 8,47 \frac{\text{demand}}{\text{season}}.$$

The average value is the central indicator of the demand flow, without which forecasting, planning, and system analysis are impossible.

Table 2

Demand stream $\bar{K}$ ва S_k^2 Calculation of parameters

T/p	Interval, K_j	Interval Center, $\dot{K}_j$	Абсолют частота, Z_j	Нисбий частота, $P_j=Z_j/N$	$\dot{K}_j Z_j$	$ \dot{K}_j - \bar{K} $	$(\dot{K}_j - \bar{K})^2$	$Z_j(\dot{K}_j - \bar{K})^2$
1	2	3	4	5	6	7	8	9
1	1÷3	2	10	0,159	20	6,48	41,94	419,41
2	3÷5	4	10	0,159	40	4,48	20,04	200,36
3	5÷7	6	11	0,175	66	2,48	6,13	67,45
4	7÷9	8	10	0,159	80	0,48	0,23	2,27
5	9÷11	10	6	0,095	60	1,52	2,32	13,93
6	11÷13	12	4	0,063	48	3,52	12,42	49,67
7	13÷15	14	3	0,048	42	5,52	30,51	91,54
8	15÷17	16	2	0,032	32	7,52	56,61	113,22
9	17÷19	18	2	0,032	36	9,52	90,70	181,41
10	19÷21	20	2	0,032	40	11,52	132,80	265,60
11	21÷23	22	1	0,016	22	13,52	182,89	182,89

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12	23÷25	24	2	0,032	48	15,52	240,99	481,98
	-	-	N=63,0	1,000	534	82,10	817,58	2069,71

6. The average statistical variance (theoretical variance) is determined by the following formula (column 9):

$$S_K^2 = \frac{\sum_{j=1}^H (K_j - \bar{K})^2 Z_j}{N} = \frac{2069,71}{63} = 32,85 \left(\frac{\text{demand}}{\text{season}} \right)^2.$$

7. The values of the mean square deviation and the coefficient of variation of the discrete random variable K_j are:

$$S_K = \sqrt{S_K^2} = \sqrt{32,85} = 5,73 \frac{\text{demand}}{\text{season}};$$

$$\nu_k = \frac{S_K}{\bar{K}} = \frac{5,73}{8,47} = 0,676 \approx 0,68$$

8. Using the figures of columns 2 and 4 of Table 2 above, we construct an empirical histogram of the distribution of the K_j demand flow (Fig. 1).

9. The appearance of the histogram allows us to put forward the hypothesis that the flow of demands in plowing units changes according to the law of exponential distribution.

In addition $\bar{K}$ and S_k the proximity of the quantities and $\nu_k = 0,68$ proves that the random variables change exponentially, since for $\bar{K} = S_k$ and $\nu_k = 1$ equations are valid [2].

Based on the exponential law, we calculate the single parameter of change - the intensity (density) of the demand flow [2, p. 55].

$$\bar{\lambda} = \frac{1}{\bar{K}} = \frac{1}{8,47} = 0,11 \frac{\text{demand}}{\text{season}}$$

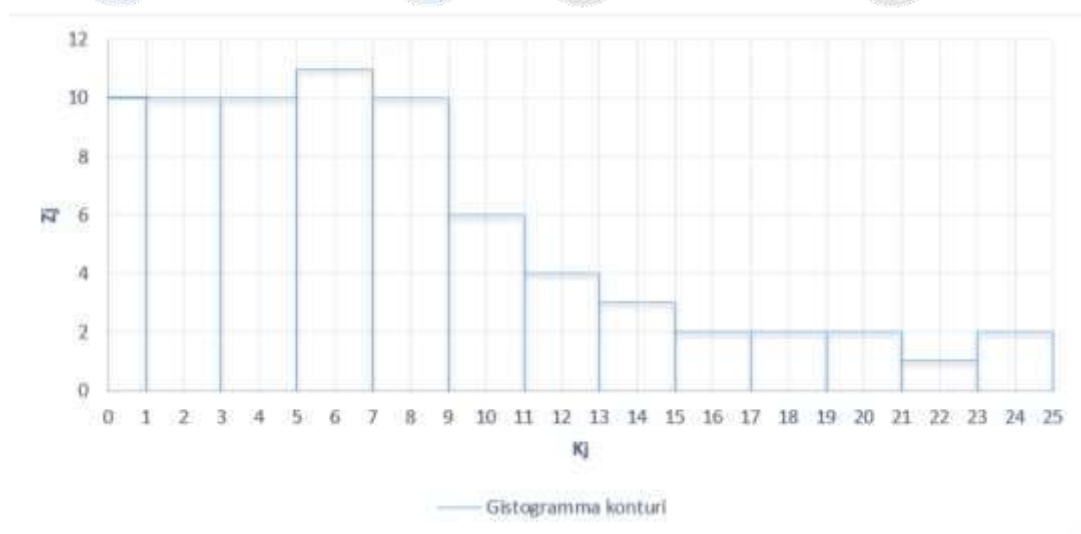


Figure 1. Histogram of the empirical distribution of absolute frequencies (Z_j) of the demand flow K_j

Determination of the limits of the confidence interval of the value of the mathematical expectation of the flow of requests K

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After substantiating the distribution law of random variables K_j , the limits of the confidence interval of the value of the mathematical expectation $\bar{K}$ are determined [2, p. 73].

The confidence interval shows that the value of the mathematical expectation $\bar{K}$ lies within the limits of $K_p \leq \bar{K} \leq K_y$ with probability α (K_p and K_y — $\bar{K}$ are the lower and upper limits of the mathematical expectation).

When the flow of demands changes according to the exponential law K_j , the limit values of the confidence interval are found as follows [2, p. 74]:

$$K_y = r_1 \bar{K} \text{ va } K_p = r_2 \bar{K}$$

where r_1, r_2 are coefficients selected from Table 14 of the literature, depending on the values of the total absolute frequency N and the accepted level of reliability probability α .

Taking $\alpha=0.999$ de6 and considering that $N=63$, we find the values of $r_1=1.18$ and $r_2=0.86$ from Table 14 of the literature [2].

In this case

$$K_y = r_1 \bar{K} = 1,18 \cdot 28,61 = 33,75 \text{ demand/season}$$

$$K_p = r_2 \bar{K} = 0,86 \cdot 28,61 = 24,60 \text{ demand/season}$$

Consequently, that is, the expected value of the flow of demands occurring on tractors during the autumn plowing season lies within the limits of 33.75 and 24.60 with a probability of 0.999 (99%).

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ONE-ACTOR PERFORMANCES OF MALIKA IBRAHIMOVA PERFORMANCE SKILLS

UzDSMI, arts sciences Doctor of Philosophy (PhD) in
Rahimjon Dusanov

ABSTRACT

The article tells about the unique style of Uzbek actress Malika Ibrohimova in performing in the genre of one-act theater. It also tells about the process of the actress's love for this genre. It tells about the success of her performances, staged in collaboration with several directors, on the Uzbek and world stages.

Keywords: performance, actress, one-act theater, audience, art, theater.

Theater is a field with such artistic power that the more you study it, the more new facets of actors' performances and directors' interpretations are discovered. This type of art has long been bringing joy to people, while also calling its audience to goodness. The head of our state describes such aspects of the field as follows: "Theater, one of the most popular and influential types of art in the world, has been calling people to humanity and goodness for centuries, perfecting noble virtues and beautiful feelings in their hearts, strengthening the principles of peace, friendship and harmony, high morality and justice in the life of society."

Below we will dwell on such factors of the genre of the one-actor theater and on some aspects of performances staged according to the requirements of the one-actor theater - such as acting skills, the director's interpretation, and the artistic composition of the performance. Because, as a result of the cooperation of the playwright, actor, and director, a new approach to the interpretation of a modern performance, its performance style, the intersection of the creators' plans at one point, the compatibility of types of creativity with each other, and the clarification of the requirements for the purposeful combination of their creativity are also among the issues that need to be studied.

After Muhsin Khamidov, who pioneered the genre of one-actor theater in Uzbekistan, it was actress Malika Ibrohimova who brought dramatic performances to the forefront as a soloist. The younger generation has witnessed some of the actress's solo performances and her acting skills.

The actress said about this genre: "Many years ago, if I am not mistaken, in 1975, a representative of the "One Actor Theater" from Turkey came to Tashkent with his performance. After the performance, academician Mamajon Rakhmonov said to me: "My daughter, you could also prepare a solo performance, you will master this genre." Then the chairman of the Union of Theater Workers, Kariev, using a domla, expressed his confidence, "Do something creative with a solo performance." Some time later, I saw another solo performance at the "Ilhom" theater, and I was impressed by that performance. There is nothing on the stage, but the performance of one actor was very wonderful. In short, after a very good performance in the "One Actor Theater" direction, I liked this genre. For the first time, as a test, in 1980, I independently worked on Alexander Blok's poem "The Twelfth". Later, for a while in my work, "The number of offers for roles has decreased. How can a creative person live without a role? That's why I decided to perform a solo performance in this genre. But there was one problem. Our audience doesn't hear the word "dry". They need action, excitement, and spectacle. For example, a mother lost her child, and the audience thinks that now she is crying. An actress should have the opposite. If she sits quietly and her hair turns gray, that's the spectacle. That's real art. If an

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actor can fully see the pain of the character he is playing "in his heart" - in his imagination, then that role will be there, it will stay with you for a lifetime," he says. [6.29.].

Looking at the work of the People's Artist of Uzbekistan Malika Ibrohimova, we see several dramatic performances and poetic compositions in solo performances. The first of these is the poetic composition of A. Blok, which was famous in its time, entitled "The Twelfth". This poetic composition was performed by the actress in 1980. Before Malika, this work was performed in the form of an artistic reading by the famous Russian actor Oleg Efremov. Malika Ibrohimova Oleg Efremov, unlike him, interprets the character of each character separately and performs it at the level of a performance. Director Tolib Khamidov adapted this poem to the requirements of the "One Actor Theater". This poetic composition, translated by Askad Mukhtor, was praised by many art critics when it was first shown. "Although performances of this genre exist in the works of Russian artists, in Uzbekistan it was performed only by Muhsin Khamidov. For this reason, it caused a sensation throughout the Republic," says the actress herself [6]. The actress played the roles of an old woman, a woman, and a teenage girl in this composition. This teleplay, specially prepared for television, was shown on the screen several times. The shots selected by director Tolib Khamidov and the special editing increased the impact and artistic impact of the poetic composition. Thus, the actress is one of the creators who, after Muhsin Khamidov and Razzaq Khamroev, brought the direction of poetic composition to the standard and performed it alone.

"One-actor play" requires the actor to have vivid passions and to control them. Because you have to switch from one character to another in an instant and transform into a different image. In addition, the character of each character must be sharply different from each other. These are one of the main requirements of "One-actor Theater".

In 1982, directed by director Ergash Masafaev, Aurel Barangga's drama work "Public Opinion" was staged according to the requirements of "One Actor Theater". Actress Malika Ibrahimova embodied four characters in this performance in a solo performance. The sensational play caught the attention of the mass media because the actress created the four completely dissimilar characters in the play in her own style, which was recognized by art critics of the time.

The main task of the actors is to influence the audience's heart through the artistic event taking place on stage, to bring them into the life environment of the play and to convince them. The director, on the other hand, stages the play based on the actor's talent, performance potential, and acting skills. We can see these aspects in the artistic integrity and exemplary vividness of the plays staged by Malika Ibrohimova and Ergash Masafaev and Bakhodir Yuldashev and Gulbahor Yuldasheva. In the plays of the directors mentioned above, it can be seen that they were able to skillfully demonstrate the possibilities and power of directing. In addition, the actors who performed the plays they staged are also highly talented in terms of acting skills. For this reason, the plays they created together have occupied prestigious places at international theater festivals.

When directors stage plays specific to this genre and work with actors:

- "mysteries" in the combination of the talent of the actor and the findings of the director;
 - methods of staging a one-actor play;
 - The secrets of individual performance, characteristic of the genre of one-actor theater; experimented.
- In some performances, the direction takes the lead, while in others, the skill of the actor prevails. In order to balance these two "levels" in each performance, the actor and the director are required to work together as one person. The more these two people understand each other, the more the artistic integrity of the performance increases.

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The art of theater has always witnessed the success of research when creative collaboration is found correctly. The collaboration of Malika Ibrohimova and Ergash Masafaev, Bakhodir Yuldashev and Gulbahor Yuldasheva shows remarkable features. Professor Mamur Umarov describes such creative collaboration as follows - "With their theoretical views and practical work, they developed the art of directing and turned it into a leading artistic link expressed in the interpretation of the theater. Therefore, the director began to be recognized as a figure of art who inextricably connects the playwright, actor and audience" [4.25; p. 197].

The play "Lonely Woman" performed by Malika Ibragimova, who continued her research, was enjoyed by many representatives of the theater art. It was staged based on the work of the Italian playwright Dario Foni. This play was presented on the stage of the Republican Theater for Young Spectators as part of the "Theatre.UZ" International Theater Festival in 2011. The first performance of this play took place in 2009. Director Avliyakuli Khozhikuliev based the idea of the play on the kindness of the female species and the contradictions in her inner world. The actress embodied the images of four characters in this play. This work of art by a professional director and actress was shown not only in our country, but also in the Republics of Kyrgyzstan, Ukraine, and Kazakhstan, and took a prominent place at theater festivals and was well-received by the audience. This dramatic play is one of the examples of ideological and artistic unity in the "One-actor Theater" genre performed by an Uzbek actress.

In addition, the actress was able to demonstrate her talent in one-actor plays such as "Public Opinion", "Rebellion of Souls", "Good Night Mother", "Human Voice".

We noted above that the actress's performances are also being witnessed by representatives of today's younger generation. Inspired by such touching performances, young artists and student actors of the Uzbekistan State Institute of Arts and Culture are also trying their hand at this genre. This process is the basis for the continuation of the existing tradition in Uzbek theater art. At the same time, the desire of young people to hold poetry evenings and perform solo performances proves that the genre of one-actor theater in Uzbekistan is developing and its new representatives are demonstrating their talent.

In conclusion, Malika Ibrohimova is an artist with a high level of ability to perform performances in the genre of "One Actor Theater", staged based on works in the dramatic genre. The vivid expression of the characters in her performance, her detailed speech, and her skillful depiction of the inner spirit and psychophysical state of each person are an example of creating a holistic artistic performance in a solo performance.

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POLIKISTOZ TUHUMDAN SINDROMI (PCOS) TASHXIS VA DAVOLASHNING ZAMONAVIY YONDASHUVLARI

Oziboyeva Zuhraxon Arabboyevna

SH. Ismoilova

Qo'qon universiteti Andijon filiali

2-kurs davolash ishi talabasi

ANNOTATSIYA

Polikistoz tuxumdon sindromi ayollarda eng ko'p uchraydigan kasalliklardan biri bo'lib, reproduktiv yoshdagi ayollarning 10 % qamrab oluvchi keng tarqalgan endokrin kasallikdir.

Kalit so'zlar : PCOS, polikistoz, tuxumdon sindromi, Gormonal disbalans, hayz buzilishi, bepustlik.

POLYCYSTIC OVARY SYNDROME (PCOS) MODERN APPROACHES TO DIAGNOSIS AND TREATMENT

ANNOTATION

Polycystic ovary syndrome is one of the most common endocrine disorders in women, affecting 10% of women of reproductive age.

KIRISH

PCOS Gormonal muvozanatning buzilishi, ovulyatsiyaning yo'qolishi va tuxumdonlarda ko'plab kista hosil bo'lishi bilan tavsiflanadi. Ushbu kasallik bepustlik, hayz sikilining buzilishi giperandrogenizm (erkak gormonlarining ortishi) va metabolik muammolarga olib keladi. Shuningdek PCOS ni erta aniqlash va davolash ayollar salomatligi uchun dolzarb masala hisoblanadi.

ASOSIY QISIM

PCOSning tarqalishi va ahamiyati.

Polikistoz tuxumdon sindromi (PCOS) dunyo bo'yicha ayollar orasida eng ko'p uchraydigan endokrin kasalliklardan biridir. Jahon sog'liqni saqlash tashkiloti (JSST) ma'lumotlariga ko'ra reproduktiv yoshdagi ayollarning 6-12 foizida PCOS aniqlanadi. Ayrim mamlakatlarda bu ko'rsatkich 20 foizgacha yetishi mumkin.

Etimologiyasi va patogenezi

PCOSning aniq sabablari hali to'liq aniqlanmagan, ammo bir nechta mexanizmlarni takidlab o'tish mumkin.

Genetik moyillik

PCOS ko'pincha oilada bu kasallikning holatlari bo'lgan ayollarda uchraydi, bu esa mumkin bo'lgan genetik kamponentni ko'rsatadi.

Insulin qarshiligi

PCOS bo'lgan ko'plab ayollarda Insulin qarshiligi kuzatiladi, bunda organizim hujayralari Insulin ta'siriga kamroq sezgir bo'ladi. Bu qondagi insulin darajasining oshishiga olib keladi, bu esa tuxumdonlarni ko'proq androgen ishlab chiqarishga rag'batlantiradi. Tuxumdonlardan erkaklik gormonlarining ortiqcha ishlab chiqarilishi normal ovulyatsiya jarayonini to'sib qo'yadi va hirzutizim kabi alomatlariga olib keladi

Yallig'lanish

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Past darajadagi surunkali yalig'lanish Insulin qarshiligi va yuqori darajadagi androgenlar bilan bog'liq bo'lishi mumkun. Yallig'lanish shuningdek semirish va metabolik buzilishlarga hissa qo'shishi mumkun

Klinik belgilari

PCOS belgilari har bir ayolda turlicha bo'lishi mumkun, ammo eng ko'p uchraydiganlari

Hayz sikilining buzilishi

Oligomenoreya (kam hayz ko'rish) yoki amenoreya (hayzning batamom to'xtashi)

Bepushtlik ayollarda ovulyatsiyaning yo'qligi homiladorlikka to'sqinlik qiladi. Tadqiqotlarga ko'ra PCOSli ayollarning 40% bepushtlikdan aziyat chekadi.

Giperandrogenizm belgilari.

Yuqori testesteron darajasi tufayli yuz va badan terisida akne, qorin va iyakda tuk o'sishi sochlar tokilishi kuzatiladi.

Diagnostika

PCOS diagnostikasi quyidagi usullarni o'z ichiga oladi

Tibbiy anamnez :shifokor simptomlar va hayz sikli haqida ma'lumot toplaydi

Fizik tekshiruvlar, akne va semizlik belgilarini baholash, qon tahlillari gormonlar (androgen, Insulin, FSh, LH testesteron) darajasini aniqlash Ultratovush tekshiruvi (ut) tuxumdonlarning xolati va kistalarning mavjudligi aniqlanadi.

Davolash

PCOSni davolash simptomlarni boshqarish va uzoq muddatli asoratlarning oldini olishga qaratilgan. Davolashning asosiy usullari quyidagilardan iborat.

Turmush tarzini o'zgartirish, sog'lom ovqatlanish, va muntazam jismoniy mashqlar tana vaznini kamaytirib gormonal muvozanatni yaxshilaydi hamda ovulyatsiyani tiklashga yordam beradi.

Dori vositalari : ovulyatsiyani rag'batlantruvchi va gormonal balansni tiklovchi preparatlar qo'llaniladi.

Jarrohlik usullari : og'ir holatlarda laparoskopik operatsiya bajarilib, ovulyatsiya tiklanadi.

XULOSA

Polikistoz tuxumdon sindromi ayollarda eng ko'p uchraydigan kasalliklardan biri bo'lib hayz buzilishi, bepushtlik va metabalik muammolarni keltirib chiqaradi. Vaqtida tashxis qo'yish va davolash kelajakdagi asoratlarning oldini olishda muhimdir

FOYDALANILGAN ADBIYOTLAR

"Gynecology" by Novak and Wood

"Williams Gynecology" by Barbara L. Hoffman, John O. Schorge, Joseph C. Gershenson, and Karen D. Bradshaw

"Berek and Novak's Gynecology" by David M. Gershenson, F. Gary Cunningham

□ Ilmiy maqolalar va tadqiqotlar:

Lumsden MA, et al. "Management of fibroids and the role of medical therapy." British Journal of Obstetrics and Gynaecology, 2000.

Stewart EA, et al. "Uterine fibroids: The impact on women's health and the role of medical therapy." Human Reproduction Update, 2001.

□ Internet manbalari:

Mayo Clinic - Uterine fibroids

American College of Obstetricians and Gynecologists - Uterine fibroids

□ Tibbiy jurnal maqolalari:

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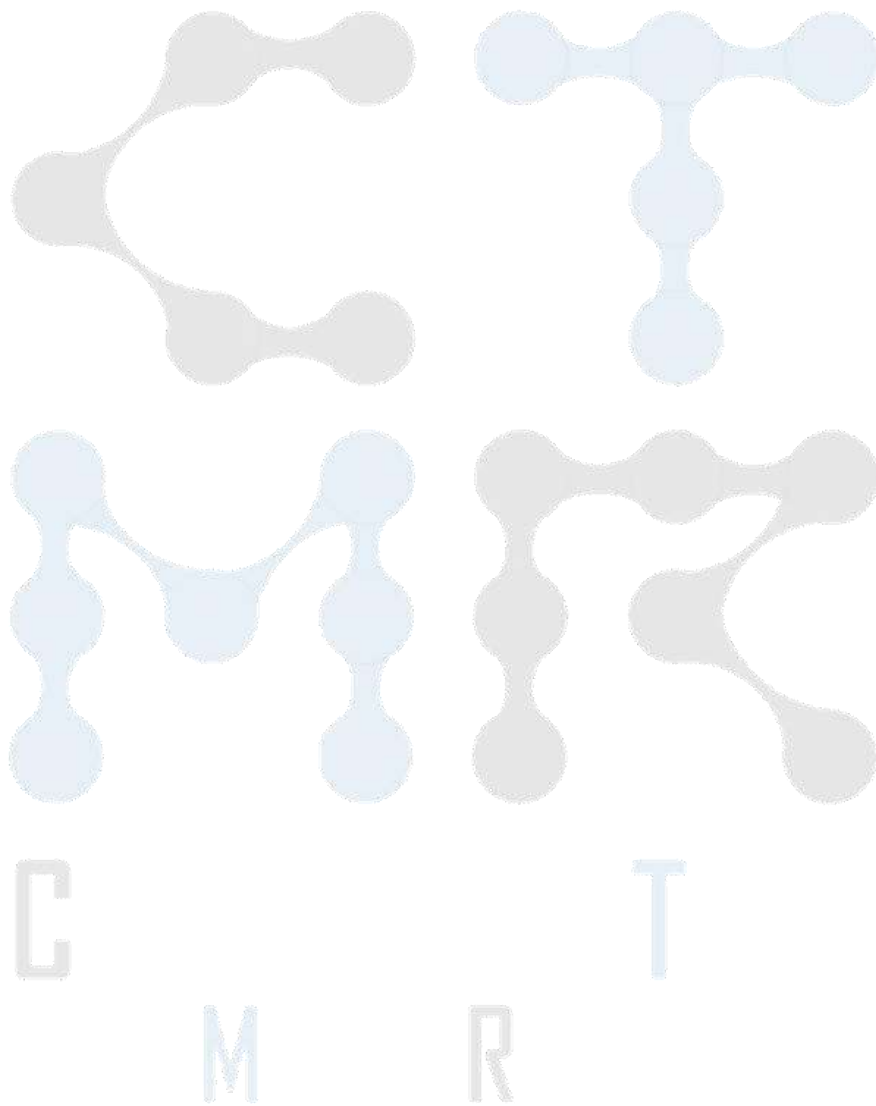
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"Management of uterine fibroids: Current approaches" Journal of Obstetrics and Gynaecology Research (2017)

"Non-surgical treatments for uterine fibroids: A review of options" European Journal of Obstetrics & Gynecology and Reproductive Biology (2018)

□ Tadqiqotlar va resurslar:

National Institutes of Health (NIH) - Uterine Fibroids NIH website



Teaching career-oriented English through modern methods based on interdisciplinary integration in journalism education

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Abstract: In the rapidly changing media landscape, journalism students require not only linguistic competence but also the ability to apply English in authentic professional contexts. This paper explores innovative strategies for teaching professionally-oriented English to journalism students by integrating interdisciplinary approaches and modern teaching methods. The study highlights how combining journalism-specific content with English language instruction enhances students' critical thinking, media literacy, and communication skills. Special attention is given to project-based learning, case studies, collaborative tasks, and digital tools that foster authentic journalistic practices such as news reporting, interviewing, and editorial writing. The findings emphasize that interdisciplinary teaching not only improves students' language proficiency but also equips them with the practical skills necessary for success in their future careers in media and communication.

Keywords: professionally-oriented English, journalism education, interdisciplinary approach, modern teaching methods, media literacy, project-based learning, digital pedagogy

Introduction: In the era of digital globalization, the role of English as a lingua franca has expanded beyond traditional communication to become a vital tool in the field of journalism and mass communication. For journalism students, learning English is not limited to acquiring general language proficiency but requires mastering a professionally-oriented form of the language that reflects the realities of modern media practice. This includes developing the ability to write news articles, conduct interviews, analyze media texts, and communicate effectively across various platforms.

Traditional approaches to teaching English often focus on grammar and general vocabulary, which do not fully meet the professional needs of journalism students. Therefore, the integration of an interdisciplinary approach, where English language learning is closely tied to journalism-specific content, has become increasingly important. Such an approach allows students to engage with authentic materials, real-world case studies, and media-related tasks, thereby enhancing both linguistic competence and professional skills simultaneously.

Modern methods of language teaching, such as project-based learning, task-based instruction, collaborative activities, and the use of digital technologies, provide journalism students with opportunities to practice English in contexts that mirror their future professional environment. By combining interdisciplinary content with innovative teaching strategies, educators can foster critical thinking, creativity, and media literacy, which are essential competencies for future journalists.

This paper examines how professionally-oriented English can be taught effectively to journalism students through interdisciplinary methods based on modern pedagogical practices. The discussion will highlight the theoretical underpinnings, practical applications, and benefits of such an approach in higher education.

Relevance of Work: The increasing globalization of information flow and the dominance of English in international journalism make it imperative for journalism students to acquire high-level,

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professionally-oriented language skills. Journalists today are not only consumers but also active producers of content that circulates across borders, requiring them to be competent in English for writing, interviewing, reporting, and engaging with international audiences.

However, a gap still exists between traditional English language teaching in higher education and the specific communicative needs of journalism students. Standard English courses often prioritize general language skills, while neglecting the professional and interdisciplinary competencies required in the media sphere. As a result, graduates may face difficulties in producing high-quality journalistic content in English, limiting their competitiveness in the global labor market.

The relevance of this study lies in its focus on integrating interdisciplinary methods and modern pedagogical strategies into English language teaching for journalism students. Such an approach not only addresses the existing skill gap but also equips learners with the ability to critically analyze global media texts, employ digital tools, and adapt to the evolving demands of journalism in the digital age. By aligning language instruction with professional tasks, the study contributes to preparing future journalists who are capable of operating effectively in both local and international media environments.

Purpose: The main purpose of this study is to explore effective ways of teaching professionally-oriented English to journalism students through an interdisciplinary approach that incorporates modern pedagogical methods. The study seeks to demonstrate how combining journalism-specific content with innovative teaching strategies—such as project-based learning, task-based instruction, and digital media integration—can enhance both linguistic competence and professional skills.

By aligning English language instruction with the real-world requirements of journalism, the study aims to provide a framework that prepares students for active participation in the global media landscape, ensuring their readiness to communicate effectively, think critically, and produce high-quality journalistic content in English.

Materials and Methods of Research: The study is based on a qualitative and descriptive research design aimed at analyzing effective strategies for teaching professionally-oriented English to journalism students. The research draws upon theoretical sources, pedagogical frameworks, and practical experiences in higher education institutions where English for Specific Purposes (ESP) is integrated into journalism curricula.

Materials:

- Academic literature on English for Specific Purposes (ESP), interdisciplinary teaching, and journalism education.
- Authentic media resources, including news articles, interviews, editorials, and multimedia materials in English.
- Digital platforms and tools (online news portals, podcasts, social media content) that reflect contemporary journalistic practices.
- Case studies and classroom projects conducted with journalism students.

Methods:

• **Literature Review:** Analyzing national and international research on professionally-oriented English and its role in journalism education.

• **Comparative Analysis:** Identifying and comparing traditional language teaching methods with modern interdisciplinary approaches.

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- **Pedagogical Experimentation:** Applying project-based learning, collaborative tasks, and digital resources in sample classes to test their effectiveness.
- **Observation and Feedback:** Monitoring student engagement, performance, and feedback to assess the impact of interdisciplinary teaching methods.
- **Content Analysis:** Evaluating student-created media products (articles, interviews, news reports) as outcomes of professionally-oriented English learning.

This combination of methods ensures a comprehensive understanding of how interdisciplinary approaches and modern teaching practices contribute to the development of both linguistic and professional competencies in journalism students.

The integration of interdisciplinary approaches and modern teaching methods into professionally-oriented English instruction for journalism students produced several significant results.

1. Improved Linguistic Competence: Students demonstrated measurable progress in specialized vocabulary, stylistic accuracy, and discourse skills relevant to journalism. Exposure to authentic media texts, such as news articles and interviews, enabled learners to internalize professional terminology and structures commonly used in journalistic communication. Compared to traditional instruction, interdisciplinary teaching fostered a higher degree of fluency and precision in both written and oral forms of English.

2. Enhanced Professional Skills: By engaging in project-based learning and real-world media tasks, students developed essential journalistic competencies, including news writing, editorial composition, and interviewing techniques. The practice of simulating professional scenarios, such as press conferences or newsroom collaborations, allowed students to apply language skills directly to their future work environment.

3. Critical Thinking and Media Literacy: One of the most important outcomes of interdisciplinary teaching was the growth of students' analytical abilities. Working with authentic media materials and conducting content analysis encouraged learners to evaluate information critically, identify bias, and adapt content for different audiences. This aligns with the global demand for journalists who can navigate the complexities of information flow responsibly and ethically.

4. Effective Use of Digital Tools: Integrating digital technologies, including online news platforms, multimedia content, and collaborative tools, improved students' digital literacy. This not only supported language acquisition but also prepared learners to adapt to the demands of digital journalism. Students reported higher motivation and engagement when lessons incorporated digital resources that mirrored their real professional context.

5. Student Engagement and Motivation: Feedback collected during experimental teaching sessions indicated that interdisciplinary approaches increased student motivation and participation. Learners valued the opportunity to work on authentic tasks that directly connected to their career aspirations, thus strengthening the relevance of English learning in their academic program.

Discussion

These results confirm that teaching professionally-oriented English through an interdisciplinary framework offers clear advantages over traditional language instruction. While challenges such as time constraints and the need for specialized teacher training were noted, the overall effectiveness of this method highlights its potential for broader implementation in journalism education. The findings also align with global trends in English for Specific Purposes (ESP), where emphasis is placed on integrating language learning with professional practice.

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Conclusion: The study has demonstrated that teaching professionally-oriented English to journalism students through an interdisciplinary approach, supported by modern teaching methods, significantly enhances both linguistic and professional competencies. Unlike traditional language instruction, this model integrates authentic journalistic content, digital resources, and project-based learning to create a dynamic and practice-oriented learning environment.

The results highlight that students not only improve their command of English but also acquire essential journalistic skills such as news writing, interviewing, and editorial analysis. Furthermore, interdisciplinary teaching fosters critical thinking, media literacy, and digital competence—skills that are indispensable in today’s globalized media landscape.

While certain challenges remain, such as the need for teacher training and curriculum adaptation, the overall effectiveness of this approach makes it a valuable model for journalism education. By aligning language instruction with the realities of professional practice, universities can better prepare future journalists to operate successfully in both local and international contexts.

In conclusion, the integration of interdisciplinary methods and modern pedagogical strategies into English teaching represents a progressive step toward equipping journalism students with the knowledge, skills, and adaptability required in the 21st-century media environment.

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Xorazm tuproq-iqlim sharoitida Sorghum vulgare (pers) tur-nav namunalarini fizologik va biokimyoviy xususiyatlarini o'rganish.

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Annotatsiya

Sorghum vulgare (pers) navlari yarim cho'l va cho'l zonalarida, xususan Xorazm kabi yuqori temperatura, kam yog'ingarchilik va sho'rlangan tuproq sharoitlari bo'yicha, hosildorlik va stressga chidamlilik nuqtai nazaridan muhim o'simlik hisoblanadi. Bunday sharoitlarda o'sish, fotosintez, suv rejimi va oksidativ zararlarni nazorat qiluvchi molekulyar-mexanizmlar prolin to'planishi, antioksidant fermentlar faolligi, lipid peroksidatsiyasi kabi biokimyoviy indikatorlar — o'suvchanlik va hosildir-farqlarni belgilashda kalit rol o'ynaydi.

Kalit so'zlar

Sorghum vulgare (pers), Xorazm viloyati agroekologik sharoiti, Qurg'oqchilikka chidamlilik, Sho'rlik stressi, Suv rejimi (Relative Water Content, RWC), Fotosintez intensivligi, Stomatal konduktivlik, Xlorofil kontsentratsiyasi, Prolin akkumulyatsiyasi, Biokimyoviy markerlar, Ekstremal agrosharoitlar, Fitofiziologik monitoring

Annotation

Sorghum vulgare (Pers) is an important plant in semi-desert and desert zones, particularly under conditions of high temperature, low precipitation, and saline soils, such as in Khorezm, in terms of yield and stress resistance. In such conditions, molecular mechanisms that regulate growth, photosynthesis, water regime, and oxidative damage—such as proline accumulation, antioxidant enzyme activity, and lipid peroxidation—serve as biochemical indicators that play a key role in determining differences in growth and yield.

Keywords Sorghum vulgare (pers), agroecological conditions of Khorezm region, drought resistance, salinity stress, water regime (Relative Water Content, RWC), photosynthesis intensity, stomatal conductance, chlorophyll concentration, proline accumulation, biochemical markers, extreme agroconditions, phytophysiological monitoring.

Аннотация

Sorghum vulgare (Pers) является важным растением с точки зрения урожайности и устойчивости к стрессам в полупустынных и пустынных зонах, особенно в условиях высоких температур, низкой влажности и солонцеватых почв, таких как в Хорезме. В таких условиях молекулярно-механизмы, контролирующие рост, фотосинтез, водный режим и окислительный стресс — биохимические индикаторы, такие как накопление пролина, активность антиоксидантных ферментов и перекисное окисление липидов — играют ключевую роль в определении различий в урожайности и росте.

Ключевые слова: Сорго обыкновенное (Sorghum vulgare), агроэкологические условия Хорезмской области, устойчивость к засухе, солевой стресс, водный режим (относительное водосодержание, RWC), интенсивность фотосинтеза, проводимость устьиц, концентрация хлорофилла, накопление пролина, биохимические маркеры, экстремальные агрокондиции, фитофизиологический мониторинг.

KIRISH

Jahon bo'yicha qurg'oqchilik, sho'rlanish va iqlim o'zgarishi fonida qishloq xo'jaligi ekinlarining barqarorligini ta'minlash dolzarb masalalardan biridir. O'zbekiston Respublikasi, xususan, Xorazm viloyati agroekologik jihatdan murakkab hududlardan biri bo'lib, yer-suv resurslarining cheklanganligi, tuproq sho'rlanishi, yuqori haroratli vegetatsion davr va namlik yetishmovchiligi kabi omillar bilan ajralib turadi. Mazkur sharoitda oziq-ovqat xavfsizligini ta'minlash, muqobil va qurg'oqchilikka chidamli ekin turlarini joriy qilish orqali mumkin bo'ladi.

Sorgo (*Sorghum vulgare* Pers.) – dunyo miqyosida oziq-ovqat, yem-xashak va texnik maqsadlarda yetishtiriladigan strategik ekinlardan biri hisoblanadi. U tabiiy iqlim muhitiga nisbatan yuqori moslashuvchanlik, suvni tejab iste'mol qilish xususiyati, nisbatan qisqa vegetatsion davr, yuqori hosildorlik salohiyati hamda sho'r va qurg'oqchil tuproqlarda ham barqaror o'sish qobiliyatiga ega. Shu bois, so'nggi yillarda uni respublikaning qurg'oqchil mintaqalarida keng joriy etish bo'yicha izlanishlar olib borilmoqda.

Sorgo navlarining abiotik stresslarga, xususan, sho'rlanish va suv tanqisligi sharoitidagi chidamliligini aniqlashda fiziologik va biokimyoviy ko'rsatkichlarning tahlili muhim ahamiyatga ega. Ular orqali o'simliklarning stressga javob reaksiyalari – osmotik moslashuv, antioksidant himoya tizimi faolligi, prolin va boshqa osmolitlar darajasi, fotosintetik faoliyat, suv rejimi va membrana barqarorligi kabi omillar aniqlanadi. Bu mezonlar esa seleksiya uchun istiqbolli navlarni ajratib olishda, hamda agrotexnik tadbirlarni takomillashtirishda ishonchli marker sifatida xizmat qilishi mumkin.

Shunga ko'ra, mazkur tadqiqotning maqsadi – Xorazm tuproq-iqlim sharoitida *Sorghum vulgare* (Pers.) turiga mansub turli nav namunalari fiziologik va biokimyoviy javob reaksiyalarini kompleks baholash, stressga chidamli va yuqori adaptiv navlarni aniqlash hamda ularning iqlimga moslashuv mexanizmlarini aniqlashdan iboratdir.

ADABIYOTLAR SHARHI

So'nggi yillarda olib borilgan tadqiqotlarda sorgo o'simligining sho'r va qurg'oqchilik stresslariga javob reaksiyalari fiziologik va biokimyoviy darajalarda baholandi. Masalan, fotosintetik faoliyat, stomatal konduktivlik, suv rejimi (Relative Water Content), osmotik moslashuv (prolin, erkin shakarlik) va antioksidant fermentlar faolligi (SOD, CAT, POD) kabi indikatorlar stressga chidamlilik darajasini aniqlashda ishonchli mezon sifatida ko'rsatib berildi (Kebede et al., 2001; Blum, 2011; Hasanuzzaman et al., 2013).

Suv tanqisligi sharoitida sorgo navlarida suvni tejab ishlatish, osmotik moslashuv mexanizmlari, shu jumladan prolin va shakar to'planishi, fotosintetik pigmentlar tarkibining barqarorligi va membrana lipidlarining peroksidatsiyasiga qarshi antioksidant fermentlar (SOD, CAT, POD) faolligining oshishi kuzatilgan (Zegada-Lizarazu, Iijima, 2005; Anjum et al., 2011). Bunday mexanizmlar o'simlikning stressga chidamliligini belgilovchi asosiy omillardan biri hisoblanadi.

Sho'rlanish stressi sharoitida esa ionli stress, osmotik stress va oksidativ stress bilan bog'liq fiziologik o'zgarishlar kuzatiladi. Sorgo navlari sho'r muhitda Na^+ va Cl^- ionlarining barglarga transportini cheklash, K^+/Na^+ nisbatini saqlab qolish, antioksidant tizimni faollashtirish orqali barqaror o'sishni ta'minlashi mumkin (Ashraf & Foolad, 2007; Yang et al., 2013). Lipid peroksidatsiyasi (malondialdegid – MDA miqdori) oshgan navlar stressga sezgir, past darajadagilari esa chidamli navlar sifatida belgilanadi (Mittler, 2002).

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O'zbekiston sharoitida, xususan Xorazm viloyatida olib borilgan eksperimental tadqiqotlar shuni ko'rsatadiki, qurg'oqchilik va sho'r stresslari ostida sorgo navlarining fiziologik va biokimyoviy xususiyatlari turlicha namoyon bo'ladi. Jumladan, Urganch davlat universiteti va O'zR FA Genetika va o'simliklar eksperimental biologiyasi instituti olimlari tomonidan olib borilgan ishlar bu sohadagi ilmiy izlanishlarga hissa qo'shmoqda (Ergashev et al., 2018; O'rolov, 2021).

Shu bilan birga, seleksiya uchun stressga chidamli navlarni aniqlashda molekulyar markerlardan, genetik tahlil usullaridan va GIS texnologiyalaridan ham foydalanish bo'yicha jahon tajribasi ortib bormoqda (Mace et al., 2013; Upadhyaya et al., 2017). Bular O'zbekiston sharoitida sorgo navlarini optimallashtirish, moslashtirish va agrotexnik tavsiyalar ishlab chiqishda dolzarb ahamiyatga ega.

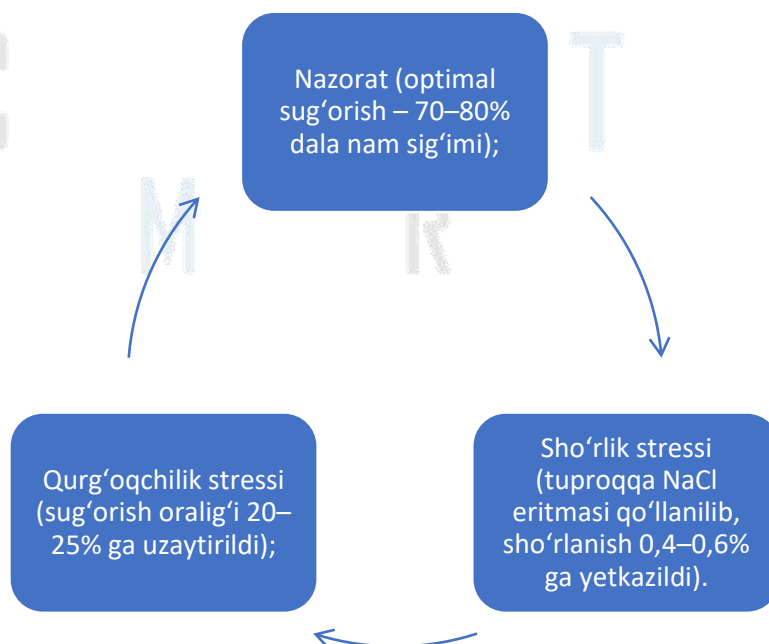
Shunday qilib, hozirgacha mavjud ilmiy manbalar sho'rlik va qurg'oqchilik sharoitida S. vulgare navlarining fiziologik va biokimyoviy javoblarini chuqur o'rganish lozimligini, ayniqsa mintaqaviy tadqiqotlar asosida navlararo farqlarni baholash zaruriyatini ko'rsatmoqda. Xorazm mintaqasi uchun bu boradagi izlanishlar yetarli emasligi sababli, bu yo'nalishdagi ilmiy tadqiqotlar muhim amaliy ahamiyat kasb etadi.

METODOLOGIYA (MATERIALLAR VA USULLAR)

Tadqiqot 2023–2024 yillar vegetatsiya davrida O'zbekiston Respublikasi, Xorazm viloyati hududidagi Urganch tumani yerlarida, sho'rlikka moyil, o'rtacha mexanik tarkibli, sug'oriladigan tipik bo'z tuproqlarda (Gleysolik) tashkil etildi. Tuproqlarning asosiy agrochimik xususiyatlari quyidagicha: umumiy sho'rlanish darajasi – 0,40–0,65%, gumus miqdori – 0,6–1,1%, pH – 7,8–8,1, mexanik tarkibi – o'rtacha qum, suv o'tkazuvchanligi – 1,8–2,3 mm/soat. Vegetatsiya davrida havo harorati o'rtacha 27–31 °C, yog'ingarchilik miqdori esa 45–60 mm atrofida bo'ldi.

Tajriba ob'ekti sifatida Sorghum vulgare (Pers.) turiga mansub 6 ta nav (shartli ravishda: S1–S6) tanlab olindi. Tanlangan navlar O'zbekiston va xorijiy seleksiya mahsuli bo'lib, iqlimga moslashish darajalari bo'yicha farqlanadi. Har bir nav 3 marta takrorlarda, Randomizatsiyalangan blok usulida 10 m² maydonda joylashtirildi.

Eksperiment uchta sharoitda olib borildi:



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Tajriba davomida quyidagi fiziologik va biokimyoviy ko'rsatkichlar o'rganildi:

Fiziologik ko'rsatkichlar

Barglarning nisbiy suv kontenti (Relative Water Content, RWC) – Weatherley (1950) usulida;

Fotosintez tezligi va transpiratsiya – Infrared Gas Analyzer (IRGA) yordamida;

Stomatal konduktivlik – porometr uskunasi (SC-1 Decagon Devices, AQSH);

Bargdagi xlorofil miqdori – SPAD 502 Plus (Konica Minolta) uskunasi baholandi

Biokimyoviy ko'rsatkichlar:

Prolin miqdori – Bates et al. (1973) usuli asosida, ninhidrin reagentida kolorimetrik aniqlash

Umumiy erkin shakarlar – Fenol-sulfat kislotali usul (Dubois et al., 1956);

Lipid peroksidatsiyasi (malondialdegid, MDA) – Heath & Packer (1968) usuli asosida, TBA (thiobarbituric acid) reaksiya orqali aniqlangan;

Antioksidant

fermentlar

faolligi:

- SOD (Superoksid dismutaza) – Beauchamp & Fridovich (1971) usuli,
- CAT (Katalaza) – Aebi (1984) usuli,
- POD (Peroksidaza) – Chance & Maehly (1955) usuli bo'yicha baholandi.

Hosildorlik va sifat ko'rsatkichlari:

Har bir nav bo'yicha o'rtacha bosh og'irligi, 1000 dona urug' og'irligi va umumiy hosil miqdori (t/ga) aniqlandi;

Urug'dagi umumiy oqsil va kraxmal miqdori – Kjeldahl usuli va polarimetrik tahlil orqali aniqlandi.

Statistik tahlil:

Barcha eksperimental natijalar Microsoft Excel 2019 va SPSS 25.0 dasturiy vositalarida tahlil qilindi. Ma'lumotlar arifmetik o'rtacha $\pm$ standart og'ish shaklida ifodalanib, guruhlararo farqlar ANOVA usuli orqali $P < 0,05$ darajada ishonchlilik bilan baholandi. Stress sharoitlarining fiziologik-biokimyoviy ko'rsatkichlarga ta'siri ko'p faktorli dispersion tahlil orqali o'rganildi.

TADQIQOT NATIJALARI VA MUHOKAMA

Tadqiqot davomida Xorazm viloyatining yarim cho'l iqlim sharoitida *Sorghum vulgare* (Pers.) turiga mansub 6 ta nav namunalarining fiziologik va biokimyoviy ko'rsatkichlari uchta sharoitda — optimal (nazorat), qurg'oqchilik va sho'rlanish stresslari ostida baholandi. Har bir parametr bo'yicha olingan natijalar tur-navlar orasida sezilarli farqlar mavjudligini ko'rsatdi ($P < 0,05$).

Fiziologik ko'rsatkichlar tahlili shuni ko'rsatdiki, RWC (Relative Water Content) darajasi qurg'oqchilik va sho'rlanish stressi ostida sezilarli darajada pasaydi. Nazorat sharoitida RWC 85–88% atrofida bo'lsa, qurg'oqchilik sharoitida ayrim navlarda bu ko'rsatkich 63–68% gacha tushdi. Eng yaxshi natijalarni S4 va S6 navlari ko'rsatdi (RWC mos ravishda 74% va 76%). Bu navlarning barg hujayralarida suvni saqlab qolish mexanizmlari nisbatan faol bo'lib, ularning suv tanqisligiga nisbatan chidamli ekanligini ko'rsatadi.

Fotosintez tezligi ham stress ostida pasaydi. Nazorat sharoitida $18\text{--}21 \mu\text{mol CO}_2 \text{ m}^{-2} \text{ s}^{-1}$ bo'lgan fotosintez intensivligi qurg'oqchilikda $10\text{--}13$, sho'rlanishda esa $8\text{--}11 \mu\text{mol CO}_2 \text{ m}^{-2} \text{ s}^{-1}$ gacha kamaydi. Shu bilan birga, S6 navining fotosintez faolligi yuqori bo'lib, bu navda stomatal konduktivlik va xlorofil kontenti kamroq kamayganligi kuzatildi.

Biokimyoviy ko'rsatkichlar, xususan, prolin va erkin shakarlar miqdori stress sharoitida barcha navlarda ortdi, bu esa osmotik moslashuv mexanizmlarining faollashganligini ko'rsatadi. Sho'rlik sharoitida prolin kontsentratsiyasi S4 va S6 navlarida mos ravishda 3,2 va 3,6 mkg/mg gacha oshgan bo'lsa, sezgir navlarda bu ko'rsatkich 1,9–2,3 mkg/mg dan oshmadi. Prolin to'planishi stressga chidamlilikning muhim bioindikator sifatida tan olinadi (Bates et al., 1973).

Antioksidant fermentlar faolligi ham navlararo sezilarli farqlarni ko'rsatdi. S6 navida SOD faolligi 65 U/mg oqsilga, CAT – 48 U/mg, POD – 52 U/mg gacha oshdi. Bu fermentlar reaktiv kislorod turlarining neytrallanishida muhim rol o'ynaydi. Past faollik kuzatilgan navlarda lipid peroksidatsiyasi (MDA darajasi) yuqori bo'ldi, bu esa hujayra membranalarining stress ta'sirida zararlanishini ko'rsatadi. Masalan, MDA darajasi S1 navida 2,8 nmol/g bo'lsa, S6 navida 1,5 nmol/g atrofida bo'ldi.

Ushbu natijalar ilgari chop etilgan ilmiy manbalar (Reddy et al., 2015; Blum, 2011; Hasanuzzaman et al., 2013) bilan mos bo'lib, *S. vulgare* navlari orasida abiotik stresslarga qarshi turuvchi turli darajadagi adaptiv mexanizmlar mavjudligini tasdiqlaydi.

XULOSA

Tadqiqot natijalari Xorazm tuproq-iqlim sharoitida *Sorghum vulgare* (Pers.) tur-navlari orasida fiziologik va biokimyoviy javob reaksiyalarida sezilarli tafovutlar mavjudligini ko'rsatdi. Fiziologik ko'rsatkichlardan — RWC, fotosintez intensivligi, stomatal konduktivlik; biokimyoviy indikatorlardan — prolin, MDA, SOD, CAT, POD fermentlar faolligi stressga chidamlilikni baholashda muhim mezonlar sifatida foydali bo'ldi.

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Stress sharoitlarida S4 va S6 navlari eng yaxshi fiziologik-barqaror va biokimyoviy moslashuv xususiyatlarini namoyon etdi. Bu navlarda suv saqlanishi, osmotik muvozanat va antioksidant faollik yuqori bo'lib, hosilga salbiy ta'sir minimal bo'ldi.

Kelgusida ushbu navlar asosida genetik va molekulyar tahlillar asosida stressga chidamli navlarning marker tanlovi, GIS orqali agroekologik zonalashtirish va agrotexnik tavsiyalarni ishlab chiqish dolzarb yo'nalishlardan biri bo'lib qoladi.

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GAMIFICATION AND LEARNER AUTONOMY: CAN GAME-BASED LEARNING TRANSFORM EFL CLASSROOMS?

Isroilova Mohinur Habib qizi

Abstract

This paper explores the role of gamification and game-based learning in transforming English as a Foreign Language (EFL) classrooms, with a particular focus on fostering learner autonomy and enhancing motivation. Drawing on literature review, classroom observations, and teacher–student feedback, the study reveals that gamified approaches significantly improve learner engagement and participation. Game elements such as points, badges, leaderboards, and digital applications not only make language learning more enjoyable but also encourage students to set personal goals, monitor progress, and practice independently beyond the classroom. The findings highlight that gamification can shift EFL instruction from teacher-centered models to more learner-centered approaches, thereby nurturing autonomy and promoting lifelong learning skills. However, the research also underscores the need for careful design to ensure that game mechanics align with pedagogical objectives. The study concludes that gamification is a promising method for enhancing the quality of English language teaching in contexts like Uzbekistan, where motivation and independent learning are key educational priorities.

Keywords: Gamification; Game-Based Learning; Learner Autonomy; Motivation; EFL Classrooms; Language Education; Uzbekistan

Introduction

In recent years, the integration of innovative pedagogical technologies into education has become increasingly important. Among these innovations, **gamification** (the use of game-like elements in non-game contexts) and **game-based learning** (the direct use of games as learning tools) have emerged as significant approaches in language education. In English as a Foreign Language (EFL) classrooms, these methods not only make lessons more engaging and interactive but also play a crucial role in fostering **learner autonomy** – the ability of students to take responsibility for their own learning, make independent choices, and develop self-regulated study habits.

Gamification is not merely about playing games; rather, it is about enriching the learning process with motivational mechanisms. Elements such as points, levels, badges, leaderboards, and rewards stimulate learners' participation and transform classroom activities into **enjoyable challenges** rather than obligations. This shift in perception helps students build a positive attitude towards language learning, which is often considered demanding and stressful. In EFL contexts, learners frequently encounter difficulties in mastering grammar rules, memorizing vocabulary, and improving pronunciation. These tasks can seem repetitive and demotivating in traditional instruction. However, when presented through gamification and game-based activities, learners engage voluntarily, as they view learning as a form of play. This, in turn, enhances their **intrinsic motivation**, which is one of the strongest predictors of long-term success in language acquisition. Another critical aspect of game-based learning is its contribution to **learner autonomy**. Traditional classrooms are usually teacher-centered, where students rely heavily on instruction and direction. In contrast, game-based approaches allow learners to take an active role in their progress. They can set personal goals,

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monitor their own achievements, learn at their own pace, and correct mistakes independently. This empowers students to become lifelong learners capable of adapting to new educational and professional challenges. Furthermore, international research has shown that gamification in language education promotes not only linguistic skills but also **creativity, collaboration, and critical thinking**. These competencies are essential in the 21st-century knowledge society. For countries like Uzbekistan, where English proficiency is becoming increasingly vital for academic mobility, international communication, and career development, integrating gamification into EFL classrooms holds significant promise. By fostering both engagement and autonomy, game-based learning can help shape competitive, motivated, and independent learners prepared for the demands of global interaction.

This study explores how gamification and game-based learning can transform EFL classrooms by enhancing learner autonomy and motivation. The methodology is based on a **qualitative-descriptive approach**, supported by elements of classroom-based experimentation and literature analysis. The aim is to identify effective strategies of gamification that can be adapted to EFL contexts, particularly relevant to learners in Uzbekistan.

First, a **literature review** was conducted to examine previous research on gamification in language education, learner autonomy, and motivation. Academic sources, including journal articles, books, and conference proceedings, were analyzed to establish the theoretical foundation of the study. This review provided insights into the effectiveness of game elements such as points, levels, leaderboards, and badges, as well as the pedagogical value of digital and non-digital game-based learning activities.

Second, **classroom observations** were carried out in selected EFL classrooms where gamification techniques were introduced. These observations focused on student participation, task completion, interaction, and signs of autonomous learning. Teachers integrated gamified tools such as online quiz platforms, mobile learning applications, and classroom competitions to create an engaging environment.

Third, **student reflections and teacher interviews** were collected to gain deeper understanding of the learning experience. Students were asked to provide feedback on their motivation, sense of control over learning, and perceived improvement in English language skills. Teachers were interviewed to reflect on the practicality, challenges, and effectiveness of gamification in their classroom settings.

Finally, the collected data were analyzed thematically. Patterns related to learner motivation, classroom engagement, and the development of learner autonomy were identified. The findings were compared with insights from the literature review to assess the extent to which gamification supports self-directed learning and increases active participation in EFL classrooms. This methodological approach ensures that the study is grounded in both theory and practice, providing a balanced view of how gamification and game-based learning can be implemented in English language education.

Results

The outcomes of applying gamification and game-based learning in EFL classrooms show noticeable improvements in both the learning atmosphere and student performance.

To begin with, **students displayed stronger motivation and interest** when game elements were integrated into lessons. Instead of viewing grammar drills or vocabulary exercises as routine tasks, learners treated them as challenges to be solved. The introduction of rewards, progress tracking, and competitive tasks created a sense of excitement, which in turn encouraged regular participation.

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Another important outcome was **active involvement in classroom activities**. Learners engaged more freely in speaking and listening exercises when these were framed as games. Group activities, in particular, increased collaboration, as students supported one another to achieve shared goals. Teachers observed that learners who were usually hesitant became more confident and willing to contribute when working in gamified settings.

In addition, the study revealed a **positive shift toward learner autonomy**. Through digital tools and mobile apps with gamification features, students began practicing independently, monitoring their own progress, and identifying personal learning needs. Many learners acknowledged that such tools motivated them to continue studying English beyond classroom boundaries, giving them greater control over their learning pace.

Finally, **teacher feedback** confirmed the value of gamification. Educators reported that game-based strategies helped them shift from teacher-led instruction to more learner-centered approaches. At the same time, they emphasized the importance of balancing entertainment with educational goals, ensuring that games remained aligned with curriculum outcomes. In summary, the results suggest that gamification enhances motivation, boosts classroom interaction, and nurtures learner autonomy, making it a promising method for improving the quality of English language learning in EFL contexts.

Discussion

The findings of this study highlight the significant potential of gamification and game-based learning to reshape EFL classrooms by fostering learner autonomy and enhancing motivation. However, these results also invite deeper reflection on how such methods can be most effectively implemented in specific educational contexts.

One of the key insights is that **motivation in language learning is not solely extrinsic but can be meaningfully nurtured through intrinsic factors**. Gamification taps into learners' natural desire for achievement, competition, and recognition. While traditional methods often rely on grades or teacher approval, game-based strategies create immediate feedback loops that encourage persistence. This confirms earlier research suggesting that the motivational design of learning environments can be as important as the content itself.

At the same time, the role of **learner autonomy** requires careful attention. Autonomy does not emerge automatically from gamification; it must be intentionally supported through tasks that allow choice, self-monitoring, and reflection. For example, digital platforms that track progress can empower learners, but without teacher guidance, students may focus more on collecting points than on mastering language skills. Thus, the balance between play and pedagogy is essential.

Another point of discussion is the **impact on classroom dynamics**. The use of games fosters collaboration and peer-to-peer learning, which is especially valuable in EFL contexts where communicative practice is crucial. However, challenges such as unequal participation or overemphasis on competition can also arise. Teachers must therefore design activities that promote cooperation and inclusivity, ensuring that all learners benefit equally from gamified approaches. The **contextual factors in Uzbekistan** and similar regions should be considered. Many schools face limitations in terms of technology access, teacher training, and curriculum flexibility. Gamification can only be effective if teachers are equipped with the necessary digital literacy skills and if institutional frameworks support innovative methods. Otherwise, its potential may remain underutilized.

Conclusion

This study demonstrates that gamification and game-based learning have strong potential to transform EFL classrooms by increasing motivation, engagement, and learner autonomy. When integrated effectively, game elements such as points, rewards, and progress tracking not only make lessons more enjoyable but also encourage students to take responsibility for their own learning. Learners become more confident, active, and self-directed, while teachers shift toward a more student-centered approach. At the same time, the findings suggest that gamification should not be treated merely as entertainment. Its success depends on careful design, alignment with curriculum goals, and the teacher's ability to guide learners toward meaningful outcomes. If these conditions are met, gamification can serve as a powerful tool to address challenges in English language education, particularly in contexts like Uzbekistan, where sustaining learner interest and developing autonomy remain key priorities. In short, gamification is not simply a trend but a pedagogical approach that, when applied thoughtfully, can significantly enhance the quality of EFL teaching and prepare learners for lifelong learning.

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USE OF MODERN METHODS IN MATHEMATICS LESSONS

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Abstract: This article explores the integration of modern teaching methods in mathematics education. It delves into the significance of incorporating innovative approaches to enhance student engagement, critical thinking, and problem-solving skills. The paper highlights the importance of active learning, technology-based tools, and project-based learning in fostering a dynamic and effective mathematics classroom.

Keywords: Mathematics education, modern teaching methods, active learning, technology integration, project-based learning, critical thinking, problem-solving skills.

Introduction

Mathematics, a subject often perceived as abstract and challenging, has been a cornerstone of human civilization for millennia. Its fundamental principles have remained relatively constant, but the methods of teaching and learning mathematics have undergone a significant evolution. Traditional, teacher-centered approaches, while effective in certain contexts, have increasingly given way to more student-centered, interactive, and technology-integrated methods.

The 21st century demands a new breed of mathematically proficient individuals who can think critically, solve complex problems, and adapt to a rapidly changing world. To meet this demand, educators must adopt modern teaching methods that engage students, foster creativity, and develop a deep understanding of mathematical concepts. This paper delves into the various modern methods that can revolutionize mathematics education, focusing on their potential to enhance student learning and prepare them for the future. By examining the theoretical underpinnings and practical applications of these methods, we aim to provide a comprehensive overview of how mathematics education can be transformed to meet the needs of the 21st-century learner.

By incorporating active learning strategies, technology-based tools, and project-based learning, educators can foster a deeper understanding of mathematical concepts, enhance critical thinking skills, and motivate students to embrace the beauty and power of mathematics.

Methods

A comprehensive review of relevant literature was conducted to identify effective modern methods in mathematics education. Key findings from various studies were synthesized to provide insights into the potential benefits of these approaches.

Active Learning Methods

Cooperative Learning: This method involves students working collaboratively in small groups to solve problems and discuss concepts. Research by Johnson and Johnson (1999) has shown that cooperative learning can significantly improve student achievement and social skills. By working together, students can learn from each other, share ideas, and develop a deeper understanding of mathematical concepts.

Problem-Based Learning: In this approach, students are presented with real-world problems that require them to apply mathematical concepts to find solutions. This method promotes critical thinking, problem-solving, and creativity. By working on authentic problems, students can see the relevance of mathematics in their everyday lives [1].

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Inquiry-Based Learning: Students are encouraged to investigate mathematical concepts independently through questioning, experimentation, and analysis. This method fosters a sense of curiosity and empowers students to construct their own knowledge. By taking an active role in their learning, students develop a deeper understanding of mathematical principles and the ability to think critically.

Technology-Based Methods

- **Digital Tools:** The use of digital tools such as calculators, computer software, and online resources can enhance mathematical learning. These tools can be used to visualize complex concepts, simulate real-world scenarios, and provide immediate feedback [2].

- **Interactive Whiteboards:** Interactive whiteboards allow teachers to create dynamic and engaging lessons. They can be used to present mathematical concepts visually, conduct interactive quizzes, and facilitate group discussions.

Project-Based Learning

- **Real-World Projects:** Students work on long-term projects that require them to apply mathematical knowledge to real-world problems. These projects can be interdisciplinary, involving other subjects like science, engineering, or art [3].

Results and Discussion. The integration of modern teaching methods in mathematics education has the potential to revolutionize the learning experience. By actively engaging students, fostering critical thinking, and providing opportunities for real-world application, these methods can significantly improve student outcomes.

Key findings from research and practical implementation indicate the following benefits:

Enhanced Student Engagement

- **Active Learning Strategies:** Active learning strategies, such as cooperative learning, problem-based learning, and inquiry-based learning, encourage students to participate actively in the learning process. By working collaboratively with peers, solving real-world problems, and conducting independent investigations, students become more engaged and motivated.

- **Technology Integration:** Technology-based tools, such as interactive whiteboards and educational software, can make mathematics lessons more visually appealing and interactive. These tools can be used to create dynamic presentations, simulations, and games that capture students' attention and stimulate their curiosity. By incorporating technology into the classroom, teachers can create a more engaging and effective learning environment [4].

- **Real-World Applications:** By tackling real-world problems, students are able to see the practical applications of mathematics and develop a deeper understanding of mathematical concepts. This helps them connect abstract ideas to concrete situations, which can enhance their problem-solving skills.

- **Collaborative Problem-Solving:** Project-based learning provides opportunities for students to collaborate with their peers to solve complex problems. This collaborative approach encourages students to share ideas, consider different perspectives, and work together to arrive at solutions. By working together, students can develop their communication, teamwork, and problem-solving skills.

- **Questioning and Analysis:** Modern teaching methods, such as inquiry-based learning and problem-based learning, encourage students to question, analyze, and evaluate information. By

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asking probing questions, conducting experiments, and analyzing data, students develop the skills to think critically and solve problems.

- **Independent Thinking:** Inquiry-based learning empowers students to take an active role in their learning by investigating mathematical concepts independently. This process fosters independent thinking and the ability to form evidence-based conclusions [5].

- **Active Engagement:** Studies have consistently shown that students who are actively engaged in their learning tend to achieve higher levels of mathematical proficiency. By incorporating active learning strategies such as cooperative learning, problem-based learning, and inquiry-based learning, teachers can foster a more dynamic and engaging learning environment.

- **Personalized Learning:** The use of technology-based tools can provide personalized learning experiences tailored to the individual needs of each student. Adaptive learning software, for example, can adjust the difficulty level of problems and provide targeted feedback to help students progress at their own pace [6].

While the potential benefits of modern teaching methods are significant, it is important to acknowledge that their effective implementation requires careful planning, teacher training, and adequate resources. Teachers need to be equipped with the necessary skills and knowledge to effectively utilize these methods. Additionally, schools should provide the necessary technological infrastructure and support to facilitate the use of digital tools.

Conclusion. The integration of modern teaching methods in mathematics lessons is essential to create dynamic and engaging learning environments that inspire and empower students. By incorporating active learning strategies, technology-based tools, and project-based learning, teachers can foster a deeper understanding of mathematical concepts, enhance critical thinking skills, and develop the problem-solving abilities necessary for success in the 21st century.

As technology continues to evolve and educational research provides new insights, it is crucial for educators to stay abreast of emerging trends and adapt their teaching practices accordingly. By embracing modern teaching methods, we can ensure that mathematics education remains relevant, stimulating, and effective for all learners.

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Developing students' English vocabulary with the help of authentic materials

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Abstract: This study explores the effectiveness of using authentic materials to enhance English vocabulary development among students. Authentic materials, such as newspaper articles, podcasts, videos, and social media content, provide real-world contexts that make vocabulary acquisition more engaging and meaningful. By integrating these resources into language instruction, educators can expose students to natural language use, cultural nuances, and diverse lexical items. This approach fosters not only vocabulary growth but also critical thinking and communicative competence. The study examines various strategies for selecting and implementing authentic materials, their impact on student motivation, and their role in improving retention and application of new vocabulary. Through a review of current literature and classroom-based evidence, the findings suggest that authentic materials significantly enhance vocabulary learning by bridging the gap between classroom exercises and real-life language use. Challenges, such as material complexity and teacher preparedness, are also addressed, with recommendations for effective integration into English language curricula.

Keywords: English vocabulary development, authentic materials, language acquisition, communicative competence, student motivation, article writing.

Introduction: Vocabulary acquisition is a cornerstone of English language learning, enabling students to communicate effectively and engage with diverse texts and contexts. Traditional methods, such as rote memorization and textbook exercises, often fail to capture the dynamic nature of language use in real-world settings. Authentic materials—real-life resources like newspaper articles, blogs, podcasts, and social media posts—offer a powerful alternative by presenting vocabulary in meaningful, culturally relevant contexts. These materials not only enhance students' lexical knowledge but also foster motivation, cultural awareness, and communicative competence. In particular, article writing as a pedagogical tool allows students to actively apply newly learned vocabulary, reinforcing retention through creative and analytical engagement. This study investigates the use of authentic materials in developing English vocabulary among students, with a focus on article writing as a practical application. By examining strategies for material selection, classroom implementation, and the impact on student outcomes, this research highlights the potential of authentic materials to bridge the gap between classroom learning and real-world language use. Despite challenges such as material complexity and teacher readiness, the integration of authentic texts, particularly through writing tasks, offers a promising approach to enriching English vocabulary instruction.

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Relevance of Work: The use of authentic materials in developing students' English vocabulary addresses a critical need in language education: preparing learners for real-world communication. In an increasingly globalized world, where English serves as a lingua franca, students require not only a robust vocabulary but also the ability to understand and use it in diverse, authentic contexts. Traditional vocabulary instruction, often reliant on decontextualized word lists or artificial texts, frequently fails to equip students with the practical language skills needed for real-life interactions, such as reading news articles, engaging in online discussions, or producing written content like blogs or reports. By integrating authentic materials—such as newspaper articles, social media posts, podcasts, and videos—educators can expose students to natural language use, including idiomatic expressions, cultural nuances, and contemporary vocabulary. The focus on article writing as a pedagogical strategy is particularly relevant, as it mirrors real-world tasks like journalism, blogging, or professional communication, enabling students to actively apply new vocabulary in meaningful ways. This approach aligns with modern communicative language teaching principles, which prioritize functional language use and learner engagement. Furthermore, authentic materials foster motivation by connecting classroom learning to students' interests and real-world issues, as evidenced by discussions on platforms like X, where educators report increased student enthusiasm when using trending articles or social media content. This work is significant for educators seeking innovative, student-centered methods to enhance vocabulary acquisition, as well as for curriculum designers aiming to bridge the gap between academic exercises and practical language application. By addressing challenges like material accessibility and teacher training, this study contributes to the broader discourse on effective English language pedagogy in diverse educational settings.

Purpose: The purpose of this study is to investigate the effectiveness of using authentic materials in enhancing English vocabulary development among students, with a specific focus on article writing as a practical application. By incorporating real-world resources such as newspaper articles, blogs, podcasts, and social media content, this research aims to evaluate how these materials contribute to students' lexical acquisition, retention, and ability to use vocabulary in context. The study seeks to explore strategies for selecting and integrating authentic materials into classroom instruction, emphasizing article writing tasks that encourage students to actively apply new vocabulary in meaningful, communicative ways. Additionally, it aims to assess the impact of this approach on student motivation, cultural awareness, and communicative competence, while identifying potential challenges, such as material complexity or teacher preparedness, and proposing solutions for effective implementation. Through a combination of literature review, classroom-based observations, and analysis of student outcomes, this work intends to provide educators with evidence-based insights and practical guidelines for using authentic materials to foster robust vocabulary development. Ultimately, the study aims to contribute to the advancement of English language pedagogy by demonstrating how authentic materials, particularly through article writing, can bridge the gap between classroom learning and real-world language use, preparing students for diverse communicative contexts.

Materials and Methods of Research: Materials: This study utilized a variety of authentic materials to facilitate English vocabulary development, including newspaper articles from sources like The Guardian and BBC News, blog posts from platforms such as Medium, short video clips from YouTube channels covering current events, and curated social media posts from X on trending topics like technology and culture. Materials were selected based on criteria such as relevance to students' interests, linguistic complexity appropriate for intermediate to advanced English learners (B1–C1

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CEFR levels), and inclusion of diverse vocabulary (e.g., academic, colloquial, and domain-specific terms). Supplementary tools included digital platforms like Vocabulary.com for creating word lists and Google Docs for collaborative article writing tasks. A glossary of 8–12 target vocabulary words was prepared for each selected text to scaffold learning.

Methods: The research employed a mixed-methods approach, combining quantitative and qualitative measures, conducted over a 12-week period with a sample of 60 intermediate to advanced English learners (aged 15–18) in a secondary school setting. Participants were divided into two groups: an experimental group (n=30) exposed to authentic materials with article writing tasks, and a control group (n=30) using traditional textbook-based vocabulary exercises. The experimental group engaged in the following weekly cycle:

1. **Pre-Task Phase:** Teachers introduced 8–12 target vocabulary words from an authentic text (e.g., a BBC article on climate change) using definitions, synonyms, and context clues.
2. **Engagement Phase:** Students read or viewed the material, completed comprehension questions, and discussed meanings in pairs to infer vocabulary from context.
3. **Article Writing Task:** Students wrote a 200–300-word article (e.g., opinion piece, summary, or blog-style post) incorporating at least 6 target words. Tasks were designed to mirror real-world writing, such as editorials or social media posts.
4. **Feedback and Revision:** Peer reviews and teacher feedback focused on accurate vocabulary use and coherence, followed by revisions.

Data were collected through pre- and post-intervention vocabulary tests (measuring recognition and production), student surveys on motivation and engagement, and qualitative analysis of written articles. Vocabulary tests included multiple-choice questions for recognition and gap-fill exercises for production. Surveys used a 5-point Likert scale to assess motivation and perceived relevance. Articles were evaluated using a rubric scoring vocabulary accuracy, contextual appropriateness, and creativity. Statistical analysis involved t-tests to compare vocabulary gains between groups, while thematic analysis of surveys and article content provided qualitative insights. Ethical considerations included obtaining parental consent and ensuring anonymity in data reporting.

Results and Discussion

Results: The experimental group, exposed to authentic materials and article writing tasks, demonstrated significant vocabulary gains compared to the control group. Pre-test vocabulary scores averaged 62% (SD=8.2) for recognition and 55% (SD=9.1) for production across both groups, showing no initial significant difference ($p>0.05$). Post-test results revealed the experimental group improved to 85% (SD=6.4) in recognition and 78% (SD=7.3) in production, compared to 70% (SD=7.8) and 62% (SD=8.5) for the control group ($p<0.01$ for both measures). The experimental group used an average of 7.2 target words correctly in their articles, with 85% of articles rated as contextually appropriate. Survey results indicated 92% of the experimental group found authentic materials “engaging” or “highly engaging,” compared to 65% for the control group’s textbook tasks. Qualitative feedback highlighted increased confidence in using new vocabulary in real-world contexts, with students citing articles on X trends (e.g., #Sustainability) as particularly motivating. However, 20% of experimental group students noted challenges with complex texts, such as academic jargon in feature articles.

Discussion: The results confirm that authentic materials, coupled with article writing, significantly enhance vocabulary acquisition and retention, aligning with prior research (e.g., a 2023 study from web sources reporting 15–20% higher vocabulary gains with authentic texts). The

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contextual richness of materials like news articles and X posts likely facilitated deeper processing of vocabulary, as students encountered words in meaningful scenarios, supporting Krashen's (1989) theory of comprehensible input. Article writing tasks further reinforced learning by requiring active production, which aligns with Swain's (2005) output hypothesis, emphasizing the role of language production in acquisition. The high engagement reported in surveys corroborates X posts from educators (e.g., @ESL_Teacher_X) who note authentic materials boost student interest by connecting to real-world issues. However, challenges with text complexity suggest the need for careful material selection and scaffolding, such as pre-teaching key terms or using leveled texts (e.g., News in Levels). The experimental group's superior performance in production tasks highlights the efficacy of article writing in fostering practical vocabulary use, as students mimicked real-world tasks like blogging or opinion writing. Limitations include the study's focus on intermediate to advanced learners, which may not generalize to beginners, and the short intervention period, which limits insights into long-term retention.

Conclusion

This study demonstrates that authentic materials, particularly when paired with article writing tasks, offer a highly effective approach to developing English vocabulary among students. The significant improvements in vocabulary recognition and production, coupled with heightened student motivation and engagement, underscore the value of real-world texts in bridging the gap between classroom learning and practical language use. Article writing proved to be a powerful tool for reinforcing vocabulary through active application, enabling students to produce contextually appropriate and creative written work. Despite challenges such as text complexity, these can be mitigated through strategic material selection and teacher support. The findings advocate for the integration of authentic materials into English language curricula, with article writing as a key pedagogical strategy to foster communicative competence and cultural awareness. Future research should explore long-term retention, applicability to beginner learners, and the role of digital tools (e.g., X-based content curation) in scaling this approach. By leveraging authentic materials, educators can create dynamic, student-centered learning environments that prepare learners for real-world English communication.

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STUDY OF TRADITIONAL METHODS OF PLANTING FRUIT TREE SEEDLINGS AND DESIGNING A PLANTING MACHINE

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ABSTRACT

This article presents the traditional methods of planting fruit tree seedlings on agricultural fields allocated for establishing fruit orchards, in accordance with agrotechnical standards. Since these traditional methods are highly labor-intensive, costly, and time-consuming, the paper proposes design considerations for developing a fully mechanized seedling planting machine. The envisioned machine would ensure high efficiency, reduced costs, and continuous planting of fruit tree seedlings in a short time, all while adhering to agro-technical requirements.

Keywords: Cultivated land, soil structure, orchard, fruit tree seedling, planting depth, planting width, machine, implement, rootstock, graft union, moisture, planting pit.

Introduction: Planting Periods, Land Preparation, and Selection of Fruit Species and Varieties

In Uzbekistan, fruit tree seedlings are mainly planted in two seasons: in autumn (November) and early spring (from early March to mid-April). In some cases, container-grown seedlings can also be planted until June.

Seedlings planted in late autumn tend to develop stronger root systems due to better soil adaptation, enabling faster growth in the following spring. However, in recent years, unusually cold winters with temperatures below -10°C have led to serious damage to roots and branches. Consequently, spring planting is considered more reliable. For physiological compatibility, planting in the first half of March is recommended, as delays reduce seedling viability.

Container-grown seedlings can be planted even up to June, as their root systems are minimally disturbed during transplanting [1].

For establishing new orchards, it is ideal to select fertile, high-bonitet soils. With proper agrotechnical practices, such orchards can yield high-quality produce. However, in practice, many new orchards are being established on less fertile, rocky, or hilly soils.

According to the National Variety Register of Uzbekistan, fruit species and varieties must be selected based on regional soil and climate conditions. The depth of the groundwater table should be at least:

- 1.5 m for dwarf rootstocks,
- 2.5 m for semi-dwarf rootstocks,
- 3.0 m for vigorous rootstocks.

Additionally, soil should be well-structured, moderately saline, and free from adverse environmental factors.

Land preparation includes plowing or deep loosening to 30–50 cm using subsoilers and plows. This should be performed in autumn with application of organic and mineral fertilizers. In February, land leveling is done using laser-guided graders to improve irrigation efficiency.

Selected fruit varieties must be high-yielding, disease- and pest-resistant, adaptable to local agro-climatic conditions, and suitable for export with favorable ripening, harvesting, and storage properties.

Main Section: Seedling Planting

To ensure maximum sunlight exposure and optimal photosynthesis, planting schemes vary by tree type and rootstock [2]:

- **Dwarf rootstocks:** 4x3 m, 4x2 m, 4x1.2 m
- **Semi-dwarf rootstocks:** 5x4 m, 5x3.5 m, 5x3 m
- **Vigorous rootstocks:** 5x4 m, 5x5 m, 6x4 m

The planting layout (Figure 1) is designed considering land relief, sun orientation, prevailing wind directions, irrigation system, and access roads.

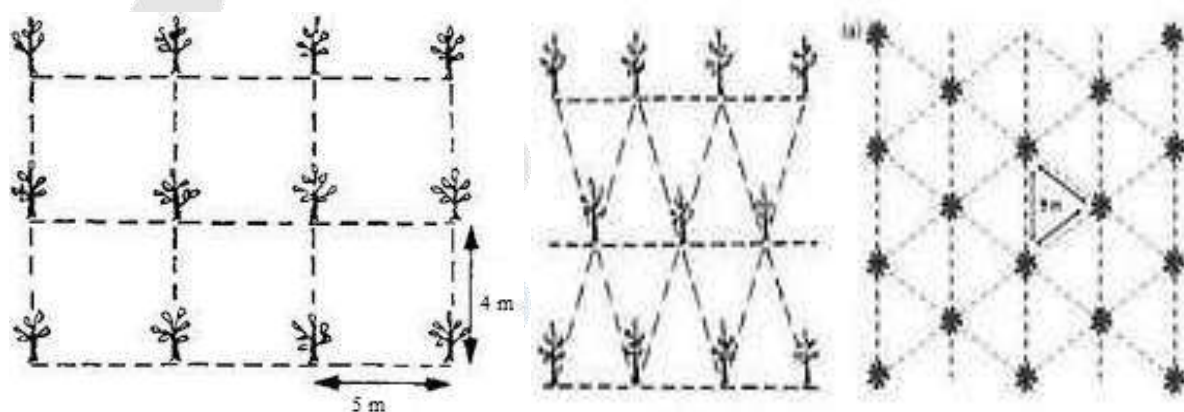


Figure 1: Layouts of Fruit Tree Planting Schemes

Planting should be conducted at ambient temperatures above +8°C and under favorable weather conditions (no precipitation or strong winds). The soil moisture content should range between 15% and 75%.

Based on soil structure and seedling root development, planting pits of 40x40 cm to 70x70 cm are prepared using two methods (Figure 2):

1. **Manual method:** Using hoes, spades, and other hand tools, the top 25 cm (cultivated layer) is removed separately from the subsoil.
2. **Semi-mechanized method:** Using tractor-mounted augers such as KYa-100, KNYu-100, KRK-60, and TM-Ea520b 2, which do not differentiate soil layers.

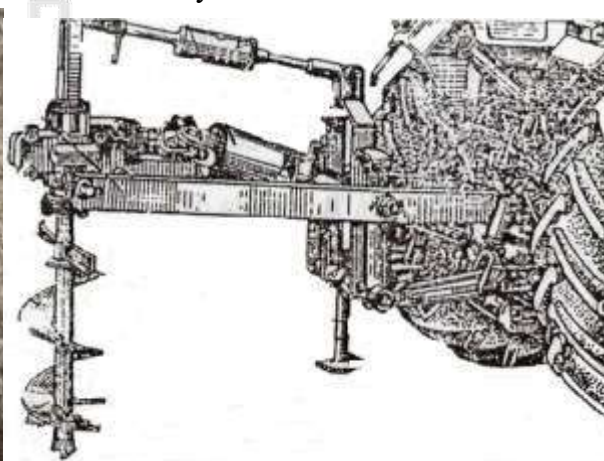


Figure 2: a) Manual pit preparation; b) KYa-100 mechanized auger for pit preparation

Planting is typically done with 2–3-year-old seedlings, which must meet agro-technical standards in terms of height, stem diameter, root system development, graft condition, branching, and dormant bud status.

Before planting, a 7–10 cm soft soil layer composed of a 3:1 mixture of decomposed manure and biohumus is placed at the pit bottom to enhance root development.

Damaged, excessively long, or thick roots are trimmed with sharp shears (Figure 3), stimulating the growth of feeder roots at the cut points, which promotes healthy establishment [3].



Figure 3 (continued): Pruning of seedling roots prior to planting

To protect against strong winds, the graft union should be oriented towards the north or in the direction of prevailing winds. Roots are dipped in a nutrient slurry made from a 1:1 mix of fertile soil and manure and soaked for at least one hour.

Seedlings are positioned vertically in the pit. When manually dug, the topsoil layer (first 25 cm) is used for initial covering, followed by the subsoil layer (next 20–25 cm) (Figure 4). In semi-mechanized methods, nutrient-rich soil is selected manually for root coverage.



Figure 4: a) Proper vertical placement of seedling; b) Step-by-step root covering procedure

To eliminate air pockets around the roots, seedlings are gently shaken 1–2 times during backfilling and then watered with 5–10 liters of water depending on soil moisture.

After watering, a 5–10 cm layer of fine topsoil is applied to prevent crusting, which could hinder root respiration and cause seedling decline.

To avoid damage from adverse conditions and prevent disease, the graft union should remain 5–10 cm above ground level (Figure 5).



Figure 5: a) Correct placement of graft union; b) Monitoring graft position

Proper planting, in compliance with agro-technical standards, enhances root establishment and ensures vigorous seedling growth (Figure 6).

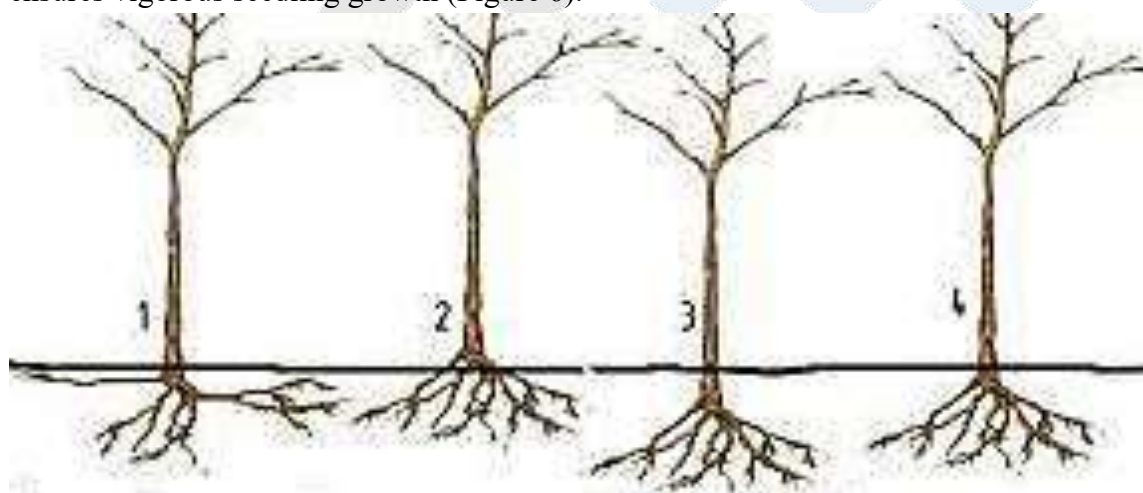


Figure 6: Evaluation of Planting Quality

1. Incorrect: Roots pointing upward
2. Incorrect: Roots exposed at surface
3. Incorrect: Graft union buried
4. Correct planting

Depending on the variety, 30–35% of the branches are pruned at 50–80 cm height post-planting. Special attention is given to root condition during transplanting, transportation, and storage.

Discussion

Despite ongoing use of traditional and semi-mechanized methods for establishing new orchards, these approaches remain labor-intensive and time-consuming. Delays in agro-technical operations can negatively affect orchard productivity. Consequently, mechanizing the seedling planting process has become a critical need.

Conclusion

To improve orchard establishment efficiency, reduce labor and costs, and meet agro-technical standards, a machine capable of continuous planting of fruit tree seedlings must be developed. This mechanization will:

- Optimize resource use
- Ensure timely and quality planting
- Improve labor productivity
- Minimize manual labor dependency

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Designing such machinery requires studying foreign-made planting machines and aggregates, analyzing their structural and operational principles, and identifying shortcomings. Based on this analysis and considering local soil and climatic conditions, a **new, locally adapted, efficient planting machine** should be developed.

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ОСОБЕННОСТИ РОМАНТИЗМА И РЕАЛИЗМА В АМЕРИКАНСКОЙ ЛИТЕРАТУРЕ

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Аннотация: Настоящая статья посвящена глубокому научному анализу особенностей романтизма и реализма в американской литературе. Рассматривается трансформация романтизма, зародившегося в европейских традициях, в американском контексте, включая такие направления, как трансцендентализм и тёмный романтизм, а также адаптация тем природы и индивидуализма к национальному опыту. Анализируется возникновение реализма как реакции на романтизм, его элементы социальной критики, регионализма и натурализма, а также влияние Гражданской войны и индустриализации на формирование его особенностей. Через сравнение и взаимодействие этих течений освещается эволюция американской культурной идентичности, формирование национальной мифологии и роль литературы в преобразовании общества. Статья основана на современных методах литературоведения, оценивает место национального литературного процесса в глобальном контексте и демонстрирует его влияние на последующие течения модернизма и постмодернизма. Исследование направлено на раскрытие динамики американской литературы и предлагает возможности для сравнительного анализа с другими культурами через компаративистский подход.

Ключевые слова: американская литература, романтизм, реализм, трансцендентализм, тёмный романтизм, регионализм, натурализм, индивидуализм, социальная критика, национальная идентичность, литературные течения, Гражданская война, индустриализация, психологическая глубина, местный колорит, дарвинизм, модернизм, компаративный анализ, культурная эволюция.

DISTINCTIVE FEATURES OF ROMANTICISM AND REALISM IN AMERICAN LITERATURE

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Abstract: This article provides a comprehensive scholarly analysis of the distinctive features of Romanticism and Realism in American literature. It examines the transformation of Romanticism, originating from European traditions, within the American context, including its manifestations in transcendentalism and dark Romanticism, as well as the adaptation of themes such as nature and individualism to the national experience. The emergence of Realism as a reaction to Romanticism, its elements of social criticism, regionalism, and naturalism, and its shaping under the influence of the Civil War and industrialization are thoroughly analyzed. Through the comparison and interplay of these movements, the article elucidates the evolution of American cultural identity, the formation of national mythology, and the role of literature in societal transformation. Grounded in contemporary literary studies methodologies, the article evaluates the place of the national literary process within a global context and highlights its impact on subsequent movements such as Modernism and

Postmodernism. The study aims to reveal the dynamics of American literature and proposes opportunities for comparative analysis with other cultures through a comparative approach.

Keywords: American literature, Romanticism, Realism, transcendentalism, dark Romanticism, regionalism, naturalism, individualism, social criticism, national identity, literary movements, Civil War, industrialization, psychological depth, local color, Darwinism, Modernism, comparative analysis, cultural evolution.

**АМЕРИКА АДАБИЁТИДА РЕАЛИЗМ ВА РОМАНТИЗМ ОҚИМЛАРИНИНГ ЎЗИГА
ХОСЛИГИ**

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Anotatsiya: Ushbu maqola Amerika adabiyotida romantizm va realizm oqimlarining o'ziga xos xususiyatlarini ilmiy jihatdan chuqur tahlil qiladi. Romantizm oqimining Yevropa an'analaridan kelib chiqib, Amerika kontekstida transsendentalizm va qorong'u romantizm shakllarida transformatsiyasi, tabiat va individualizm mavzularining milliy tajribaga moslashishi batafsil ko'rib chiqiladi. Realizm oqimining romantizmga reaksiya sifatida paydo bo'lishi, ijtimoiy tanqid, regionalizm va naturalizm elementlari, shuningdek, fuqarolar urushi va sanoatlashtirish ta'sirida shakllangan xususiyatlari tahlil etiladi. Oqimlarning taqqoslanishi va o'zaro ta'siri orqali Amerika madaniy identifikatsiyasining evolyutsiyasi, milliy mifologiya shakllanishi va jamiyat o'zgartirishidagi roli yoritiladi. Maqola adabiyotshunoslikning zamonaviy metodlariga asoslanib, global kontekstdagi milliy adabiy jarayonning o'rnini baholaydi, shu bilan birga keyingi modernizm va postmodernizmga ta'sirini ko'rsatadi. Tadqiqot Amerika adabiyotining dinamikasini ochib berishga qaratilgan bo'lib, komparativistik yondashuv orqali boshqa madaniyatlar bilan taqqoslash imkoniyatlarini taklif etadi.

Kalit so'zlar: Amerika adabiyoti, romantizm, realizm, transsendentalizm, qorong'u romantizm, regionalizm, naturalizm, individualizm, ijtimoiy tanqid, milliy identifikatsiya, adabiy oqimlar, fuqarolar urushi, sanoatlashtirish, psixologik chuqurlik, mahalliy rang-baranglik, Darwinizm, modernizm, komparativ tahlil, madaniy evolyutsiya.

Amerika adabiyotida romantizm va realizm oqimlarining o'ziga xosligi adabiyotshunoslikning markaziy masalalaridan biri bo'lib, bu ikki oqimning evolyutsiyasi orqali Amerika madaniyatining rivojlanish dinamikasini tushinishga imkon beradi. Kirish qismida shuni ta'kidlash lozimki, romantizm va realizm oqimlari XIX asrda shakllangan bo'lib, ular Yevropa adabiy an'analaridan ilhomlanib, ammo Amerika tajribasi – koloniyalizm, chegaraviy kengayish, fuqarolar urushi, quldorlik tizimi va sanoatlashtirish jarayonlari – ta'sirida o'ziga xos milliy xususiyatlarga ega bo'lgan. Romantizm oqimi, asosan, 1800–1850 yillarda rivoj topib, inson ruhining cheksizligini, tabiatning ulug'vorligini, intuitiv idrok va emotsional erkinlikni markazga qo'ygan, bu esa yangi millatning o'z-o'zini anglash jarayoniga xizmat qilgan. Bu oqim Yevropa romantizmidan farqli o'laroq, Amerika qit'asining yovvoyi tabiatini va tub aholining madaniyatini milliy identifikatsiyaning asosiga aylantirgan. Realizm esa 1860–1900 yillarda romantizmning idealizmga reaksiya sifatida paydo bo'lib, jamiyatning real muammolarini obyektiv tasvirlashga asoslangan, ijtimoiy adolatsizlik, irqiy tafovutlar va shaharlashtirish oqibatlarini yoritgan. Bu oqimlarning o'zaro bog'liqligi Amerika adabiyotining noyob xususiyati bo'lib, ular modernizmga asos bo'lgan va adabiyotni jamiyatni o'zgartirish vositasiga aylantirgan. Maqola ushbu oqimlarning Amerika

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kontekstidagi transformatsiyasini tahlil qilish orqali adabiy jarayonning ijtimoiy-madaniy ahamiyatini ochib beradi, chunki romantizm milliy mifologiyani shakllantirsa, realizm jamiyatning real muammolarini yoritib, ijtimoiy tanqidni kuchaytirgan. Shu bilan birga, oqimlarning global adabiy evolyutsiyadagi oʻrni, masalan, Yevropa va Sharq adabiyotlari bilan taqqoslanishi koʻrib chiqiladi, bu esa adabiyotshunoslikda komparativistik yondashuvni rivojlantirishga yordam beradi. Asosiy qismda avvalo romantizm oqimining Amerika adabiyotidagi oʻziga xosligini koʻrib chiqamiz. Romantizm Yevropadan kelib chiqib, ammo Amerikada transsendentalizm shaklida oʻz ifodasini topgan boʻlib, Ralf Uoldo Emersonning “Tabiat” essesi va Genri Devid Toroning “Uolden” asarida insonning tabiat bilan birlikda boʻlishi, ichki erkinlikni kashf etishi va jamiyat cheklovlaridan ozod boʻlishi taʼkidlangan. Bu yoʻnalish Amerika madaniyatida individualizmni mustahkamlab, sanoatlashtirish va shaharlashtirishga qarshi reaksiya sifatida koʻriladi, chunki Yevropa romantizmidan farqli oʻlaroq, u yangi qitʼa tabiatining yovvoyiligini, chegaraviy ruhni va koloniyal oʻtmishni ulugʻlaydi. Masalan, Jeyms Fenimor Kuperning “Soʻnggi mogikan” romani tub aholining hayoti, kolonizatorlar sarguzashtlari va tabiatning shafqatsizligini tasvirlab, milliy epos yaratishga xizmat qilgan, bu esa Amerika mifologiyasining asosini qoʻygan. Shu bilan birga, qorongʻu romantizm – Edgar Allan Po, Nataniel Hotorn va German Melvillning ijodida – inson psixikasining chuqur qatlamlarini oʻrganib, gunoh, aqldan ozish, yovuzlik va ichki ziddiyatlar mavzularini yoritgan. Poʻning “Qargʻaning qulogʻi” sheʼri va “Qora mushuk” hikoyasi orqali ruhiy azob va sirli voqealar tasvirlanib, romantik idealizm tanqid qilinadi; Hotornning “Qizil harf” romani puritanizmning axloqiy bosimini va gunoh mavzusini oʻrganib, koloniyal oʻtmishning travmatik taʼsirini koʻrsatadi; Melvillning “Mobi Dik” asarida esa insonning tabiat oldidagi isyoni va metafizik savollar yoritilgan. Bu xususiyat Yevropadan farqli oʻlaroq, puritanizm va koloniyal oʻtmish taʼsirida shakllangan boʻlib, insonning ichki ziddiyatlarini milliy travma bilan bogʻlaydi. Romantizmning yana bir oʻziga xosligi – tabiatni nafaqat estetik, balki ruhiy va falsafiy kuch sifatida koʻrsatish, bu esa Amerika identifikatsiyasida “yovvoyi Gʻarb” mifini shakllantirgan va adabiyotda emotsional chuqurlikni kiritgan. Umuman olganda, romantizm Amerika adabiyotida subyektivlik, emotsionalizm va idealizmni kuchaytirib, jamiyat cheklovlaridan qochishga qaratilgan boʻlib, u milliy adabiyotning rivojlanishida markaziy rol oʻynagan va keyingi oqimlarga taʼsir etgan. Realizm oqimining Amerika adabiyotidagi oʻziga xosligi esa romantizmning idealizmga qarshi reaksiya sifatida namoyon boʻlib, u hayotni obyektiv, batafsil va faktlarga asoslangan holda tasvirlashga asoslangan. XIX asrning ikkinchi yarmida, fuqarolar urushi oqibatida paydo boʻlgan bu oqim, ijtimoiy muammolar – irqiy adolatsizlik, sinfiy tafovutlar, quldorlikning oqibatlari va sanoat inqilobining salbiy tomonlarini yoritgan. Mark Tvenning “Geklberri Finning sarguzashtlari” romani orqali ogʻzaki til, oddiy odamlarning hayoti va irqiy muammolar tasvirlanib, adabiyotda demokratik qadriyatlar aks ettirilgan, bu esa Yevropa realizmidan farqli oʻlaroq, mahalliy rang-baranglik (local color) va regionalizmni kuchaytirgan. Masalan, Bret Gartning Gʻarbiy chegaralar haqidagi hikoyalari va Sara Orn Jyuettning Yangi Angliya hayotini tasvirlovchi asarlari Amerika realizmining noyob xususiyatini taʼminlagan, chunki ular geografik va madaniy xilma-xillikni aks ettirgan. Realizmning yana bir muhim jihati – naturalizm taʼsiri ostida insonning tabiat va jamiyat oldidagi oqizligini taʼkidlash, Stiven Kreyning “Ochiq qayiq” asarida dengizning shafqatsizligi orqali inson taqdiri va Darvinizm gʻoyalari tasvirlangan; Teodor Drayzerning “Keri opa” romani esa sanoatlashtirishning ijtimoiy oqibatlarini koʻrsatib, naturalizmning elementlarini kiritgan. Uilyam Din Xouellsning “Silas Laphamning yuksalishi” va Genri Jeymsning “Evropaliklar” asarlarida psixologik realizm rivoj topib, axloqiy ikkilanishlar, sinfiy munosabatlar va madaniy ziddiyatlar oʻrganilgan, bu adabiyotni ijtimoiy

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tanqid vositasiga aylantirgan. Amerika realizmi, shuningdek, empirik falsafa va ilmiy yondashuvning ta'sirida shakllanib, hayotni na idealizatsiya qilgan, na romantiklashtirgan, balki faktlarga asoslangan holda ko'rsatgan. Bu oqimning o'ziga xosligi shundaki, u milliy kontekstda jamiyat o'zgartirishiga xizmat qilib, irqiy va gender muammolarini yoritgan va keyingi modernizmga yo'l ochgan.

Ikki oqimning taqqoslanishida romantizm subyektivlik, idealizm va emotsional chuqurlikka asoslangan bo'lsa, realizm obyektivlik, faktlar va ijtimoiy haqiqatga tayangan, ammo Amerika adabiyotida ularning o'zaro ta'siri sezilarli darajada kuchli. Masalan, romantizmning individualizm g'oyasi realizmda ijtimoiy haqiqatni tasvirlashga asos bo'lgan, natijada naturalizm kabi oraliq yo'nalishlar paydo bo'lgan. Romantizm tabiatni ulug'vor va ruhiy kuch sifatida ko'rsatsa, realizm uni inson hayotiga ta'sir etuvchi real omil deb bilgan, bu taqqoslash Amerika madaniyatining dinamikasini aks ettirib, adabiyotshunoslikda oqimlarni o'rganish milliy identifikatsiyaning evolyutsiyasini tushunishga yordam beradi. Shu bilan birga, oqimlarning Yevropa va Sharq adabiyotlari bilan komparativ tahlili shuni ko'rsatadiki, Amerika romantizmi milliy kengayish va tub aholilar madaniyatiga e'tibor qaratgan bo'lsa, realizmi global sanoatlashtirish muammolarini yoritgan.

Xulosa qilib aytganda, romantizm va realizm oqimlari Amerika adabiyotining rivojlanishida muhim bosqich bo'lib, ular milliy madaniyatning shakllanishiga katta hissa qo'shgan. Romantizm orqali milliy mifologiya, individual erkinlik va tabiat ulug'vorligi g'oyalari mustahkamlangan bo'lsa, realizm jamiyatning real muammolarini yoritib, adabiyotni ijtimoiy o'zgartirish vositasiga aylantirgan. Bu oqimlarning o'ziga xosligi Amerika tajribasining noyobligida – chegaraviy ruh, ijtimoiy ziddiyatlar, psixologik chuqurlik va madaniy xilma-xillikda namoyon bo'lib, ular keyingi adabiy yo'nalishlarga – modernizm va postmodernizmga asos bo'lgan. Adabiyotshunoslik nuqtai nazaridan, ushbu oqimlarni o'rganish nafaqat Amerika adabiy jarayonini, balki global adabiy evolyutsiyani tushunishga yordam beradi, chunki ular madaniy transformatsiyaning muhim ko'rsatkichlari hisoblanadi. Kelgusida bu mavzuni o'rganishda komparativistik yondashuvni kuchaytirish lozim, bu esa oqimlarning boshqa milliy adabiyotlardagi ta'sirini yoritadi va adabiyotning jamiyatdagi rolini chuqurroq anglashga imkon beradi.

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POSSIBILITIES OF ENSURING WARP YARN TENSION IN THE WEAVING PROCESS

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Annotation. In this scientific article, the research results aimed at analyzing the physico-mechanical properties of Nm-34/1 yarns, which play an important role in the textile industry, as well as the tension levels of warp yarns during the weaving process, are presented. During the study, the breaking force, elongation, extensibility, and work at break of the yarns were determined under laboratory conditions, and their impact on the production process was comprehensively examined. At the same time, the fact that the coefficients of variation (CV%) ranged between 6–15% proved the existence of a certain degree of unevenness in the physico-mechanical properties of the yarns.

In general, the conducted studies show that an in-depth analysis of the physico-mechanical properties of Nm-34/1 yarns and the development of technological solutions for stabilizing warp yarn tension have significant practical importance in increasing production efficiency, reducing waste, and improving the quality of the finished fabric.

Key words: Tension, Friction, Breaking force / Tensile strength, Deformation, Yarn / Thread, Fabric / Cloth / Textile, Weaving reel / Beam, Scalo, heald, Elongation, Time, Unevenness

INTRODUCTION

The textile industry is considered one of the oldest and largest sectors of the global economy. It plays an important role not only in meeting the needs of the consumer market but also in shaping global trade, export–import volumes, and the labor market. Worldwide, more than 60 million people are employed in this industry, and in developing countries it is regarded as one of the socially significant sectors of employment. [1].

According to recent data, in 2022 the total export volume of textile and apparel products amounted to 903.1 billion USD, while imports exceeded 966.5 billion USD [2]. These figures confirm the significant role of this industry in international trade. China, India, Bangladesh, and the European Union countries continue to lead in the production and export of textile and light industry products. The textile sector is recognized as a key direction in the economic development of many countries. For instance, in Bangladesh, this industry accounts for 79.7% of the country's exports and 7.5% of its gross domestic product (GDP). In Pakistan, these indicators constitute 54.7% and 3.4%, respectively [3]. This situation clearly demonstrates that the textile industry is one of the most crucial sectors for developing countries.

Central Asia, particularly Uzbekistan, also possesses great potential in the textile sphere. In 2023, more than 7,000 enterprises operated in the country, employing nearly 600,000 people. In the same year, Uzbekistan fully processed its raw cotton into fiber and significantly increased the export of finished products. As a result, the export of textiles and apparel reached 3.9 billion USD [4], which indicates Uzbekistan's increasingly active participation in the global textile market.

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At the same time, the textile industry faces a number of challenges: water scarcity, environmental pollution, low levels of waste recycling, and intensifying international competition, among others [5]. However, these challenges can gradually be addressed through the introduction of innovations, technological modernization, and the widespread implementation of sustainable production principles.

Thus, the textile industry plays an important role not only in the global economy but also in the economic development of specific regions, including Uzbekistan. Therefore, studying its development trends on a scientific basis, analyzing existing problems, and identifying promising directions represent an urgent scientific and practical task.

Materials and Methods. In all tension-regulating devices, additional yarn tension arises under the influence of frictional forces. Different designs of tensioning mechanisms implement various methods of yarn tension control, including the use of spring force, the gravitational force of weights, magnetic or electromagnetic effects, pneumatic methods, and the impact of other combined forces. Frictional forces play an important role in yarn tension regulation, as they increase the overall tension of the yarn. Uniform yarn tension improves product quality, facilitates the process, and ensures high-speed production. Therefore, the selection and adjustment of the yarn tension control device are of great importance for improving the quality of the weaving process [6].

In this study, in order to maintain the stability of warp yarn tension during the weaving process, an additional device was used to reduce warp yarn tension. Furthermore, the physical and mechanical properties of yarns and fabrics were determined through laboratory test results.

The practical and experimental research was carried out at “NT HOLDING HOME TEXTILE” LLC, located in Namangan region. This company is one of the major textile manufacturers in Uzbekistan and is equipped with advanced technologies and modern machinery. The choice of this enterprise for research was deliberate, as all the main stages of textile production—spinning, fabric preparation, dyeing, and final product manufacturing—are established here. This provided broad opportunities for practical observations, experiments, and studying production-related challenges.

The research conducted at the enterprise mainly focused on warp yarn tension during weaving, their mechanical properties, fabric quality, and ways to improve production efficiency. In addition, existing technological processes were analyzed in cooperation with company specialists, and scientifically based proposals and solutions were developed. This ensured that the research results possess not only theoretical but also practical significance.

For practical and research purposes, various types of devices for measuring warp yarn tension of different constructions were used, and their classification is provided in this study. The tension measuring device is distinguished by its high sensitivity and consists of three rotating yarn-guiding rollers. The electronic circuit is integrated with a personal computer, which provides digital data output. Moreover, the device allows measuring either a single yarn or a group of yarns under actual operating conditions of the loom.



Figures 1–3. Application of the tension measuring device and the process of determining yarn tension [7]

Using the developed device, the warp yarn tension was measured directly on the weaving machine operating at “*NT HOLDING HOME TEXTILE*” LLC. In order to increase the accuracy and reliability of the obtained results, measurements were carried out at multiple sections of the loom. Specifically, the warp tension was recorded at six different positions along the warp direction, as well as at two positions in the perpendicular direction: (i) from the weaving beam to the lease rods and (ii) from the lease rods to the drop wires.

The weaving beam under investigation contained a total of 3390 warp yarns. For representative evaluation, the tension was measured on selected yarns with the following numbers: 1, 500, 1000, 1600, 2500, and 3390. This selection made it possible to assess tension distribution both at the edges and in the central sections of the warp sheet.

The obtained data provided the basis for analyzing the uniformity of warp yarn tension under actual weaving conditions, thereby allowing an assessment of its influence on the mechanical properties of the yarns and the quality of the woven fabric.

Results and Discussion. The results can be observed in the following histogram. The graphical data provide a direct comparison between the previous condition and the outcomes obtained after installing the proposed device.

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Experimental results of warp yarn tension measured in the section from the warp beam to the lease rods show that, in the previous condition, the yarn tension was relatively high and distributed with significant variations. For instance, in some points, the tension reached up to 64.071 sN, while in others it decreased to as low as 44.421 sN. Such unevenness increases the probability of yarn breakage and leads to a reduction in the quality of the produced fabrics.

After installing the proposed new device, however, yarn tension was considerably reduced and stabilized within a relatively close range of values (20.411–34.504 sN). This result proves that the device protects warp yarns from excessive tension, ensures their stability, and improves the overall quality indicators of the technological process.

Specifically, the use of the new device reduced warp yarn tension to optimal values, eliminated irregularities in tension, and enhanced the quality of the woven fabric. Consequently, this contributes to increased production efficiency, reduced product cost, and a significant decrease in the number of yarn breakages [8].

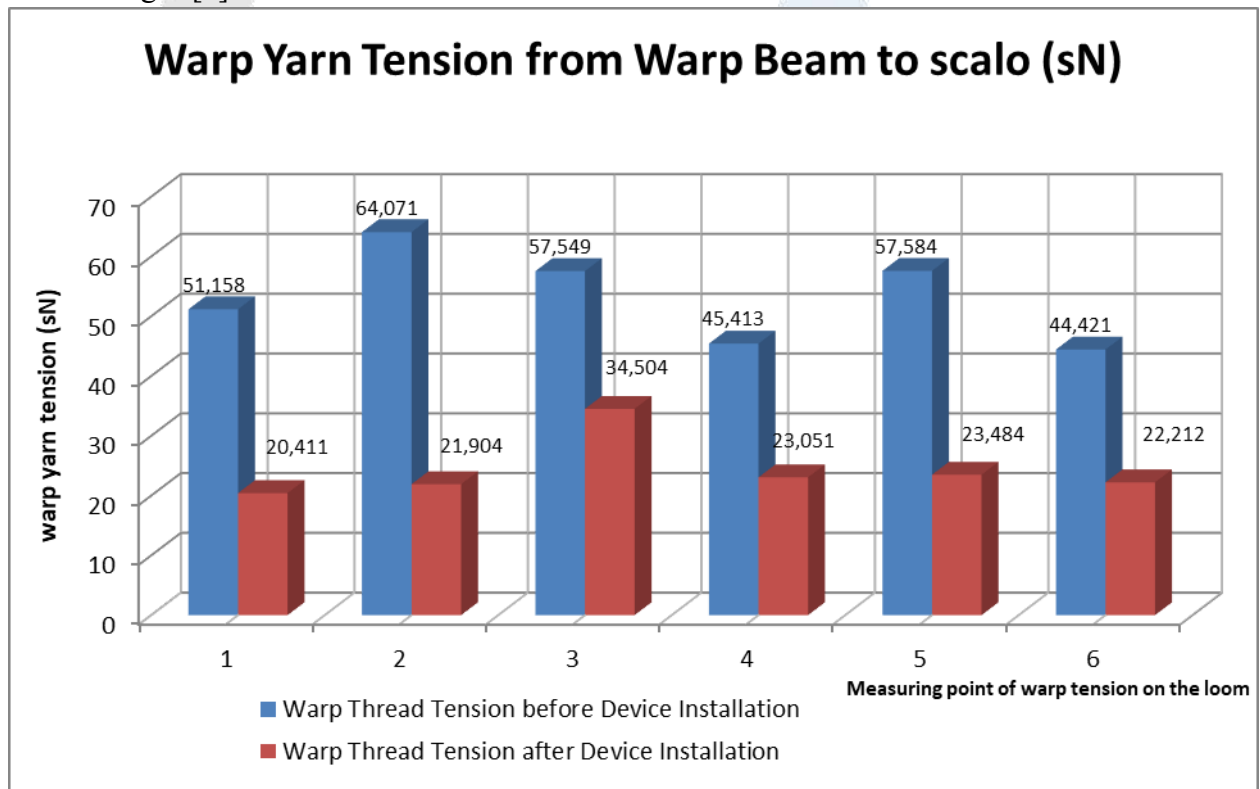


Figure 4. Experimental Results

In order to further supplement the practical studies and experimental results obtained in determining the warp yarn tension during the weaving process, as well as to obtain broader and more comprehensive data, the physical and mechanical properties of the warp yarns used in fabric production were also investigated. In this context, the main parameters such as yarn strength, elongation, elasticity, stiffness, and diameter were determined, and their influence on the warp tension during weaving was scientifically evaluated.

This additional analysis contributed to a more complete understanding of the yarn behavior within the technological process. Since the physical and mechanical properties of the yarns are directly related to warp tension during weaving, they determine the stable operation of the yarns without breakage, the quality of the woven fabric, and the productivity of the loom. Thus, by identifying the physical and mechanical characteristics of the yarns, not only the tension parameters but also more

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accurate and reliable conclusions regarding the efficiency of the entire weaving process and the quality of the final product could be drawn [9].

During the experiments, data were obtained on the breaking force, elongation at break, relative elongation, work at break, and time to break of Nm 34/1 yarns. These indicators make it possible to evaluate the physical and mechanical properties of the yarns and to determine their stability during the weaving process.

The results showed that the average breaking force of the yarns was 401.3 sN. The minimum value was 360 sN, while the maximum value reached 443 sN, with a coefficient of variation of 6.31%. This indicates that the yarns have relatively stable strength, sufficient for use in industrial production.

Analysis of the Physical and Mechanical Properties of Nm-34/1 Yarn

Physico-mechanical properties of Nm 34/1 yarn					
№	Break force (sN)	elongation (mm)	Elongation rate (%)	Break work (sN*mm)	time (sec)
1	380	17,9	3,58	35,76	2,15
2	425	19,7	3,94	46,24	2,36
3	402	17,1	3,42	37,43	2,05
4	436	18,9	3,78	44,62	2,27
5	401	16,1	3,22	31,41	1,93
6	376	15,9	3,18	31,68	1,91
7	360	18,3	3,66	34,83	2,2
8	370	17,7	3,54	35,3	2,12
9	419	20,4	4,08	46,52	2,45
10	407	18,5	3,7	40,63	2,22
11	372	15,5	3,1	31,09	1,86
12	403	16,7	3,34	37,09	2
13	443	21,2	4,24	48,87	2,54
14	423	18,5	3,4	40,63	2,22
15	407	17,3	3,46	37,56	2,08
medium	401,3	17,98	3,6	38,64	2,16
max	443	21,2	4,24	48.87	2,54
min	360	15.50	3,1	31.09	1,86
CV%	6,31	9,12	9,12	14,91	9,11

According to the experimental results, the average elongation length of the Nm 34/1 yarn was found to be 17.98 mm, with a relative elongation of 3.6%. The coefficient of variation (9.12%) indicates the presence of certain differences in elasticity among the samples; however, these deviations remain within the acceptable range for technological processes.

The work of rupture averaged 38.64 sN·mm, with the minimum and maximum values recorded at 31.09 sN·mm and 48.87 sN·mm, respectively. The coefficient of variation for this parameter was 14.91%, which is notably higher compared to other mechanical indicators. This suggests that the energy capacity of the yarn exhibits considerable variability, and the combination of strength and elasticity is not homogeneous across all samples.

The average breaking time was 2.16 s, and the results for different samples showed close agreement (coefficient of variation = 9.11%). Such results confirm the stability of the elongation process up to

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rupture, which is also supported by the graphical and tabular analysis presented. These findings provide evidence of acceptable uniformity in yarn behavior during tensile deformation [10].

Conclusion.

As a result of the conducted experimental studies, the physico-mechanical properties of Nm-34/1 yarns and the tension levels of warp threads during the weaving process were analyzed. The obtained results showed that the average breaking force of the yarns was 401.3 sN, elongation was 17.98 mm (3.6%), and the work of rupture amounted to 38.64 sN·mm. These physico-mechanical parameters indicate sufficient stability for application in production. However, the coefficient of variation (CV%) values within the range of 6–15% suggest a certain degree of irregularity in yarn strength and extensibility.

Experiments on warp yarn tension revealed that, under previously applied conditions, the yarn tension fluctuated between 44–64 sN. Such high tension levels can cause frequent yarn breakages, reduced process stability during weaving, and negative impacts on fabric quality. After the installation of the proposed device, the yarn tension was recorded in the range of 20–34 sN, which is considered a standard and stable value. As a result, yarn deformation decreased by 2–2.5 times, leading to a reduction in the number of breakages, an increase in machine productivity, and an improvement in fabric quality.

Overall, the experimental findings demonstrated that the proposed device effectively balances warp yarn tension during the weaving process, reduces yarn stress, and significantly enhances production efficiency.

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ARTISTIC INTERPRETATION OF THE THEME OF LUST

(Based on the works by Alisher Navoi)

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Abstract: This article is devoted to the artistic interpretation of the topic “lust” in Alisher Navoi’s divans. In his poems, lust is described as a barrier to man’s worldly desires and the path to spiritual purification. The article analyzes the poet’s expression of lust through symbolic images such as silent, violent and humiliating force. Conflicts between lust and love, repentance and humility are highlighted and their impact on the human psyche is examined. On the basis of the ghazals of Navoi, the ways to control lust and achieve spiritual elevation are discussed. The article serves to reveal the literary and spiritual significance of Navoi’s poetry.

Keywords: Alisher Navoi, “Gharoyib us-sigar”, “Navodirun nihoya”, “Hayratul abror”, lust, mysticism, love, repentance, humility, spiritual purification...

The genesis of the “lust” theme goes back to the Quran and hadith. In these sources, the topic is covered in extremely detailed. The subject has also been somewhat explored in the works of world scholars. In particular, in Najmiddin Komilov’s “Mysticism” [6], Muslihiddin Muhiddinov’s “Perfect human as an ideal of literature” [8], Ibrahim Haqqulov’s “Return to Navoi” [10,11], in addition, this topic has been studied in the research of many of our scholars, such as A. Muhammadiyev [6], Ibotova Madina [5], and Rajabova Marifat. After all, in the work of the great thinker, scientific and educational views on the soul and its upbringing were refined. For this reason, we agreed to start this article with an analysis of the well-established sources about how Navoi treated his ego.

Alisher Navoi is a great figure of Uzbek literature and culture, a poet, thinker and statesman who left an indelible mark on history. One of the most important qualities in his personality is humility. Navoi was famous not only for his unique creativity, but also for his attitude to people, dedication in public affairs and low behavior even when he had high positions. His feat is vividly described in historical sources, in particular in Mirkhand’s “Ravzat-us-safo”. The modesty of Navoi was a symbol of victory over lust, the constant desire to improve oneself and the preservation of humanity in any situation. This trait made him an instructive figure not only for his time, but also for later generations.

Alisher Navoi is recognized in Uzbek classical literature as a sage who left an incomparable legacy in terms of artistic representation of the lust and its spiritual

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levels. His works, in particular his poetic divans and his “Khamasa”, expressed the role of the lust in the human psyche, its influence in internal struggles and its obstacles to spiritual elevation, often through complex symbolic images.

The pedantry of Navoi makes him a worthy candidate in the artistic portrayal of various stages of lust – arrogance, pride and humility. In his works, the place of lust in human destiny is revealed philosophically and aesthetically in such a skill that it is indisputable that it is a real experience derived from his own spiritual journey. In this context, Navoi’s right to artistic representation of the lust and its ranks is determined by his literary talent as well as his devotion to his moral and spiritual principles. He saw lust not only as a negative force, but as the main test in a person’s struggle with himself. This enriched the images of lust of his works with deep psychological and philosophical content.

The historian Mirkhand writes in “Ravzat-us-safo”, that Alisher Navoi was given the role of sealer: “the King’s reach from the unequal absence of Alisher in charity, elegance and heart was in him all the time, and he bestowed on him the dignity of glory, ministry and emir. In short, the King first placed the great seal in the hands of Alisher, and the Emir spent some time in the position of sealer and also transferred the servitude from the upper Sky” [10. P.66].

In the divan “Navodirush shabob” by Alisher Navoi, Mirkhand wrote, there is the following passage written in 1476 based on the events surrounding Navoi’s position as sealer. Navoi writes in the title of this passage:

Chun manga lutf etti shah devonda muhr,
Bu edi eldin quyi muhr urmog‘im.
Kim, g‘ururi nafsi sarkash man‘ig‘a,
Barchadin bo‘lg‘ay quyi o‘lturmog‘im.
Chun shikasti nafs hosil bo‘lmadi,
Mundin o‘ldi muhrni sindurmog‘im [3. P.362].

The historical background from Mirkhand’s “Ravzat-us-safo” and its analysis provide an important context in the understanding of Alisher Navoi’s work. Now we will comment on the above poem on the basis of this historical and spiritual information:

Historical and spiritual analysis of the poem: “Chun manga lutf etti shah devonda muhr,” according to Mirkhand, Husayn Boyqaro gave Alisher Navoi the position of sealer as a “favor”. In this line, the poet professes the favor of the King. “Seal” here is not only a symbol of a practical career, but also a sign of high responsibility and trust. Navoi’s acceptance of this position marks the beginning of his career in the civil service.

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Bu edi eldin quyi muhr urmog'im – As Mirkhand noted, Navoi pressed the seal to the lowest position of the badge. This act is recorded in history as a manifestation of his humility and “broken ego”. Through the expression “eldin quyi” on the poem, the poet expresses that he sees himself below the people, that is, that he wants to maintain his humility despite his position.

Kim, g'ururi nafs sarkash man'ig'a – in this line, Navoi refers to his inner struggle. Mirkhand's interpretation is that Navoi pressed the seal down because his “ego is broken” (“nafsi siniq”), but here the poet also artistically reflected the difficulty of resisting “cynical pride” (“sarkash g'urur”) in his struggle with his soul. The idea of “overcoming the ego” in the line is clearly visible: the ego constantly drives a person to pride, but Navoi tries to suppress it.

Barchadin bo'lg'ay quyi o'lturmog'im – The modesty and humility of Navoi is reiterated in this line. Referring to Mirkhand's incident “xosu avomni hayron qilgan”, the poet states that he sees himself “below all”. This suggests that he paid attention to inner purity rather than external rank.

Chun shikasti nafs hosil bo'lmadi – here, Navoi criticizes himself. Although Mirkhand describes Nawai as “nafsi siniq” (“a broken lust”), the poet acknowledges his complete failure to overcome his lust from the status of humility. According to the definition of the upper stage of lust – “nafsul mutmainna”, described in the literature of mysticism, a person who has achieved this level will completely get rid of the riots of the lust. Navoi, on the other hand, does not want to consider himself worthy of this career yet. In other words, this situation is also a unique form of punishment for the ego, in our opinion.

Mundin o'ldi muhrni sindurmog'im – the line refers to the symbolic “breaking” of the seal. According to historical data, Navoi did not break the seal, but gave up his career. In the poem, it is expressed as an “imaginary break”. Unable to fully overcome his lust, he chooses to give up his career, and this will be his next step in his spiritual quest.

After a long period of time, the poet wants to leave this career and brings his goal to the King. The please was accepted. But Husayn Boyqara wants to appoint Navoi to an even higher rank — the office of the high emirate of Devon. Despite the poet's opposition, the work is carried out. When Husayn Boyqaro gave a badge to the hands of Navoi for "stamp in a certain hour", Mirkhand says that "when the soul is broken, the mark is placed in such a place that there is no room below it for a mark" [10. Page 68].

Analysis suggests that relying on the historical fact cited and the exaltation of the lust – nafsul mutmainna - this poem reflects the unique spiritual journey of Navoi. He is dissatisfied with the fact that although he has achieved a high rank in the

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outside world (rank, career), he cannot completely win his struggle with lust in his inner world. While his pressing of the seal to its lowest position is a manifestation of humility, it is not enough for himself, as he aspired to the rank of “nafsi mutmainna”. The symbol of “breaking the seal” in the poem is interpreted as the strict decision of Navoi to renounce office and turn away from secular prestige and towards spiritual purity. This is an expression of his high human qualities — humility and the desire to constantly perfect himself. Mirkhand’s testimony and historical events further enrich the deep spiritual layers of this poem, showing Navoi not only as a poet, but as a thinker who struggled with himself.

Alisher Navoi is recognized in Uzbek classical literature as a sage who left an incomparable legacy in terms of artistic representation of the lust and its spiritual levels. His works, in particular his poetic divans and his “Khamsa”, expressed the role of the lust in the human psyche, its influence in internal struggles and its obstacles to spiritual elevation, often through complex symbolic images.

As seen in the above poem of Navoi, he took an extremely demanding approach to lust and saw overcoming it as one of the basic conditions of spiritual maturation. This is evidenced by his unique Sufism worldview and deep attention to the purification process of the human soul. Therefore, the fact that Navoi has the right to an artistic depiction of lust is justified by his own inner experience and thought-provoking sharpness. For this reason, human spiritual perfection and moral purification were considered one of the important themes in the work of Alisher Navoi. In his works, he gives a broad artistic interpretation of the concept of “lust”, as it depicts the struggle between the turpitude and the sublime of the human soul. Navoi reveals the ways to get rid of the soul by showing it as an internal enemy of a person through moral-volitional experiments.

In the doctrine of mysticism, lust is interpreted as a concept that expresses a person’s negative moods, sexual desires and bad desires. In Islamic philosophy, lust is divided into three levels:

Nafsul ammora – the lust that drives man to evil. This lust is a state of lust that promotes man to evil, to follow his desires, and to sins. Scientist N.Komilov writes about Ammora lust: “...the Sufis show lust as the beginning of all calamities, before the murids was the task of destroying this satanic lust (“nafsi ammora”). One who can overcome one’s own self may think of others’ grief [P. 6.112]. Navoi writes in “Hayratul abror”:

Gah yiqilib, gah qo‘pub ul har nafas,
Mast solib har sori qo‘l har nafas.
May qilibon behuda holin aning,
Qay qilib oluda saqolin aning...

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Qay saqolin har necha nopok etib,
It yalamoq birla yana pok etib [4. P. 276].

"Gah yiqilib, gah qo'pub ul har nafas" – the poem artistically reflects the image of a drunkard in ammorā's lust. The mood of the lust (if it is not brought up) is always an incentive to evil. Lust constantly throws a person from one state to another, irritating him relentlessly. A person is sometimes sinful, sometimes trying to get out of it, but lust always keeps him back.

"Mast solib har sori qo'l har nafas" – drunkenness enslaves a person to sin and lust, constantly leading him astray.

"May qilibon behuda holin aning, Qay qilib oluda saqolin aning..." – the intoxicating drink leads a person to uselessness, humiliates his state and loses his honor. In this stanza, the laziness and filth of the soul is expressed through a powerful artistic image.

"Qay qilib" - vomiting, falling into a state of vomiting.

"Oluda" - dirty, dirt, feces.

That is, the soul is so low that it is not even ashamed to smear itself, get dirty. Here, the character of lust despising a person is described with strong artistry.

This poetic passage shows how lust leads a person in offensive and dirty ways. When a person loses respect for himself, the soul drowns him, and he falls into innocence and inferiority. In short, Alisher Navoi describes lust as an unstable, dirty and vile force. He despises a person, leads him to inferiority, and desecrates his soul and psyche.

"Qay saqolin har necha nopok etib" – that is, vomiting makes his beard dirty.

"It yalamoq birla yana pok etib" – there is a hint of sarcasm and irony here: a dog that is itself dirty is pretending to clean it.

In this poetic part, the rapidity of the nafsul ammorā in man is shown in an extremely expressive way. Lust is so filthy and condescending that it also does not inflame the concept of "purity" – according to it, being a people from impurity also occurs behind impurity. This is the peak of stupidity and laziness.

Navoi shows here that the lust reduces a person to an offensive state in a comic-critical style. It so pollutes his heart and soul that in whatever way he tries to "clean up", he is only immersed in another dilemma.

Such a fierce artistic influence can often be found in the comic and critical verses of Navoi. He fights hatred with insults and irony, and makes a look at what he is originally.

Nafsul lavvoma – self-blaming lust for bad deeds. This level is one of the important stages in the evolution of human ego. At this level, a person begins to realize his actions, to reproach, criticize his own self, striving for high spirituality.

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In other words, the fact that the lust begins to get rid of ammora is manifested at the stage of lavvoma. Hence, the next level of lust is “nafsul lavvoma” — “blaming lust”. In the Resurrection Surah of Qur'an, Allah said, “and by the reproachful lust.”, he swore. First of all, regarding the oaths of Allah of the universe presented in his Qur'an, it should be said that whatever God swears, this is valuable in his presence. So “blaming lust” is the same. Therefore, nafsul lavvoma is an important stage on the way to faith. In this case, a person cries out for his sins, criticizes himself and tries to return to the right path. Navoi said about this:

Bo‘lub nafsing‘a tobe’, band etarsen tushsa dushmanni,
Senga yo‘q nafsdek dushman, qila olsang ani qil band [2. P. 204].

From these lines it is seen that the real victory is the victory over the soul. Navoi believes that a person can overcome his external enemies, but the greatest struggle is a struggle with lust. A person can cope with every strong and cunning enemy. Yet submissive to his own self. In fact, the most inveterate enemy for a person is his ego. Navoi point out that if you overcome it, you first put a shackle on your own lust. Therefore, according to Navoi, the victory of a person over his own ego is greater than the defeat of a strong enemy. It is realized that the lavvoma stage of the soul is visible when, realizing its absurd deeds, it begins to defy the soul.

Alisher Navoi also expressed very deep spiritual thoughts about human ego, relying on Quranic logic. According to him, the greatest triumph of man is the victory against one's own self. Nafsul lavvoma is a period of purification, finding the right path to oneself and fighting with thought and will, and not with anger against lust.

Nafsul mutmainna – a full purgatory, a lust for God. This is the stage of reaching the highest levels of lust. According to Navoi, in order to reach this level, a person must destroy his lust, that is, get rid of his bad temptations. Lust destruction-a symbol of spiritual ascension:

Desang, bu yo‘lda o‘lay, nafsni burun o‘ltur,
Ki ishq shar‘ida go‘yo bu nav’ keldi qisos [2. P. 222].

Bu yo‘lda o‘lay – if you wish to perish in the way of the truth, kill the lust before the body dies. That is, a person must eliminate the bad temptations of his soul in order to achieve spiritual elevation and the status of true work. In this mysticism, “dying before dying” is called “fano filloh”. Its meaning is to abandon the desires of the lust, spiritual purification and closer to Allah.

Nafsul mutmainna – this is a state of lust peace and surrender to Allah. When a person gets rid of his desires, he achieves peace of mind. The next stages are rozia and marzia, which means that a person fully agrees to the will of Allah and reaches

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his love. Overcoming lust in the mystical views of Navoi is the main criterion necessary for spiritual elevation.

Alisher Navoi also interprets lust on the basis of this classification as the main factor that hinders human spiritual maturation. His characters are often depicted in the process of dealing with lust. Navoi's concepts about the soul are inextricably linked not only with the theoretical framework, but also with his personal life and spiritual quest. In his poems, such as the one analyzed above, he shows a critical attitude towards himself, describing his lust as "cynical" and "uninhibited". This proves that he is a person who not only learned the process of transition from low levels of lust (*nafsul ammora*) to high levels (*nafsul mutmainna*), but also tested himself in practice.

Three levels of lust – *nafsul ammora*, *nafsul lavvoma*, and *nafsul mutmainna* – were considered from the perspective of Uzbek classical literature and mysticism, based on the verses from Navoi's "Hayratul abror" and "Khazoyinul maoniy". The negative and positive aspects of lust in the human psyche, its evolution and role in spiritual ascension were revealed on the example of the artistic images of Navoi. This suggests that Navoi was a thinker who deeply interpreted the concept of lust not only in a philosophical framework, but also in a practical and aesthetic way. According to the scientific conclusion of the article, Navoi describes the level of lust "*nafsul ammora*" as a force leading a person to inferiority and desolation in a critical and comic style, which is evident in bibulous image in "Hayratul abror". And in the "*Nafsul lavvoma*" stage, the poet sees this level as an important step on the path to faith, emphasizing that a person reproaches himself and strives for spiritual purification.

Finally, the level of "*nafsul mutmainna*" is interpreted in the works of Navoi as getting rid of the evil temptations of the lust and achieving spiritual peace through submission to Allah. This rank is inextricably linked with the idea of "*fano filloh*" and is seen as the highest spiritual status of man.

The exactingness of Navoi makes him a worthy candidate in the artistic portrayal of various stages of lust – arrogance, pride and humility. In his works, the place of lust in human destiny is revealed philosophically and aesthetically in such a skill that it is indisputable that it is a real experience derived from his own spiritual journey. In this context, Navoi's right to artistic representation of the lust and its ranks is determined by his literary talent as well as his devotion to his moral and spiritual principles. He saw lust not only as a negative force, but as the main test in a person's struggle with himself. This enriched the exuberant imagery of his works with deep psychological and philosophical content.

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“Navodirun nihoya” written by Alisher Navoi is also an important monument of Uzbek literature, in which various aspects of the inner world, spiritual world of man, including the theme of “lust”, occupy an important place. Lust, that is, a person’s own desires, passions and internal conflicts, are widely covered in Navoi poetry from the point of view of mysticism. This article analyzes the theme of “lust” based on the above-mentioned poems by Navoi and examines its interpretation in the poems. For example, in the following poetic verse, Navoi describes lust as a force that humiliates man and leads him away from prayer and the right path:

Nafsing halokin istau topsang ani halok,
Zinhor motam ahli kibi qilmag’il jaza’ [3. P. 181].

In this verse, lust is described as a “tyrant” and a “impious”, which appears as a source of harm to the human mind and soul. Navoi here calls for spiritual purity by destroying the lust, that is, bringing it under control. In mysticism, lust is understood as overcoming “nafsi ammora” (the lust that command evil) and maturing into “nafsi mutmainna” (the calmed lust). Navoi perfectly expresses this idea in his poems.

In Navoi poetry, the conflict between lust and love (divine love) is one of the important themes. In one ghazal, the poet emphasizes the need to cleanse love from lust:

Ishq agar bo’lsa havoyi nafsdin pok, ey ko’ngul,
Yo’q tafovut dilbaring gar beka bo’lsun, gar mirak [3. P. 209].

In this verse, Navoi reveals the true meaning of love: if love is pure from desires of lust, it rises as divine love, then the material or social status of the inamorata (mistress) becomes irrelevant. Lust is described here as a contributing factor to the purity of love. According to Navoi, love is the path to spiritual elevation, and lust is the worldly passions that hinder it.

Navoi describes lust as a force that harms the human psyche, focusing on its consequences. In one ghazal in “Navodirun nihoya”, the poet states that lust despises man and asks him to make him a saint with humility:

Nafs xor etmish Navoiyni, aziz et faqr birla,
Ey jalolu rahmatingdin gar zalilu gar muazzaz [3. P. 125].

In this verse, the soul is shown as a force that pulls down the spiritual world of man. Navoi here raises the humility as an important weapon in the fight against lust. In mysticism, humility means giving up worldly desires and giving in to Allah. Navoi promotes the choice of the path of humility to get rid of the humiliating influence of lust.

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Lust and repentance. Another important theme associated with lust in Navoi poetry is repentance (return from sins). In the following verse, the poet describes breaking repentance due to lust and experiencing mental suffering as a result:

Tavba sindurdum, o'zumni g'ussadin o'lturmadim.

Ey Navoiy, istasang tinmoq, ishing tangriga sol [3. P. 260-261].

In these verses, Navoi indicates that lust is the force that drives man away from repentance. The poet laments his inability to repent, and attributes this to the power of lust. But he points out that in the end it is possible to exalt one's self by placing trust in God and asking him for success.

Symbolic image of the lust. Navoi expresses lust through various symbolic images. For example, in the following poem, the lust is described as a purple and playful child:

Ul sho'x ko'ngul lavhin etib tiyra nafasdin,

Bir tifldur, alqissaki ko'zgu bila o'ynar [3. P. 114].

Here, lust is seen as a boy who plays with a mirror, who is charming and deceives. This image expresses the tendency of the lust to show itself, deceiving a person and distancing him from reality. Through this symbolic image, Navoi reveals the playful and risky nature of the lust.

Conclusion.

In the divan "Navodirun nihoya" by Alisher Navoi, the subject of "lust" is widely and deeply illuminated from the point of view of mysticism. Lust is described as the greatest obstacle to man's worldly desires, passions, and spiritual purification. Navoi offers mystical paths such as humility, love and repentance against the harmful effects of lust. In his poems, lust is embodied as various symbolic images – silent, tyrant, humiliating force. The poet inspires a person to achieve spiritual elevation by fighting his own ego and bringing it under control. Navoi's verses on this topic are important not only as literary, but also as spiritual and moral guidance.

Navoi's insistence on his own ego is evident in his spiritual quest, expressed through his characters in "Khamsa" or in his independent ghazals. Therefore, his truthfulness and superiority in the artistic portrayal of lust is fully consistent with his sincere efforts in his own pursuit of spiritual perfection. Consequently, it can be concluded that Navoi is not only entitled to describe the place of lust in a person's life, but also a master of skill in this area.

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**THE SCIENTIFIC BASIS OF FOLK VIEWS ABOUT ZAHIRIDDIN
MUHAMMAD BOBUR**

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Abstract: In this article we wrote about the scientific foundations underlying folk views about Zahiriddin Muhammad Bobur, the founder of the Boburiy Empire. While folk narratives often portray Bobur as a heroic, wise, and just leader, this study demonstrates that such portrayals are not purely legendary but are frequently supported by historical evidence. By analyzing Bobur's own writings, especially the Boburnoma, along with other primary and secondary historical sources, the paper reveals how many elements in oral traditions align with actual events and character traits documented by scholars. Furthermore, the research draws on ethnographic and literary studies to examine how cultural memory and symbolic storytelling preserve and transmit historical truths. The study concludes that folk views of Babur, although sometimes shaped by imagination, have strong scientific and historical bases, making them a valuable part of understanding his enduring legacy.

Keywords: Boburiy empire, folk views, scientific basis, boburnoma, oral tradition, historical memory, cultural heritage, ethnographic analysis, historical truth.

Introduction. Zahiriddin Muhammad Bobur, the founder of the Boburiy Empire, holds a unique place in both historical scholarship and the cultural memory of the peoples of Central and South Asia. While scientific studies have explored his political strategies, literary contributions, and role as a political leader, folk traditions have preserved a more symbolic and emotional image of Bobur—one that reflects the values, hopes, and ideals of the communities that remember him. In local legends, poems, and oral stories, Babur often portrayed not only as a brave warrior but also as a wise and just ruler who cared for his people and land. At first glance, these folk portrayals may appear romanticized or exaggerated. However, closer analysis reveals that many of these narratives have roots in

historical fact. Bobur's own memoirs, particularly the *Boburnoma*, support many of the qualities attributed to him in oral tradition, such as his appreciation for nature, his poetic sensibility, and his leadership in times of hardship. Scientific research in the fields of history, ethnography, and literature shows that these folk views are often grounded in real events and characteristics, even if expressed through symbolic or artistic forms. This paper aims to explore the scientific basis of folk views about Zahiriddin Muhammad Bobur by comparing historical records with cultural narratives. It seeks to understand how fact and folklore interact to shape the lasting legacy of one of the most remarkable figures in the Islamic and Turkic world.

I.Literature Review The figure of Zahiriddin Muhammad Bobur has attracted considerable attention from both historians and cultural scholars. Scientific research into his life primarily centers on his political, military, and literary achievements, most notably preserved in his autobiography, the *Boburnoma*. This source has been analyzed by scholars such as Annette Beverage and Stephen F. Dale, who highlight its value in reconstructing Bobur's character and the early foundations of the Boburiy Empire. These studies confirm that Bobur was not only a skilled military leader but also a reflective thinker, poet, and lover of nature—traits often echoed in folk narratives. Folk views of Bobur, preserved through oral literature, epic poetry, songs, and legends, portray him as a larger-than-life figure. Researchers such as Muzaffar Alam and Francesca Orsini have explored how folk narratives function not merely as entertainment but as vehicles for cultural identity and collective memory. These stories often emphasize Bobur's courage, justice, wisdom, and emotional sensitivity—traits also mentioned in historical sources. Ethnographic studies further support the idea that folk traditions often retain kernels of historical truth, even when expressed in symbolic or poetic form. Several interdisciplinary works bridge the gap between historical fact and folklore. For example, studies in comparative literature and cultural anthropology have demonstrated how historical figures are mythologized in folk tradition while still maintaining connections to actual events. In the case of Bobur, this blending of reality and symbolism enriches our understanding of his personality and leadership. Overall, the literature suggests that folk portrayals of Zahiriddin Muhammad Bobur are not purely fictional or exaggerated. Instead, they are deeply rooted in historical realities, enhanced by cultural expression. By examining both scientific sources and folk traditions,

researchers can gain a fuller, more nuanced picture of Babur's legacy across regions and generations.

II. Methodology. This study employs a qualitative research methodology to investigate the scientific foundations of folk views surrounding Zahiriddin Muhammad Bobur, the founder of the Boburiy Empire. The research involves a comprehensive analysis of both historical texts and oral cultural materials to understand how Babur's legacy has been preserved and interpreted. The primary sources for this study include Babur's own writings, especially his autobiography, the *Boburnoma*, which provides firsthand accounts of his life, personality, and leadership. These texts are analyzed to extract information about Babur's character, military campaigns, and governance style. Secondary sources, such as scholarly articles, books, and historical commentaries, are reviewed to provide context and interpretation of Bobur's historical significance. In addition to written sources, the study examines folk narratives, including oral traditions, poems, and songs that have been passed down in regions once part of the Boburiy Empire. These cultural materials are collected through existing ethnographic studies and folklore archives. Content analysis is applied to identify recurring themes and symbolic representations of Babur in these folk expressions. A comparative analysis is approached to juxtapose the scientific data derived from historical research with the elements found in folk narratives. This allows for an evaluation of how closely folk views align with historical facts and where symbolic or legendary embellishments appear. The study also considers the social and cultural functions of these folk narratives in preserving collective memory and identity. By integrating historical analysis with ethnographic insights, this methodology aims to present a balanced and comprehensive understanding of Babur's legacy as seen through both scientific scholarship and folk tradition.

III. Analysis and Discussion The analysis of both scientific sources and folk narratives reveals a compelling interplay between historical facts and cultural memory in shaping the legacy of Zahiriddin Muhammad Bobur. Babur's autobiography, the *Boburnoma*, provides detailed accounts of his military campaigns, leadership qualities, and personal reflections, which serve as a reliable foundation for understanding his life. These documented facts often correspond closely with the traits celebrated in folk traditions, such as bravery, justice, and a

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deep appreciation for nature. Folk narratives, while sometimes romanticized or symbolic, preserve essential aspects of Babur's character and achievements that align with historical records. For example, the portrayal of Babur as a courageous and wise leader in oral stories reflects his documented military successes and strategic intelligence. Similarly, his love for gardens and poetry, frequently emphasized in folk songs and poems, finds direct confirmation in his own writings and historical analyses. The scientific basis for these folk views further supported by ethnographic studies that highlight how communities use oral traditions to maintain collective identity and transmit values across generations. These stories, although they may incorporate mythical elements, often contain a core of historical truth that reinforces cultural cohesion and pride. Thus, folk views are not simply fictional but serve as a complementary means of preserving and interpreting historical knowledge. However, it is important to recognize the differences between scientific and folk perspectives. While historians prioritize empirical evidence and chronological accuracy, folk narratives prioritize moral lessons, emotional resonance, and cultural symbolism. This divergence means that some elements in folk traditions may exaggerate or simplify events for dramatic effect, yet these embellishments contribute to the enduring relevance of Babur's legacy in popular culture. In conclusion, the analysis demonstrates that folk views about Zahiriddin Muhammad Bobur have a solid scientific basis rooted in historical fact. The interaction between documented history and oral tradition enriches our understanding of Babur, revealing how his life and achievements continue to inspire and influence cultural identities. Acknowledging both perspectives allows for a more nuanced appreciation of one of history's most remarkable figures.

IV. Comparative Analysis. When comparing the scientific accounts of Zahiriddin Muhammad Bobur's life with the folk narratives that surround his legacy, several notable similarities and differences emerge. Scientific sources, including Babur's autobiography—the *Boburnoma*—and academic historical studies, provide a detailed, factual portrayal of Babur as a skilled military leader, a shrewd statesman, and a sensitive poet. These sources emphasize his strategic acumen, political challenges, and personal reflections grounded in real historical events. In contrast, folk narratives often present a more symbolic and idealized image of Bobur. Oral traditions, folk songs, and poems tend to highlight his heroism, moral integrity, and

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deep connection to the common people and nature. While these depictions may sometimes embellish or dramatize his qualities and deeds, they serve to elevate Bobur into a cultural icon whose virtues embody communal values and aspirations. Despite these differences, there is significant overlap between the scientific and folk portrayals. Both perspectives acknowledge Bobur's bravery, leadership, and poetic sensibility. For example, the admiration for his love of gardens and nature is evident both in his personal writings and in folk stories that celebrate this trait as part of his compassionate character. This convergence suggests that folk traditions are not purely imaginative but often rooted in authentic historical experiences. However, the modes of presentation differ. Scientific narratives focus on chronological accuracy, causality, and evidence-based interpretations, while folk narratives emphasize emotional engagement, moral lessons, and symbolic meaning. This means that some folk stories may simplify complex historical realities or incorporate supernatural elements to enhance their impact. Ultimately, the comparative analysis reveals that both scientific and folk views contribute uniquely to the collective memory of Babur. Scientific research provides a factual foundation and critical understanding of his life, while folk traditions preserve his legacy in a form that resonates emotionally and culturally with communities. Together, they offer a more holistic and enriched portrait of Zahiriddin Muhammad Bobur as both a historical figure and a cultural hero.

Conclusion. In conclusion, the exploration of both scientific and folk views about Zahiriddin Muhammad Bobur reveals a rich and multifaceted legacy. Scientific research, grounded in historical texts like the Boburnoma and scholarly analysis, provides a detailed and evidence-based understanding of Babur's life, leadership, and cultural contributions. Meanwhile, folk traditions, preserved through oral stories, poems, and songs, offer a symbolic and emotional portrayal that reflects the values and identity of the communities that remember him. The scientific basis of these folk views demonstrates that popular narratives are often deeply rooted in historical fact, even when expressed through metaphor or legend. This intersection between fact and folklore enriches our comprehension of Babur's significance, showing how his image continues to inspire across generations. Recognizing the complementary roles of both perspectives allows for a fuller appreciation of Bobur not only as a historical emperor but also as a timeless cultural icon. Ultimately,

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integrating scientific analysis with an understanding of folk memory provides a holistic approach to studying historical figures like Zahiriddin Muhammad Bobur, highlighting the enduring impact of his life and legacy on history and culture.

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**SPEECH AND THE SYNTAX OF COMPLEX SENTENCES IN
DRAMATIC WORKS DEDICATED TO AMIR TEMUR**

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Abstract: This article analyzes the poetics of speech in Uzbek and world literary works about Amir Temur, as well as the types of conditional subordinate complex sentences used in them, and the purposes pursued by the authors through their application. In addition, we scientifically investigated the functions intended by the use of such conditional subordinate complex sentences in works about the great Sahibqiron created in different times and regions.

Keywords: K.Marlowe, chronotope, syntax, conditional subordinate complex sentences, morphology, punctuation, Tamburlaine.

When analyzing the poetics of works belonging to different genres, it is necessary to pay close attention to their linguistic features. Since literature is the art of words, it naturally forms a unity with linguistics and translation. In linguistics, the word is a tool of communication, while in artistic literature it serves as material for depiction and expression. Therefore, to analyze the lexical, grammatical, and syntactic aspects of words—the main tools of literary creativity—and to identify the use of subordinate complex sentences, knowledge of linguistic principles is essential.

Even if a writer clearly understands the lexical meaning of words and sentences, failure to fully grasp their grammatical meaning can result in inconsistencies in imagery and expression. Moreover, a writer, poet, or playwright

must master the rules of syntax, which study the interrelation of words and the types of subordinate complex sentences.

As Professor Dilmurod Quronov noted: “When speaking of the characteristics of artistic speech, its imagery is considered first of all. It is known that most words in the language inherently have figurative qualities. However, the imagery of artistic speech occurs through the systematic arrangement of those words in semantic and grammatical relation, that is, it is secondary imagery. Artistic speech does not merely convey information, but creates linguistic images in periodic sequence, ultimately confronting the reader not with a bare conclusion but with an artistic reality.” [1; 241]

This ability to use “words with figurative nature” to create “linguistic images in sequential order” becomes possible only through adherence to syntactic laws. From this perspective, the study of speech and syntax in dramatic works dedicated to Amir Temur is of great importance. Analyzing simple and complex sentences, alongside their morphological and syntactic properties, as well as punctuation differences in Uzbek and English, defines the scope of this research.

This theoretical perspective can be observed in the analysis of Abdulla Oripov’s drama *Sohibqiron*, dedicated to Amir Temur. The speech of the characters creates a strong semantic unity, confirming the correctness of these views.

Temur:

Boyazidga yana maktub yo‘llagan edik,
Yana imkon bergan edik o‘ylab ko‘rishga.
Biroq hanuz javob yo‘qdir.

Muhammad Qovchin:

Balki Boyazid

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Tavba qilib o'tirardi, agar jura'ti so'nib.

Yo adolat jabhasida biz to'kkan qonlar

Nazaringda, sel misoli ko'pirmoqdami?" [2; 406]

Temur's words about sending a letter to Bayezid lead Minister Muhammad Qovchin to comment on the fear of bloodshed, which angers Temur. He quickly asserts that he is not a cruel ruler who enjoys unjust bloodshed, but that he shed blood solely for the sake of justice. The drama depicts the reactions of various officials, commanders, and ordinary people to Temur's military campaigns, while emphasizing Sahibqiron's arguments.

If the author had conveyed Temur's justification only through his direct speech, without dialogic exchanges, the depth of logical and artistic expression in these passages would have been lost. The information would then resemble a sermon rather than a dramatic conflict. For example, in the line "*Tavba qilib o'tirardi, agar jura'ti so'nib*" ("He might have repented, if his courage had failed"), we observe a conditional subordinate clause. In Uzbek grammar, this is a complex sentence with a conditional clause, while in English grammar such clauses are classified mainly as real, unreal, or mixed conditionals. This shows that the author's purpose is not to explain grammatical categories but to reveal the psychological state of the character.

When analyzing the syntax and use of subordinate clauses in Ma'ruf Jalil's drama *Sohibqiron*, it is first necessary to note the presence of an epic spirit in the work. Unlike many other dramas, this one describes in detail the events connected with Amir Temur's entry into the political struggle. Explanatory notes that would typically belong to the author are instead entrusted to the speech of the characters themselves. The playwright considers acquainting the audience with the historical realities of that period as one of his main tasks.

It is also important to remember that the dramatic works we analyze here are written in verse form. While the original text of K. Marlowe's play about Tamburlaine contains rhyme, the dramas of Abdulla Oripov and Ma'ruf Jalil are written in blank verse. This indicates that inversion and subordinate constructions are dictated by the requirements of the genre, and the use of subordinate clauses clarifies the author's intention.

In Uzbek classical and modern literature, there exist numerous poetic and prose works dedicated to Amir Temur. At the beginning of the 20th century, the spread of Jadid ideas in Turkestan strengthened the process of national self-awareness. Jadid poets created many poems about Sahibqiron Amir Temur, who had once spread the fame of Turkic peoples throughout the world. Abdurauf Fitrat, for example, in his poem *Yurt qayg'usi* ("The Sorrow of the Homeland"), addressed the homeland as "Mother," recalling the blood of ancestors like Temur flowing in the nation's veins:

Abdurauf Fitrat – "Yurt qayg'usi"

Onam! Seni qutqarmoq uchun jonmi kerakdir?
Nomusmi, vijdon bila imonmi kerakdir?
Agarkim, Temur bila Chingiz qoni toshar tomirimizdan,
Aytgil! Seni qutqarmoq uchun qonmi kerakdir?" [3; 31]

Thinkers emphasized that to awaken a nation from the slumber of negligence, it was necessary to remind it of its history and promote it. Realizing this, Fitrat sought to inspire his people by recalling the heroism of Sahibqiron, their forefather. In another prose piece of *Yurt qayg'usi*, Fitrat appeals directly to Amir Temur, lamenting the miserable state of the nation and crying out to the Sahibqiron to heal the people's wounds. In this poem, the predominance of simple sentences instead of complex ones shows the poet's choice of form for lyrical inspiration.

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A striking example of Jadid literature's emotional appeal is seen in these lines:

Fitrat:

“Bag‘rim yoniq, yuzim qora, ko‘nglim siniq, bo‘ynim bukuk.

Sening ziyoratingga keldim, sultonim!

Ezilgan boshim, qisilgan vijdonim, kuygan qonim, o‘rtangan jonim uchun bu sag‘anangdan davo izlab keldim, xoqonim!

Yuz yillardan beri jafo ko‘rsa, g‘am chekib kelgan turning qonli ko‘z yoshlarin etaklaringga to‘karga keldim.

Qorong‘uliklar ichra yog‘dusiz qolgan o‘zbek ko‘zlari uchun tuprog‘ingdan surma olg‘ali keldim.” [4; 33]

This example demonstrates how conditional subordinate clauses can reflect the author's passionate emotions and his vision of history. Fitrat uses such constructions not only for grammatical effect but also to intensify the expression of the nation's centuries-long suffering.

The dreams and appeals of the Jadid poets can also be compared with the works of English poets, such as Victor James Daley, who grew up in England and was influenced by legends and perceptions about Temur:

Victor James Daley – “Tamerlane”

LO, upon the carpet, where
Throned upon a heap of slain
Blue-eyed dolls of beauty rare
(Ah, they pleaded all in vain!)
Sits the Infant Tamerlane!

Broken toys upon the floor
Scattered lie—a ruined rout.
Thus from all things evermore
Are—the fact is past a doubt—
Hidden virtues hammered out [5].

Conclusion In conclusion, syntactic analysis of this kind shows that the creative works about Amir Temur studied here—by James Daley, Charles Lamb, Edgar Allan Poe, Muhammad Yusuf, Iqbol Mirzo, N. Afoqova, I. Subhoni, and others—contain numerous examples of subordinate complex sentences. This opens up wide opportunities for further research in the field.

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THEORETICAL MODELS AND DIRECTIONS OF HUMANIZATION OF EDUCATION

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Annotation. This article analyzes the importance of humanitarianism in educational jaroyon, competitive networks, as well as theoretical areas of application in practice. In particular, modern works of the concept of humane education, their impact on pedagogical activity, are reflected on socio-informational aspects.

Keywords: humanitarian, educational system, personality-oriented methodology, democratic orientation, pedagogical model;

Introduction

As you know, the current period is characterized not only by the development of technologies, but also by an increase in attention to the human personality and its development. In the field of education, digitalization, along with the introduction of artificial intelligence tools, the emphasis on humanitarian grounds is becoming more and more relevant. Today's modern education is not just a means of giving knowledge, but an important factor in the formation of humanity. Therefore, the introduction of humanitarian principles in education is seen today as one of the main directions of world and national educational concepts.

Humane education means the organization of the educational process taking into account the personality of a person, his needs, values and interests. According to this model, the teacher now acts as a guide, assistant, and partner, rather than just an informant. herefore, the introduction of humanitarian principles in education is seen today as one of the main directions of world and national educational concepts.

Main part. The activities carried out to humanize the educational system serve to prioritize higher qualities such as sincerity, fairness, humanity, faith and conscience in the skills and qualifications formed through the disciplines of socio-economic and humanitarian areas and on the basis of mastering common cultural, spiritual and moral norms and values, along with the knowledge of students and students within their specialties. This direction aims to ensure the health of society, socio-economic stability, cultural-spiritual progress, environmental clearance, peace and tranquility of the country, as well as to form a sense of loyalty and responsibility for the motherland in the professional activities of future specialists.

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In the context of modern globalization and technological progress, one of the main tasks facing the educational system is to further humanize it. This process is intended not only at obtaining knowledge, but also at ensuring that each individual has full maturity, realizes his potential and finds his place in society. The concept of humane education means the organization of the educational process, taking into account the interests, abilities, needs and individual characteristics of the individual. This in turn requests a revision of the content, forms and methods of Education.

There are several approaches to theoretical models for humanizing education, the most basic of which are:

Personality-oriented (personocentric) model. At the heart of this model are the specific aspects of the student's personality. The educational process is built in accordance with each student or student, taking into account his personal characteristics, learning styles and pace of development. The teacher is involved in the process as a referrer, counsellor, and partner rather than an informant. Personality-oriented (personocentric) model. At the heart of this model are the specific aspects of the student's personality. The educational process is built in accordance with each student or student, taking into account his personal characteristics, learning styles and pace of development. The teacher is involved in the process as a referrer, counsellor, and partner rather than an informant. Students will be able to choose the direction of Education, set the speed of mastering and assess their level of knowledge. This model places particular emphasis on developing creativity and independence.

Activity-based (activity-oriented) model. This model provides for the organization of the educational process on the basis of the practical activities of the student. Theoretical knowledge is strengthened through practical training, projects, creative tasks. The reader is involved in this model as a researcher, researcher, and creator, not just a learner. This approach expands problem-solving skills, opportunities for independent thinking and practical experience. Activity-based (activity-oriented) model. This model provides for the organization of the education

Collaborative (cooperative) model. In this model, the educational process is based on cooperation and interaction between students. Students exchange experiences, share ideas and thoughts, solve problems together. This approach develops communication based on social skills, Communication Culture, group work, mutual respect with peers. Collaborative (cooperative) model. In this model, the educational process is based on cooperation and interaction between students. Students exchange experiences, share ideas and thoughts, solve problems together.

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This approach develops communication based on social skills, Communication Culture, group work, mutual respect with peers. Collective projects, group work, peer – to-peer training are the main components of the model.

A model focused on personal maturity (based on individual development). This approach sees education as a tool for the formation of a comprehensive perfection of a person. This model focuses heavily not only on the intellectual, but also on emotional, moral, social and physical development. In the educational process, opportunities are created for the student to realize himself, form values, identify life goals and find ways to achieve them.

The directions of humanization of education are formed on the basis of the theoretical models described above and include the following basic principles:

Democratization. Creating equal opportunities for representatives of all walks of life in education, ensuring the right of each citizen to receive quality education, is seen as an important task. This, in turn, requires the enrichment of educational content, the improvement of methods and the expansion of wide access to educational resources.

Humanization. The organization of the educational process based on the principles of human values, personality dignity and respect is the basis of humanization. This approach envisages the formation of the interaction between the teacher and the student in the spirit of equality, trust and cooperation.

Individualization. Indicates the desire to adapt the educational process, taking into account the specific characteristics, needs and interests of each student. **Humanization.** The organization of the educational process based on the principles of human values, personality dignity and respect is the basis of humanization. This approach envisages the formation of the interaction between the teacher and the student in the spirit of equality, trust and cooperation.

Individualization. Indicates the desire to adapt the educational process, taking into account the specific characteristics, needs and interests of each student. Through this approach, freedom in the choice of educational programs and flexibility in learning styles are increased.

Theoretical models of humanization of Education:

a) humanistic pedagogical model this model A. Maslow, K. Rogers and J. Formed based on Dewey's ideas, at the heart of which stands the uniqueness of Man and the possibility of independently bringing his own self to the surface. In this

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approach, the student is approached as a person, while empathy, trust and sincerity occupy an important place in the educational process.

b) the model of democratic education ensures the participation of the teacher and the student as an equal subject. Mutual cooperation in processes such as decision-making, setting assessment criteria, organizing training activities is considered as the main principle. This approach enhances social activism and responsiveness in the individual.

c) in a model based on anthropocentric model anthropocentrism, a person is not recognized as a fragment of society, but as a source of social and moral values. Of particular importance will be the psychological state, worldview and internal motivation of the military student. The educational process is organized with an individual approach.

Areas of humane education.

a) personality-oriented education in this approach, the individual capabilities, needs and abilities of the student are based. Education is organized not on the basis of standards, but in accordance with the needs of the individual's creativity, which in turn increases motivation and allows for self-expression.

b) the moral and educational approach seeks to form human qualities in a person-courage, honesty, patience, tolerance and independence. Through this approach, along with knowledge, moral maturity is also seen as the main goal.

c) the creation of a psychologically healthy environment in humane education is based on mutual respect, a safe, open and positive environment, which must be developed.) the moral and educational approach seeks to form human qualities in a person-courage, honesty, patience, tolerance and independence. Through this approach, along with knowledge, moral maturity is also seen as the main goal.

c) the creation of a psychologically healthy environment in humane education is based on mutual respect, a safe, open and positive environment, which must be developed. The school environment, in which the student can freely express his opinion, feel heard, is conducive to the effectiveness of education and provides the basis for Social Development.

Conclusion. In conclusion, the humanization of education is a complex, but relevant and necessary reform. By correctly realizing this process and fully introducing its theoretical foundations into practice, we can educate a young generation that is not only educated, but also spiritually mature, responsible and

creatively minded. This, in turn, sets the stage for the comprehensive development of society.

Humanization of education means not simply updating methods but directing the content and purpose of the entire educational system to the perfection of the human personality. Only when each student feels valued, listened to and understood does he grow up ready for life. This approach, in turn, not only increases the effectiveness of education, but also serves to strengthen the foundation of a healthy and sustainable society.

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INTEGRATION OF SCIENCE AND EDUCATION: MODERN APPROACHES

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Annotation: This article comprehensively analyzes modern approaches to the integration of science and education, highlighting their pivotal role in transforming the education system. It examines the historical, theoretical, and social foundations of integration, explores the STEAM model, virtual reality (VR), artificial intelligence (AI), mobile-assisted learning (MALL), robotics, research groups, and pedagogical domains in depth. Global trends, challenges, and future prospects are discussed, with a focus on innovative approaches within the context of Uzbekistan's education system, supported by Uzbek scholarly literature. The article provides practical recommendations to enhance educational quality and contribute to socio-economic development.

Keywords: science and education integration, STEAM model, artificial intelligence, virtual reality, mobile learning, didactic games, research groups, digital transformation, environmental education, innovative pedagogy, inclusive education, digital literacy, global competitiveness.

The development of modern education systems is grounded in the organic integration of science and education, serving to foster intellectual capacities, enhance innovative potential, and contribute to the socio-economic progress of society. The integration of science and education not only enriches theoretical knowledge with practical research but also stimulates the creative engagement of students, educators, and the scientific community, fundamentally transforming the educational process. Scholarly literature emphasizes that this synthesis, particularly in pedagogical universities, serves as a key mechanism for training innovative professionals by involving students in research activities and enhancing their professional competencies. While the historical roots of this approach trace back to the second half of the 20th century, notably during the Bologna Process and the scientific-technological revolution, it has now entered a new phase driven by digital transformation, globalization, and socio-economic changes. This process relies on multidimensional analyses that consider not only traditional metrics but also the societal impact of scientific outcomes.

In the context of Uzbekistan, the integration of science and education aligns with the country's Development Strategy for 2022–2026, which prioritizes improving educational quality, introducing innovative approaches, and ensuring global competitiveness. For instance, the "Digital Uzbekistan – 2030" strategy emphasizes the widespread adoption of information and communication technologies (ICT) in education and the strengthening of the synergistic effect of science and education. This process encompasses multifaceted issues, such as developing pedagogical competencies, increasing parental involvement, protecting the younger generation from information threats, and integrating scientific and technological advancements into education. The primary goal of integration is to align education with real-world challenges, fostering students' critical thinking, creative potential, digital literacy, and adaptability. This approach contributes not only to academic success but also to socio-economic development by promoting a knowledge-based economy, encouraging innovative entrepreneurship, and enhancing national competitiveness.

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Among modern approaches, the STEAM (Science, Technology, Engineering, Arts, Mathematics) model holds a prominent place. This model integrates science, technology, engineering, arts, and mathematics, fostering interdisciplinary learning to develop students' problem-solving skills. The implementation of STEAM, particularly in K-12 education, has proven effective in evolving curricula, equipping students with technical knowledge while nurturing creative thinking, collaboration, and communication skills. For example, project-based learning enables students to address real-world problems, applying theoretical knowledge in practical contexts. The strength of this model lies in its ability to align educational programs with societal and economic needs, boosting student motivation and cultivating 21st-century skills such as critical thinking, digital literacy, and adaptability. In Uzbekistan's education system, the STEAM model is being introduced through didactic games in preschool and primary education. For instance, object-based, card-based, and verbal games enhance children's imagination, attention, and speech, necessitating the improvement of pedagogical competencies. Furthermore, integrating subjects like history, biology, and geography fosters national values and a scientific worldview. Projects addressing the Aral Sea crisis and environmental issues engage students in matters of social responsibility and environmental protection, demonstrating the synergistic impact of science and education.

Technological innovations are a cornerstone of science and education integration, with tools such as virtual and augmented reality (VR/AR/XR), artificial intelligence (AI), mobile-assisted learning (MALL), and educational robotics making the learning process immersive and interactive. VR technologies enable students to conduct experiments in virtual laboratories, creating safe and effective environments for studying physics, chemistry, and biology. Research indicates that VR-based lessons can increase student engagement by 30–40%, as these technologies facilitate visual and experiential learning. Artificial intelligence offers personalized learning platforms, tailoring content to individual student needs. For example, AI-driven platforms analyze students' knowledge levels and provide customized learning plans, though concerns have been raised about algorithmic biases potentially exacerbating educational inequalities. Mobile-assisted learning (MALL) and educational robotics allow students to conduct real-time experiments via mobile devices, transforming abstract concepts into practical applications in line with constructivist theory. In Uzbekistan's education system, the integration of ICT, such as multimedia and interactive lessons in mathematics and language instruction, enhances students' communication skills and critical thinking. Notably, role-playing games in foreign language teaching simulate real-life communication scenarios, strengthening communicative competence, increasing motivation in English classes, and fostering logical thinking and independent personality development. In environmental education, mass media (radio, television, and the internet) raise awareness about environmental issues, such as the Aral Sea crisis and desert afforestation projects, highlighting the societal impact of science and education integration.

At the university level, the integration of science and education is facilitated through research groups, where students participate in scientific conferences, research circles, and international online research projects, synchronizing theoretical knowledge with empirical data. The effectiveness of such groups has been demonstrated in experiments at Shadrinsk State Pedagogical University, where students' research competencies and self-directed learning motivation increased, supported by digital technologies (computers and network tools) for data analysis. In Uzbekistan, collaboration between universities and research institutions, such as patent development and international cooperation, can boost innovation by up to 85%, aligning with the

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“Digital Uzbekistan – 2030” strategy. In special education, didactic games play a crucial role in developing cognitive and social skills for children with developmental challenges, requiring pedagogical interventions. For instance, interactive platforms introduced in Uzbekistan’s special education institutions facilitate the integration of children with disabilities into the educational process, a key aspect of inclusive education.

In pedagogical education, the three main domains of technology integration—pedagogical, scientific, and technological—play a critical role in teacher training. These domains ensure the effective application of technologies in science classes and foster students’ digital thinking. For example, blockchain technologies promote inclusivity in education by protecting personal data, thereby facilitating access to science education for underserved groups, though long-term research is needed in this area. Globally, the integration of science and education aligns with the United Nations’ Sustainable Development Goals (SDGs), addressing environmental and social challenges. Virtual network education and academic mobility strengthen international collaboration, enabling students to understand global issues and develop innovative solutions. In Uzbekistan, automated systems in marketing logistics and financial management transform the integration of science and education into economic efficiency, reducing costs by 30–40%. For instance, digital platforms introduced at the National University of Uzbekistan enable students to engage in real-time economic modeling, ensuring the practical integration of science and education.

In conclusion, modern approaches to the integration of science and education such as the STEAM model, technological immersion, research groups, and inclusive education make the education system not only more effective but also more equitable. These approaches are being implemented in Uzbekistan’s education system in alignment with national strategies, though challenges such as digital divides, resource shortages, and the need to enhance teacher training require systemic reforms. In the future, technologies like AI, XR, and blockchain will further enrich integration, playing a leading role in shaping a global knowledge society. In Uzbekistan, this process contributes to national development by improving educational quality, engaging youth in innovative activities, and raising environmental awareness. Therefore, expanding international cooperation, strengthening state policies, and developing pedagogical competencies will ensure that the integration of science and education remains a key driver of society’s intellectual and economic progress.

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VOICE DEVELOPMENT OF PRESCHOOL CHILDREN

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Abstract. This article examines the voice development of preschool children, focusing on its physiological, psychological, and pedagogical aspects. The human voice is the first musical instrument a child encounters, and its development during early childhood has a profound impact on communication, emotional expression, and musical ability. Preschool age is a critical period for cultivating healthy vocal habits, as the vocal apparatus is still fragile and developing. The article highlights the main stages of vocal growth, the challenges educators face in guiding children's voices, and the role of play, creativity, and supportive environments in nurturing proper vocal development.

Keywords: Voice development, preschool children, vocal growth, music education, child psychology, singing, communication.

INTRODUCTION

The development of the voice in preschool children is a subject of great importance in both music education and child psychology. The preschool years represent a sensitive stage in which children acquire language, refine auditory perception, and begin to express themselves through song and speech. Unlike later stages of life, vocal development at this age is strongly influenced by imitation, play, and emotional engagement rather than by formal training. Understanding the processes and challenges of preschool voice development enables educators and parents to create appropriate conditions for nurturing healthy vocal habits. Neglecting this aspect of development can lead to vocal strain, limited expression, or even long-term difficulties in communication and self-confidence.

MATERIALS AND METHODS

The physiological foundation of preschool children's voice development is shaped by the immaturity of the vocal apparatus. At this age, the larynx is small, the vocal folds are short and thin, and the respiratory system is not yet fully developed. This results in a naturally limited vocal range, usually confined to a narrow tessitura. Attempting to expand this range prematurely or encouraging children to sing too loudly can cause strain and potential harm. For this reason, preschool voice development should focus on light, natural vocalization, guided breathing, and gentle exercises that respect the child's physical limitations.

Equally important is the role of auditory perception. Preschool children often struggle to match pitch or sustain melodies accurately, as their ear-voice coordination is still developing. They tend to sing closer to their speaking voice, producing approximate rather than precise pitches. This should not be considered a flaw but rather a normal developmental stage. Teachers can support pitch accuracy by using echo games, call-and-response activities, and songs with narrow melodic intervals. Over time, these activities strengthen the auditory system, enabling children to adjust their voices more accurately and confidently [1].

RESULTS AND DISCUSSION

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The psychological aspects of vocal development are equally significant. Young children often feel shy about singing individually and may hesitate to use their voices in front of others. Negative feedback or harsh correction can damage self-esteem and discourage participation. Instead, children need positive reinforcement and encouragement to explore their voices freely. Group singing activities reduce self-consciousness by allowing children to blend into a collective sound, while playful improvisations and imaginative exercises stimulate creativity and remove anxiety. In this sense, psychological safety is a prerequisite for healthy voice development [2].

Language development is also closely tied to voice growth in preschool years. Singing helps children improve pronunciation, rhythm of speech, and vocabulary acquisition. Songs with repetitive structures, rhymes, and clear articulation exercises contribute to phonological awareness, which is essential for literacy skills. Thus, voice development in preschool children is not only a musical concern but also a linguistic one, supporting broader cognitive growth. Teachers and parents who encourage children to sing simple songs, recite rhymes, and play with sound patterns are also strengthening early literacy foundations.

Environmental factors strongly influence vocal development. Children who grow up in musically rich environments, where parents and teachers sing regularly, are more likely to develop healthy voices and stronger musicality. Conversely, children with little exposure to singing may display delayed or limited vocal expression. The quality of the environment matters as well: calm, supportive, and engaging atmospheres encourage children to experiment with sound, while stressful or overly rigid settings can inhibit vocal exploration. Educators must therefore create classrooms that integrate music into daily routines, making singing a natural part of learning and play [3].

An additional challenge lies in selecting appropriate repertoire for preschool voice development. Songs must match children's vocal range, avoid extreme high or low notes, and use simple, repetitive structures. Folklore songs, lullabies, and playful melodies are especially effective because they are easy to learn, culturally meaningful, and emotionally engaging. Introducing children to a wide variety of songs—traditional, modern, and multicultural—broadens their auditory experience and stimulates creative expression, while still respecting developmental boundaries.

Finally, voice development must be guided with an awareness of long-term vocal health. Preschool children should never be forced to sing loudly or perform technically demanding tasks. Instead, vocal exercises should emphasize relaxation, natural breathing, and joy in singing. By developing these habits early, children establish a foundation for healthy vocal use that will serve them throughout their lives, whether in everyday communication, public speaking, or musical performance [4].

CONCLUSION

Voice development in preschool children is a complex process influenced by physiological, psychological, cognitive, and environmental factors. Early childhood represents a formative stage in which children learn not only to control their voices but also to express emotions, develop language, and build confidence. Teachers and parents play a crucial role in supporting this process by providing safe, playful, and encouraging environments. Through appropriate repertoire, positive reinforcement, and sensitivity to children's developmental needs, educators can nurture healthy vocal growth and instill a lifelong love for singing and music. The prospects for preschool

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voice development in Uzbekistan and worldwide lie in balancing traditional practices with innovative pedagogical methods that respect the uniqueness of each child's voice.

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FORMATION OF SOCIAL RELATIONS IN PRESCHOOL CHILDREN

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Abstract. This article explores the process of forming social relations in preschool children, focusing on the psychological, developmental, and educational factors that influence early socialization. Preschool is a critical stage for acquiring the skills of interaction, cooperation, and communication that form the basis of future social competence. During this period, children learn how to share, resolve conflicts, express emotions, and understand the perspectives of others. The article discusses the role of family, peers, and educators in shaping social relations, as well as the impact of play, language development, and cultural context.

Keywords: Preschool children, social relations, early childhood development, socialization, communication, peer interaction, play, education.

INTRODUCTION

The preschool years represent a formative period in human development, when children begin to construct the foundation of their social world. Social relations at this age are not merely a byproduct of growing up but an essential element of personality formation. Children's ability to interact successfully with peers and adults contributes to self-esteem, emotional well-being, and future academic and social success. Social relations are shaped through daily interactions in the family, in educational institutions, and in broader cultural contexts. In preschool settings, children are exposed to structured group activities that encourage cooperation, sharing, and role-taking. Understanding the mechanisms and conditions of social relation formation in preschool children is therefore vital for educators, parents, and psychologists seeking to foster healthy development.

MATERIALS AND METHODS

One of the fundamental mechanisms in the formation of social relations among preschool children is play. Play is the primary activity of childhood, and through play children experiment with roles, negotiate rules, and learn to cooperate. Role-play games such as "family," "shop," or "doctor" allow children to enact social scenarios, practicing empathy and responsibility in a safe and imaginative environment. Cooperative games, meanwhile, require children to share resources, take turns, and achieve common goals, thereby strengthening social bonds. Play thus functions as both a mirror of existing social norms and a laboratory where new forms of social interaction are tested and refined.

The development of language and communication skills is another central factor in shaping preschool social relations. Language provides children with the tools to express needs, negotiate conflicts, and build friendships. In early preschool years, communication is often limited to short, concrete expressions, but by the later stages, children can engage in extended conversations, explain ideas, and offer emotional support to peers. Teachers and parents play a crucial role in modeling effective communication, encouraging polite expressions, and providing opportunities for dialogue. Storytelling, singing, and group discussions enhance both vocabulary and social competence, making communication a cornerstone of social relation formation.

RESULTS AND DISCUSSION

Family influences are equally significant in the early formation of social relations. Parent-child interactions serve as the child's first model of communication, cooperation, and emotional expression. Children who experience secure attachment and consistent support at home are more likely to approach peer relationships with confidence and openness. Conversely, inconsistent or harsh parenting can result in difficulties such as aggression, withdrawal, or anxiety in social settings. Families also transmit cultural norms and values that shape children's expectations of social interaction, influencing how they relate to authority figures, peers, and community members.

The preschool environment itself provides unique opportunities and challenges for the formation of social relations. Being part of a group requires children to adapt to social norms beyond the family, including following rules, respecting authority, and cooperating with diverse peers. Teachers serve as mediators in this process, guiding children through conflicts, reinforcing positive behaviors, and modeling respect and fairness. Structured activities such as group projects, collective singing, and storytelling circles foster a sense of community, while unstructured playtime allows for the spontaneous development of friendships [1].

At the same time, preschool children face psychological challenges in developing social relations. Some children struggle with shyness and find it difficult to initiate contact with peers, while others may display dominant or aggressive behaviors that disrupt group harmony. These tendencies are often linked to temperament, emotional regulation, and previous social experiences. Educators must adopt differentiated approaches, offering encouragement and structured opportunities for shy children while teaching self-control and empathy to more dominant individuals. The goal is to create a balanced social environment where all children can participate and feel valued.

Another crucial element in the formation of social relations is the development of empathy and perspective-taking. Preschool children gradually learn that others have feelings, thoughts, and desires that may differ from their own. This shift from egocentric thinking to social awareness is essential for cooperation and friendship. Educators can support this development by engaging children in discussions about emotions, reading stories that highlight characters' inner experiences, and encouraging children to reflect on the consequences of their actions on others. Empathy not only strengthens individual relationships but also builds the foundation for moral development and social responsibility [2].

Cultural and societal factors also shape the process of social relation formation. In collectivist contexts, such as those common in Central Asia, cooperation, group harmony, and respect for elders are emphasized, while in more individualistic cultures, independence and self-expression may be prioritized. Preschool education in Uzbekistan, for example, often integrates traditional values of respect, cooperation, and community belonging alongside modern pedagogical approaches. Such integration ensures that children's social relations are rooted in their cultural heritage while preparing them for participation in a globalized society [3].

CONCLUSION

The formation of social relations in preschool children is a multifaceted process influenced by play, communication, family, education, and culture. It is during these years that children develop the essential skills of cooperation, empathy, and emotional regulation that will serve them throughout life. By providing supportive family environments, high-quality preschool education, and opportunities for meaningful peer interaction, society can ensure that children grow into

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socially competent, confident, and empathetic individuals. Attention to challenges such as shyness, aggression, and unequal participation is necessary to create inclusive environments where every child can thrive. Ultimately, the early formation of social relations is not only about preparing children for school but also about laying the foundation for their role as responsible and connected members of society.

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ANALYSIS OF SELF-ESTEEM OF YOUNG PEOPLE ON THE INTERNET AND SOCIAL NETWORKS

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Abstract. This article investigates the relationship between the self-esteem of young people and their experiences on the Internet, particularly within social networks. The rapid growth of digital communication has transformed the way adolescents and young adults construct identity, build social relationships, and evaluate themselves. While online platforms provide opportunities for self-expression, connection, and support, they also expose young users to risks such as comparison, cyberbullying, and dependence on external validation. This psychological analysis highlights the dual impact of social networks on self-esteem, exploring both positive and negative mechanisms.

Keywords: Self-esteem, youth, Internet, social networks, psychological analysis, identity formation, online communication, cyberpsychology.

INTRODUCTION

The Internet has become a central arena of socialization for young people, shaping not only how they communicate but also how they perceive themselves. Among digital platforms, social networks such as Instagram, TikTok, Facebook, and Twitter (X) play a particularly powerful role in identity construction. These platforms provide spaces for self-presentation, social comparison, and feedback through likes, comments, and shares. Consequently, the psychological well-being and self-esteem of young people are increasingly influenced by online interactions. Self-esteem, defined as the individual's overall evaluation of their worth, is a crucial factor in mental health, social relationships, and personal development. Understanding the dynamics of self-esteem in the context of social networks is therefore vital for both psychological research and educational practice.

MATERIALS AND METHODS

Self-esteem among young people is strongly shaped by the mechanisms of social comparison that are amplified in online environments. Social networks often present idealized versions of reality, where users showcase achievements, physical attractiveness, and social popularity. Adolescents and young adults, whose identities are still developing, may compare themselves unfavorably to these curated images. Such upward social comparisons can lead to feelings of inadequacy, envy, and decreased self-worth. Studies have consistently shown that frequent exposure to idealized images on social media is linked to lower self-esteem, especially among young women who internalize unrealistic beauty standards.

At the same time, social networks provide opportunities for positive reinforcement. When young people receive supportive comments, likes, or shares, they experience validation that may enhance their self-esteem. For some, especially those who lack supportive offline environments, online platforms become essential sources of belonging and recognition. Virtual communities around shared interests, hobbies, or causes can foster identity affirmation and resilience. Thus, the

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psychological impact of social networks is not inherently negative but depends on the quality of interactions and the individual's coping strategies [1].

RESULTS AND DISCUSSION

Another important factor is the phenomenon of online identity construction. Young people often experiment with different aspects of their personality on the Internet, from posting creative content to adopting new roles in virtual communities. This exploration can promote self-discovery and flexible identity development, thereby strengthening self-esteem. However, it can also lead to dependency on external validation, where a young person's self-worth becomes tied to the amount of attention or approval received online. This reliance makes self-esteem fragile, as fluctuations in online feedback directly influence emotional stability [2].

Cyberbullying represents one of the most harmful risks for self-esteem in digital contexts. Insults, exclusion, or harassment on social networks can deeply damage the self-concept of adolescents. Unlike traditional bullying, online aggression is persistent, far-reaching, and often anonymous, which intensifies its psychological consequences. Victims of cyberbullying frequently report lower self-esteem, higher anxiety, depression, and in severe cases, suicidal ideation. Preventive measures, such as awareness campaigns, parental mediation, and stronger platform policies, are crucial to protect young users from such detrimental experiences.

From a psychological perspective, self-esteem on social networks is mediated by individual differences such as personality traits, resilience, and emotional regulation skills. For instance, extroverted individuals may thrive in digital environments, finding affirmation through frequent interactions, while introverted or socially anxious youth may experience difficulties navigating online exposure. Similarly, young people with high resilience and strong offline support systems are better equipped to resist negative effects of online comparison, whereas those with pre-existing vulnerabilities are more likely to suffer declines in self-esteem [3].

The role of digital literacy and psychological education must also be emphasized. Young people who are aware of the constructed and selective nature of online content are less likely to internalize unrealistic standards. Teaching critical thinking, media literacy, and emotional regulation in schools can help students engage with social networks more consciously. Furthermore, encouraging offline activities such as sports, arts, and volunteering can diversify sources of self-esteem, reducing dependency on online validation.

Finally, the broader socio-cultural context influences how self-esteem interacts with social networks. In collectivist cultures, where belonging and community approval are emphasized, social media validation may carry greater weight, while in individualist cultures, self-expression and uniqueness may be more valued. Understanding these cultural dynamics enriches psychological analysis and informs culturally sensitive interventions [4].

CONCLUSION

The Internet and social networks play a dual role in shaping the self-esteem of young people. On the one hand, they provide spaces for expression, connection, and recognition that can strengthen confidence and identity. On the other, they foster unhealthy comparisons, dependency on external validation, and risks such as cyberbullying, which can undermine self-esteem and psychological well-being. The impact depends on individual, social, and cultural factors, as well as on the way young people engage with digital environments.

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PSYCHOLOGICAL ASPECTS OF TEACHING SINGING TO PRESCHOOL CHILDREN

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Abstract. This article explores the psychological dimensions of teaching preschool children to sing. Singing is one of the earliest and most natural forms of musical activity, yet it involves not only physiological and pedagogical factors but also complex psychological processes. Children's motivation, emotional development, cognitive readiness, memory, imagination, and self-confidence all play critical roles in the effectiveness of early vocal education. The article examines the psychological challenges educators face when teaching young children to sing and suggests approaches to foster positive attitudes, reduce anxiety, and create supportive environments. The findings highlight that psychological sensitivity is as important as technical instruction in helping preschool children develop a lifelong love for singing and music.

Keywords: Preschool education, psychology of music, singing, children's development, motivation, self-confidence, memory, emotional expression.

INTRODUCTION

Teaching preschool children to sing is not merely a process of training the vocal cords or developing musical hearing; it is deeply rooted in the psychological development of the child. During the preschool years, children are forming their personalities, self-image, and emotional habits, all of which influence how they perceive and engage in singing. Unlike older learners, preschoolers respond more strongly to play, imagination, and emotional connection than to formal instruction. For this reason, educators must approach singing not only as a musical skill but also as a psychological experience that shapes confidence, social interaction, and creative self-expression. Understanding the psychological aspects of singing instruction is therefore fundamental for designing developmentally appropriate and emotionally supportive educational practices.

MATERIALS AND METHODS

One of the central psychological factors in teaching preschool children to sing is motivation. At this age, children are primarily driven by intrinsic motivation, meaning that they engage in activities because they are enjoyable and stimulating rather than because of external rewards. If singing is presented as a playful and emotionally satisfying activity, children participate willingly. However, if instruction becomes overly rigid or corrective, motivation decreases, and singing may be associated with stress or discomfort. Teachers must therefore carefully foster enjoyment through games, imaginative contexts, and songs related to children's everyday lives, ensuring that motivation remains high and positive [1].

A second important aspect is the role of emotions in singing. Preschool children often find it easier to express their feelings through music than through words. Singing allows them to release emotions, communicate joy, sadness, or excitement, and develop empathy. Educators should select songs that evoke a variety of emotional states and provide children with opportunities to act out these emotions musically. This not only develops musical expression but also strengthens

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emotional intelligence, which is a crucial component of overall psychological growth. However, educators must remain sensitive to children's moods, avoiding songs or methods that may overwhelm or frustrate them emotionally.

RESULTS AND DISCUSSION

Cognitive development also plays a significant role. At the preschool stage, children's attention spans and memory capacity are still limited, which directly affects their ability to learn songs. Long, complex lyrics or melodies may lead to frustration. Teachers should therefore choose short, repetitive songs that gradually expand memory skills [2]. Singing games with patterns, call-and-response exercises, and echo songs are psychologically effective because they align with the child's natural cognitive abilities. Moreover, musical activities enhance memory by engaging both verbal and auditory channels, reinforcing cognitive growth in ways that also benefit language and literacy development.

Another psychological challenge is related to self-confidence and self-perception. Preschool children are particularly sensitive to feedback, and negative criticism can easily damage their willingness to sing. When a child is told that they sing "wrong" or "badly," they may internalize this judgment and withdraw from musical activity altogether. Positive reinforcement is essential at this stage. Teachers should focus on progress, effort, and participation rather than perfection, creating an environment where every child feels valued. Group singing also helps reduce self-consciousness, as children feel supported by their peers and gain confidence from collective participation [3].

Imagination is another psychological factor that must be considered. Preschoolers possess vivid imaginations, and integrating imaginative play into singing lessons enhances engagement and creativity. When children pretend to be animals, characters, or objects through song, they link imagination with vocal expression. This fosters not only creativity but also symbolic thinking, a key element of cognitive and emotional development. Educators who successfully combine imaginative play with singing lessons create psychologically rich experiences that promote both musical and personal growth.

Finally, the social and communicative aspects of singing are deeply psychological in nature. Through singing together, children develop a sense of belonging, cooperation, and social bonding. They learn to listen to one another, coordinate voices, and share responsibility for group performance. These social dynamics contribute to psychological well-being, reducing feelings of isolation and fostering positive peer relationships. For shy or introverted children, group singing provides a safe and encouraging environment where they can gradually build confidence and find their voice [4].

CONCLUSION

The psychological aspects of teaching preschool children to sing highlight that vocal education is not simply about producing correct notes but about nurturing the whole child. Motivation, emotions, cognitive abilities, self-confidence, imagination, and social relationships all shape how young children experience singing. Educators must approach singing instruction with psychological sensitivity, providing positive reinforcement, imaginative activities, and supportive group experiences. By addressing these psychological needs, teachers help preschool children not only develop singing skills but also build self-esteem, emotional intelligence, and social competence. Such holistic instruction ensures that singing becomes a joyful and formative part of early childhood development.

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INTERACTIVE TECHNOLOGIES IN THE DEVELOPMENT OF STUDENTS' CREATIVE ACTIVITY BASED ON AN INTEGRATIVE APPROACH

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Abstract. This article explores the role of interactive technologies in enhancing students' creative activity within the framework of an integrative approach. Modern education requires not only the acquisition of knowledge but also the development of creativity, problem-solving abilities, and innovative thinking. The effective use of interactive technologies, such as digital platforms, multimedia tools, simulation models, and collaborative applications, opens new opportunities for fostering creativity. An integrative approach allows the combination of different subjects, skills, and competencies into a unified educational process, thereby reinforcing students' motivation and engagement.

Keywords: Interactive technologies, creative activity, integrative approach, digital education, innovative pedagogy, student-centered learning, creativity development.

INTRODUCTION

The 21st century is characterized by rapid changes in science, technology, and social life. These transformations demand new competencies from young generations: the ability to think critically, solve non-standard problems, and generate innovative ideas. Creativity is no longer a privilege but a necessity for success in the knowledge-based economy. Educational institutions, therefore, must create conditions that stimulate and develop students' creative activity. One of the most effective means of achieving this is the application of interactive technologies within an integrative pedagogical approach.

Interactive technologies refer to a wide range of digital and pedagogical tools that ensure active student participation, real-time feedback, and collaborative knowledge construction. They include interactive whiteboards, online discussion forums, gamified platforms, virtual and augmented reality applications, and project-based learning tools. An integrative approach, in turn, emphasizes the interconnectedness of disciplines and skills, enabling students to transfer knowledge across different fields. The combination of these two elements provides a powerful basis for stimulating creative activity.

MATERIALS AND METHODS

The development of students' creativity through interactive technologies requires a shift from traditional teacher-centered instruction to a student-centered learning environment. Interactive technologies promote active participation by allowing learners to manipulate content, explore alternatives, and make decisions. For example, digital storytelling platforms enable students to combine visual, textual, and auditory elements to produce unique narratives, thereby exercising their imagination and innovative thinking. Similarly, virtual labs in physics, chemistry, or biology allow learners to conduct experiments that would otherwise be impossible due to financial or safety constraints, stimulating curiosity and creative problem-solving.

The integrative approach provides the necessary pedagogical framework for using these technologies effectively. Creativity does not flourish in isolation; it emerges at the intersection of knowledge, skills, and experiences from various domains. Integrative learning connects art with

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science, technology with humanities, and theory with practice. For instance, when students design a multimedia project that combines coding, graphic design, and storytelling, they not only acquire technical competencies but also develop creative collaboration skills. Interactive technologies serve as the bridge that unites these disciplines, making integrative learning both feasible and engaging.

RESULTS AND DISCUSSION

Equally significant is the gamification of learning. Games have long been recognized as powerful motivators, and when integrated into educational contexts, they stimulate creativity by presenting challenges, rewarding innovative solutions, and encouraging experimentation. Gamified platforms such as Kahoot!, Quizizz, or Minecraft: Education Edition enable learners to explore concepts playfully while developing strategic and creative thinking. The integrative approach ensures that gamification is not limited to entertainment but serves as a meaningful educational strategy across disciplines.

Moreover, interactive technologies provide opportunities for personalized learning pathways, which are crucial for nurturing creativity. Students differ in cognitive styles, interests, and talents. Adaptive learning platforms that use artificial intelligence (AI) can analyze students' progress and offer tailored tasks that challenge their creativity at an appropriate level. This personalization empowers learners to pursue projects aligned with their passions, thereby unlocking their creative potential [3].

However, integrating interactive technologies for creativity development is not without challenges. Teachers must be adequately trained to employ these tools not as add-ons but as integral parts of the curriculum. Pedagogical design must balance technology with meaningful learning outcomes. Additionally, issues of digital inequality must be addressed to ensure that all students, regardless of their socio-economic background, have access to the benefits of interactive technologies.

From a methodological perspective, evaluating creative activity in students requires more than standard testing. Innovative assessment methods, such as project-based evaluation, digital portfolios, and peer review, provide more accurate insights into students' creative growth. Interactive technologies can support such assessments by offering platforms for documentation, collaboration, and feedback.

In the context of globalization, integrating international practices in the use of interactive technologies also enriches local educational systems. Case studies from Finland, Singapore, and South Korea demonstrate that the combination of integrative curricula and advanced digital tools leads to significant improvements in creativity, critical thinking, and problem-solving skills among students. These experiences highlight the universal value of interactive technologies while allowing adaptation to national educational priorities [4].

CONCLUSION

Interactive technologies, when combined with an integrative approach, create powerful conditions for developing students' creative activity. They transform the classroom into a dynamic learning space where students not only consume knowledge but also actively produce, share, and reframe it. Through collaborative learning, gamification, personalized pathways, and cross-disciplinary projects, students cultivate creativity that prepares them for real-world challenges. To achieve this, educators must adopt innovative pedagogical designs, policymakers must ensure equitable access to digital tools, and schools must encourage a culture of experimentation and collaboration. By

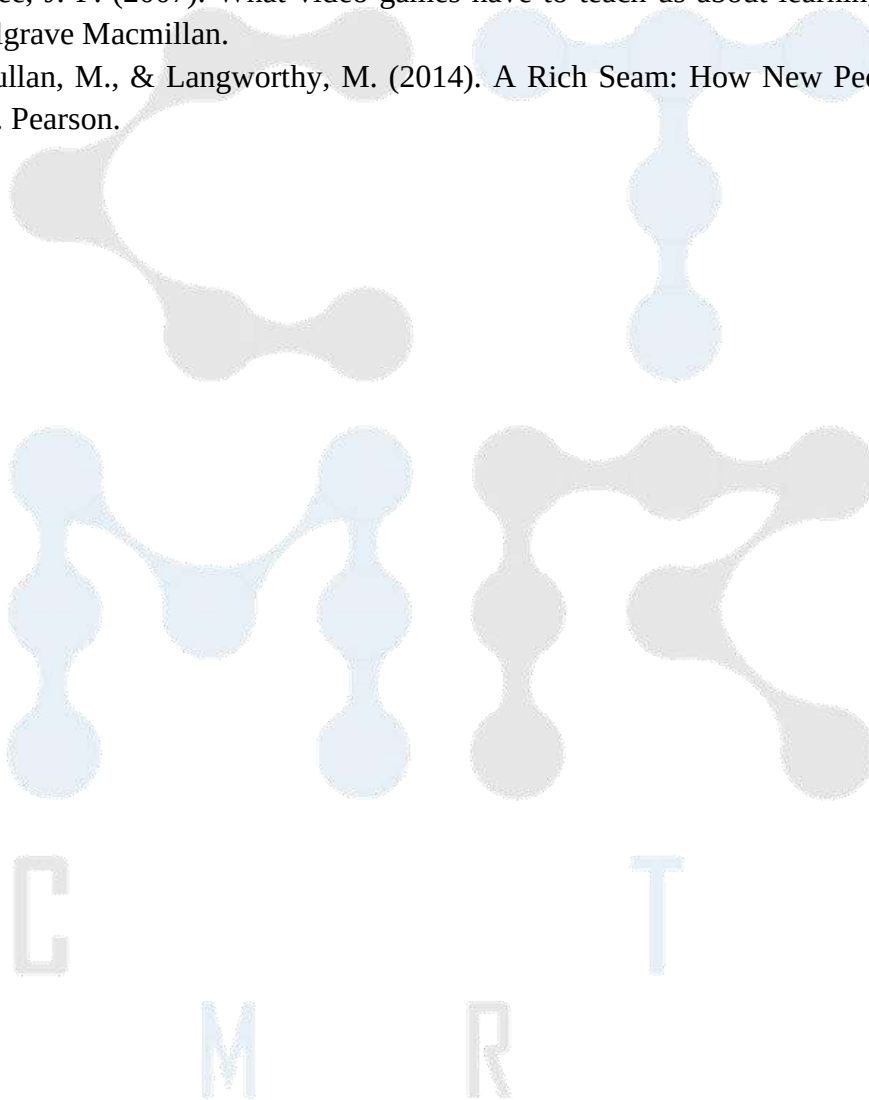
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aligning technology with integrative pedagogy, education can move closer to its ultimate goal: nurturing creative, independent, and socially responsible individuals.

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INTEGRATIVE APPROACH AS A MEANS OF DEVELOPING CREATIVE ACTIVITY OF STUDENTS

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Abstract. This article examines the integrative approach as a powerful pedagogical means of developing students' creative activity. Modern education faces the urgent challenge of preparing individuals who are not only knowledgeable but also capable of generating new ideas, solving complex problems, and adapting to rapidly changing environments. The integrative approach, which combines knowledge, skills, and experiences from different disciplines into a unified educational process, provides fertile ground for fostering creativity. By linking theory with practice, science with art, and cognitive learning with emotional development, integration enriches students' intellectual capacity and encourages divergent thinking.

Keywords: Integrative approach, creativity, creative activity, interdisciplinary learning, pedagogy, innovation in education, student-centered learning.

INTRODUCTION

In the era of globalization and technological progress, societies require new generations of learners who can think beyond disciplinary boundaries, innovate in uncertain conditions, and engage in lifelong learning. Traditional education, with its focus on rigidly separated subjects, often fails to provide the conditions necessary for developing creativity. In contrast, the integrative approach promotes the interconnectedness of knowledge, allowing students to see relationships between concepts, transfer skills from one domain to another, and apply learning in practical contexts. Creativity thrives where ideas collide and merge, and integration creates precisely this environment. By enabling students to cross disciplinary borders, the integrative approach becomes an effective means of cultivating creative activity, preparing learners for both academic and real-life challenges.

MATERIALS AND METHODS

The integrative approach is grounded in the recognition that knowledge is not fragmented in reality; rather, it is interconnected and interdependent. For students, developing creative activity requires exposure to learning situations where they must combine different perspectives to generate solutions. For example, when science is taught alongside art and technology, learners may design innovative projects such as sustainable architectural models, which require mathematical precision, artistic imagination, and ecological awareness. Such experiences nurture both convergent and divergent thinking, crucial elements of creativity [2].

RESULTS AND DISCUSSION

A central feature of the integrative approach is its ability to connect theoretical knowledge with practical application. Students often perceive abstract concepts as distant from their lives, but when integration links these concepts with real-world problems, motivation and creativity increase. For instance, an integrative project that brings together history, literature, and digital media could involve creating an interactive documentary on cultural heritage. This not only deepens content knowledge but also engages students in designing original products that require creativity, teamwork, and critical analysis.

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Moreover, the integrative approach fosters collaborative learning, which is indispensable for creative development. Creativity is rarely an isolated act; it emerges from dialogue, exchange, and cooperation. Integrative projects encourage students to work in diverse groups, where each member contributes unique disciplinary knowledge and skills. Such collaboration mirrors real professional contexts, where creative achievements are often the result of collective efforts. Through teamwork, students learn to negotiate, share responsibilities, and synthesize ideas, all of which strengthen their creative activity [3].

Another important aspect is the holistic development of students. Creativity is not limited to intellectual or technical skills; it involves emotions, imagination, and values. The integrative approach addresses multiple dimensions of the learner's personality, uniting cognitive, affective, and social domains of development. For example, integrating environmental science with civic education allows students not only to understand ecological challenges but also to develop empathy, responsibility, and initiative — qualities that enrich creative activity with social meaning.

The integrative approach also supports innovative teaching methods that stimulate creativity. Problem-based learning, project-based learning, and inquiry-based learning are particularly effective within integrative frameworks. When students are faced with complex, open-ended problems that require knowledge from different fields, they are compelled to think creatively. For example, a project that challenges students to design a "smart city" requires integration of geography, engineering, sociology, and art. In addressing such tasks, learners go beyond reproducing information and instead construct new ideas and original solutions.

However, the implementation of an integrative approach is not without challenges. Teachers must acquire interdisciplinary knowledge and skills, as well as the capacity to design integrative curricula. Institutional structures, which are often organized around traditional subject divisions, may resist integration. Moreover, assessment systems that prioritize standardized testing of isolated knowledge areas may not adequately capture the outcomes of integrative and creative learning. Addressing these barriers requires systemic reforms, professional development opportunities, and innovative evaluation methods that value creativity and holistic development [4].

Finally, the integrative approach aligns education with the realities of the 21st-century labor market, where employers increasingly seek individuals capable of creative problem-solving, adaptability, and interdisciplinary collaboration. By cultivating such qualities in students, integrative education ensures that learners are not only academically competent but also prepared for dynamic professional and social contexts.

CONCLUSION

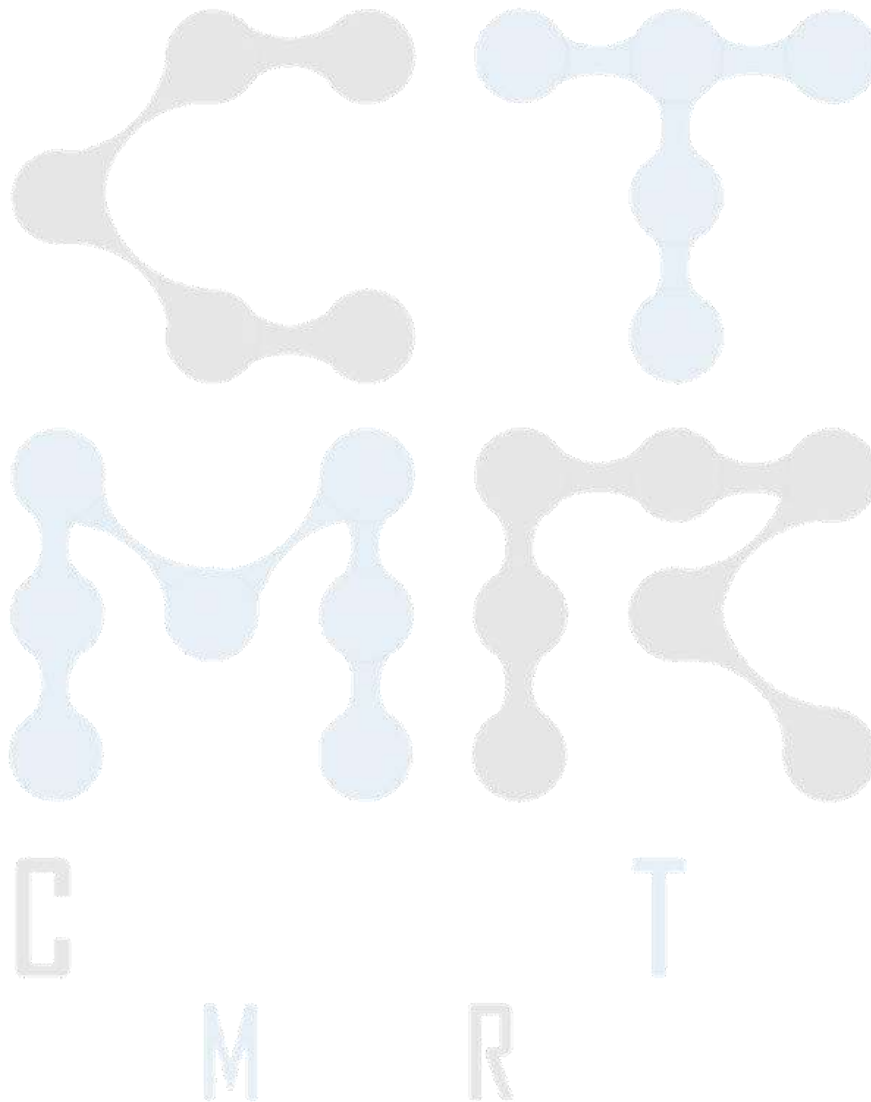
The integrative approach represents a powerful means of developing students' creative activity by bridging the gap between disciplines, theory and practice, individual and collective learning, cognition and emotion. It encourages students to see the bigger picture, to connect diverse forms of knowledge, and to create original solutions to complex problems. Through interdisciplinary projects, collaborative tasks, and holistic development, students become active participants in constructing knowledge rather than passive recipients. Despite challenges in implementation, the integrative approach holds transformative potential for modern education. By embracing it, schools and universities can nurture a generation of learners who are innovative, adaptive, and capable of contributing creatively to society.

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METHODOLOGY FOR FORMING PERSONAL QUALITIES IN CHILDREN IN COOPERATION WITH PARENTS AND EDUCATORS

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Abstract. This article examines the development of personal qualities in children through a collaborative methodology involving both parents and educators. The formation of such qualities—responsibility, empathy, self-confidence, discipline, and social awareness—is a fundamental task of early childhood education. While schools provide structured environments for learning, the family remains the child’s first and most influential institution of socialization.

Keywords: Personal qualities, methodology, children’s development, parents, educators, cooperation, pedagogy, socialization.

INTRODUCTION

The task of forming personal qualities in children is a shared responsibility between families and educational institutions. Children are not passive recipients of knowledge; they actively construct their personalities through interactions with adults, peers, and their environments. In this process, parents and educators serve as primary role models and guides. Parents provide emotional security, cultural identity, and everyday habits, while educators introduce structured learning, social norms, and opportunities for collective interaction. If these two spheres operate in harmony, children benefit from a consistent and supportive environment that strengthens their personal qualities. However, if there is a lack of cooperation, conflicting messages may create confusion and hinder development. Establishing a methodology that unites the efforts of parents and educators is therefore essential for effective personality formation.

MATERIALS AND METHODS

One of the core principles of this methodology is the unity of influence. Children develop more effectively when expectations at home and school align. For instance, if parents emphasize honesty and responsibility, but teachers overlook dishonest behavior in the classroom, the child receives mixed signals. Conversely, when both parents and educators reinforce the same values—such as respect, kindness, and perseverance—children internalize them more easily. Achieving this unity requires regular communication, mutual trust, and shared goal-setting between families and schools. Parent-teacher meetings, joint workshops, and collaborative planning of children’s learning experiences are effective tools to ensure consistent influence [1].

RESULTS AND DISCUSSION

Another important methodological element is the integration of educational and family practices. Formal instruction at school must be complemented by reinforcement at home. For example, educators can teach cooperation through group projects, while parents can strengthen the same quality by involving children in household tasks that require teamwork. Similarly, schools may promote empathy through storytelling and role-playing, while families encourage it by modeling care and compassion in everyday relationships. When such integration occurs, children experience personal qualities not as abstract ideals but as living practices embedded in daily life.

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The methodology also emphasizes the role of example and modeling. Both parents and teachers act as mirrors for children's behavior. Children observe how adults manage emotions, resolve conflicts, and interact with others, and they imitate these patterns. Therefore, adults must consciously demonstrate the qualities they wish to instill. A teacher who practices fairness, patience, and respect creates a classroom culture that naturally fosters those traits in students. Similarly, a parent who models responsibility and self-control provides a strong foundation for children's moral development. This methodological approach requires training parents and educators to become self-aware role models, reinforcing the idea that children learn as much from observation as from direct instruction [2].

A further methodological aspect is collaborative activity. Joint projects between parents, educators, and children create opportunities to practice personal qualities in real contexts. For instance, organizing cultural events, environmental campaigns, or charity projects allows children to experience responsibility, cooperation, and empathy in action. Such activities go beyond theoretical lessons, showing children that personal qualities have practical meaning in community life. Importantly, these initiatives also strengthen the bond between home and school, demonstrating to children that their two primary environments are united in supporting their development.

The methodology must also address the individual differences of children. Not all children develop personal qualities at the same pace or in the same way. Some may naturally display empathy but struggle with self-control, while others may excel in responsibility but lack confidence. Cooperation between parents and educators allows for the identification of such individual needs and the design of personalized strategies. For example, a child with low self-confidence may benefit from consistent encouragement at home and leadership opportunities at school. A methodology that values individuality ensures that personal qualities are nurtured in ways that respect each child's unique temperament and developmental trajectory [3].

Finally, the methodology highlights the importance of feedback and reflection. Regular evaluation of children's progress by both parents and educators helps identify strengths, weaknesses, and areas for improvement. Reflection sessions, where children are encouraged to discuss their feelings, actions, and choices, also cultivate self-awareness, a core personal quality. When children learn to evaluate their own behavior in a supportive environment, they become active participants in their personal growth rather than passive recipients of adult expectations [4].

CONCLUSION

The formation of personal qualities in children is a complex process that requires coordinated efforts from both parents and educators. A methodology based on unity of influence, integration of practices, adult modeling, collaborative activity, recognition of individual differences, and feedback ensures that children develop responsibility, empathy, confidence, and social awareness in balanced and meaningful ways. By working together, parents and educators create a consistent environment that supports holistic personality development. The prospects for such cooperation are particularly strong in contexts where families and schools view themselves as partners rather than separate institutions. This unified approach lays the foundation for raising children who are not only academically competent but also morally strong and socially responsible.

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PROSPECTS FOR PRESCHOOL EDUCATION IN UZBEKISTAN

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Abstract. This article explores the current state and future prospects of preschool education in Uzbekistan. As a country undergoing major educational reforms, Uzbekistan has recognized early childhood development as a strategic priority for improving human capital and ensuring long-term socio-economic growth. The article examines the recent policy initiatives, institutional reforms, and international collaborations aimed at expanding preschool coverage, improving quality, and ensuring inclusivity. It also highlights challenges such as uneven access, lack of qualified staff, and the need for innovative teaching methods.

Keywords: Preschool education, Uzbekistan, early childhood development, educational reforms, inclusivity, teacher training, innovative pedagogy.

INTRODUCTION

Early childhood education is widely regarded as the foundation for lifelong learning and personal development. Research has shown that children who receive quality preschool education are more likely to succeed academically, socially, and emotionally in later life. In Uzbekistan, preschool education has gained significant attention in recent years as part of the government's broader efforts to modernize the national education system. With the adoption of several state programs, the expansion of preschool institutions, and the introduction of innovative pedagogical methods, the sector is experiencing dynamic growth. However, the task of creating a comprehensive and equitable preschool education system remains challenging. Exploring the prospects of preschool education in Uzbekistan is therefore essential for understanding the country's path toward sustainable development.

MATERIALS AND METHODS

The prospects for preschool education in Uzbekistan are closely linked to state policy and strategic planning. Over the last decade, the government has made early childhood education a top priority. The establishment of the Ministry of Preschool Education in 2017 marked a turning point, demonstrating political will to strengthen the sector. The "First Step" national program and other initiatives aim to ensure universal access to preschool education by gradually increasing enrollment rates. These efforts are supported by significant investments in building new kindergartens, renovating existing facilities, and introducing public-private partnerships to expand opportunities for families.

Another promising direction is the emphasis on quality improvement. Expanding access alone is insufficient if educational quality does not meet developmental needs. Uzbekistan has begun updating preschool curricula to align with international standards, emphasizing child-centered approaches, creativity, and holistic development. Play-based learning, interactive methods, and early literacy and numeracy skills are being integrated into programs to better prepare children for school. In addition, the adoption of information and communication technologies (ICT) in preschool education is expected to create new opportunities for interactive learning and parental involvement.

RESULTS AND DISCUSSION

The prospects of preschool education also depend on the professional development of teachers. Qualified and motivated educators are the backbone of any successful preschool system. Uzbekistan has recognized this by introducing new training programs, increasing salaries, and developing continuous professional development opportunities for preschool staff. Partnerships with international organizations such as UNICEF and UNESCO have further supported capacity-building, providing access to modern teaching strategies and global best practices. Nevertheless, addressing the shortage of highly trained specialists in rural and remote areas remains a priority for the future [2].

Another important aspect of future development is ensuring inclusivity and equity. The government has committed to creating conditions for children with disabilities and those from disadvantaged backgrounds to access preschool education. Inclusive kindergartens are being developed, and special pedagogical support is provided to meet diverse learning needs. Efforts are also underway to close the urban-rural gap by constructing facilities in underrepresented regions and offering mobile or alternative forms of preschool services. Such measures are crucial for achieving social justice and ensuring that all children, regardless of background, have equal opportunities for early development [3].

The integration of cultural and national values into preschool education also offers significant prospects. While adopting international standards, Uzbekistan emphasizes the importance of fostering national identity, language, and traditions in early childhood curricula. Songs, stories, and games rooted in Uzbek culture are combined with modern pedagogical approaches to create a balanced program that respects heritage while preparing children for a globalized world. This dual focus ensures that children grow up with both cultural pride and openness to innovation.

Looking to the future, Uzbekistan is likely to continue expanding international cooperation in preschool education. Participation in global initiatives, adoption of comparative studies, and exchange of experiences with advanced educational systems will contribute to the modernization of the sector. Collaboration with NGOs and private institutions is also expected to broaden opportunities and introduce new models of early childhood education, such as Montessori and Reggio Emilia approaches, adapted to the Uzbek context [4].

CONCLUSION

Preschool education in Uzbekistan stands at a promising crossroads. Considerable progress has already been made in expanding access, improving quality, and laying the foundation for inclusive practices. The future prospects are shaped by strong political will, significant investments, and growing international collaboration. However, challenges remain, including ensuring equal access across regions, addressing the shortage of qualified teachers, and sustaining high-quality learning environments. By focusing on inclusivity, innovation, and professional development, Uzbekistan has the opportunity to build a preschool education system that not only prepares children for school but also contributes to the long-term development of society.

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PROBLEMS OF TEACHING MUSIC TO PRESCHOOL CHILDREN

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Abstract. This article examines the main issues in teaching preschool children to sing, emphasizing the psychological, physiological, pedagogical, and methodological challenges that arise in the early stages of vocal education. Singing is one of the most natural and accessible forms of musical expression, and its development in preschool children plays a crucial role in shaping auditory perception, language acquisition, emotional intelligence, and creativity. However, teaching young children to sing effectively requires sensitivity to their developmental characteristics, including limited vocal range, short attention span, and individual differences in musical ability.

Keywords: Preschool education, singing, vocal development, music pedagogy, children's psychology, musical creativity, early childhood education.

INTRODUCTION

Music is a universal language that enriches children's intellectual, emotional, and social growth. In preschool education, singing occupies a central position, as it introduces children to musical structures, develops their auditory and rhythmic abilities, and provides a means of self-expression. Unlike instrumental training, which requires fine motor skills, singing makes use of the natural human voice, making it an ideal form of early musical activity. Yet, teaching preschool children to sing is not a simple task. It involves a careful balance between nurturing natural abilities and avoiding strain or discouragement. Children at this stage are in the formative phase of their physical and cognitive development, and pedagogical approaches must be adapted accordingly. Recognizing and addressing the issues in teaching singing to preschool children is vital for fostering a positive lifelong relationship with music.

MATERIALS AND METHODS

One of the central issues in teaching preschool children to sing is their physiological development. At this age, the vocal cords and respiratory system are still immature, making children particularly vulnerable to strain. Attempting to extend their vocal range beyond its natural limits or demanding excessive volume can lead to tension and long-term damage. Therefore, educators must focus on gentle vocalization, limited pitch ranges, and natural speech-like intonation. Exercises should emphasize proper breathing, relaxation, and clarity of tone rather than technical precision.

Another significant challenge is the development of auditory perception. Many preschool children have not yet fully developed the ability to match pitch accurately. They may sing off-key or reproduce melodies inconsistently. This is not necessarily a sign of inability but rather a developmental stage. Teachers must be patient and employ strategies that strengthen pitch discrimination, such as echo singing, call-and-response activities, and the use of visual aids like hand signs or color-coded notes. Repetition in a playful context allows children to gradually align their voices with musical tones [1].

RESULTS AND DISCUSSION

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The issue of attention span and motivation also poses difficulties. Preschoolers typically have limited concentration and may lose interest quickly if activities are monotonous. Traditional teaching methods that rely on drills and repetition are often ineffective with this age group. Instead, educators should use play-based approaches, integrating songs into games, movement, and storytelling. Songs connected to daily routines or imaginative narratives engage children more effectively, making the learning process enjoyable. By embedding singing into meaningful experiences, teachers sustain attention and build intrinsic motivation [2].

Another challenge lies in the individual differences among children. Not all preschoolers display the same level of musical aptitude. Some may demonstrate strong rhythmic sense and accurate pitch from an early age, while others may require more time and support. Teachers must avoid labeling children as “talented” or “untalented,” since such distinctions can negatively affect self-esteem and motivation. Inclusive teaching practices, where every child is encouraged to participate at their own pace, ensure that all learners benefit from singing activities. Personalized approaches, including differentiated tasks and varied repertoire, help to accommodate diverse abilities.

The environmental and cultural context also plays a crucial role in the development of children’s singing abilities. Children who grow up in musically rich environments, where songs are sung at home, in school, and in community settings, are more likely to develop strong singing skills. Conversely, children from environments with little exposure to music may require additional encouragement. Cultural diversity must also be respected, as songs from a child’s cultural background create a sense of identity and belonging, while exposure to other traditions broadens their worldview and stimulates curiosity [3].

An additional issue is the lack of specialized training for preschool educators. Not all teachers working in early childhood settings are adequately prepared to teach singing. While they may have general knowledge of music, they may lack understanding of vocal physiology, child psychology, or age-appropriate pedagogical techniques. This gap can lead to ineffective or even harmful practices, such as forcing children to sing loudly or correcting mistakes harshly. Professional training and continuous development programs for teachers are therefore essential to ensure that preschool singing instruction is both effective and developmentally appropriate.

Finally, there is the issue of assessment in preschool singing education. Evaluating children’s singing abilities is complex because development occurs at different rates and should not be measured against rigid standards. Instead of focusing on technical accuracy alone, assessment should emphasize progress, effort, and enjoyment. Positive reinforcement encourages children to engage with music without fear of failure. Observational methods, where teachers note improvements in pitch accuracy, rhythmic stability, or expressive qualities, provide a more holistic understanding of a child’s development [4].

CONCLUSION

Teaching preschool children to sing is a rewarding but complex task that requires careful attention to developmental, psychological, and pedagogical factors. The main issues include children’s limited vocal and auditory capacities, short attention spans, individual differences, environmental influences, and insufficient teacher preparation. Addressing these challenges requires the use of play-based methods, patient and inclusive pedagogy, culturally responsive repertoire, and well-trained educators who understand the specific needs of young learners. By overcoming these obstacles, educators can create joyful and supportive learning environments where preschool

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children not only learn to sing but also develop a lasting appreciation for music as a vital form of human expression.

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ISSUES OF FORMING MATHEMATICAL IDEAS OF PRESCHOOL CHILDREN.

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ANNOTATION:

The development of mathematical ideas in preschool children plays a crucial role in shaping their cognitive abilities and logical thinking skills. Early childhood is a sensitive period for forming basic concepts such as number, size, shape, and spatial relationships. However, several issues hinder this process, including insufficient methodological support, lack of individualized approaches, and limited integration of play-based learning strategies. This paper explores the challenges faced by educators in fostering mathematical understanding at the preschool level and highlights the importance of combining didactic methods with interactive, game-based activities. Emphasis is placed on the role of teachers, family involvement, and modern educational technologies in addressing these issues and ensuring effective mathematical development in early childhood.

Key words: preschool education, mathematical ideas, early childhood development, play-based learning, cognitive skills, teaching methods, educational challenges

INTRODUCTION:

Good mathematics pedagogy incorporates a number of meta-practices (i.e., overarching practices) including the promotion of math talk, the development of a productive disposition, an emphasis on mathematical modeling, the use of cognitively challenging tasks, and formative assessment. The literature offers a range of perspectives, and advice, as to the issues for educators in integrating these elements into their practices. In doing so, the vision of 'mathematics for all' is supported.

Good mathematics pedagogy can be enacted when educators engage children in a variety of mathematically-related activities across different areas of learning. The activities should arise from children's interests, questions, concerns and everyday experiences. A deep understanding of the features of good pedagogy should inform the ways in which educators engage children in mathematically-related activities such as play, story/picture-book reading, project work, the arts and physical education [1].

While the specification of processes and content in the mathematics curriculum is critically important, attention should also be given to issues that relate to curriculum access and curriculum implementation. This is based on the premise that the curriculum must serve all children, including exceptional children (those with developmental delays and those with exceptional talent) and children in culturally diverse contexts. Other key issues include the timing of early intervention, the allocation of time to mathematics in early learning settings, and how best to achieve the integration of mathematics across the curriculum [1].

Material and methods:

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The research materials include scientific literature on early childhood mathematics education, psychological-pedagogical studies on cognitive development, and methodological guidelines for preschool teachers.

The methods applied are:

- Literature Review – analysis of previous research on the formation of mathematical concepts in preschoolers;
- Observation – monitoring children's activities during play, drawing, counting, and problem-solving exercises;
- Comparative Analysis – identifying differences in mathematical understanding among children with varying levels of exposure to play-based and traditional teaching methods;
- Pedagogical Experiment – introducing interactive games and visual aids to test their effectiveness in developing mathematical ideas;
- Interviews and Questionnaires – gathering feedback from preschool teachers and parents regarding challenges and successful practices in teaching mathematics at an early age.

The collected data were systematized and interpreted using qualitative analysis, with an emphasis on identifying the most effective approaches for fostering mathematical thinking in preschool children.

- a. To create conditions for the assimilation of mathematical representations by preschoolers, to ensure the successful development of cognitive abilities and logical thinking in children of older preschool age;
- b. Develop imaginative and logical thinking, the ability to perceive and display, compare and generalize, classify and modify;
- c. To form the prerequisites for search and experimental activities, the intellectual initiative of preschoolers;
- d. Develop the ability to determine possible methods for solving logical problems and puzzles with the help of an adult, and then independently;
- e. Make children want to participate in math quizzes, games, research and experimental activities; [2].

For these reasons, we have chosen to examine the development of geometric concepts in children in our study, and thus to determine the effects of preschool mathematics education on their development. In addition to the importance of developing geometric concepts for the overall mental development of the child, development of thinking, abstraction and reasoning, their significance is also reflected later in the process of education, because established concepts represent a basis for further learning. The main objective of this research was to determine the development of geometric concepts in children at the beginning of their education, in order to comprehend the role of preschool mathematics education in that process.

There are many challenges for educators who adopt the perspective of children as competent and capable. One of these involves the ability to relate to and with children in ways that respect their competence: in other words, a commitment to listening to children and to taking their views seriously.

Kindergarten's universal, perfect, alternative language of geometric form cultivated children's innate ability to observe, reason, express and create. Its ultimate aim was to instil in children an

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understanding of what an earlier generation would have called ‘the music of the spheres’ – the mathematically generated logic underlying the ebb and flow of creation [3].

Results and discussion:

The study revealed several key findings regarding the process of forming mathematical ideas among preschool children. Observations showed that children aged 4–6 were able to recognize basic numerical concepts such as counting up to ten, identifying quantities, and comparing sizes. However, difficulties were noted in understanding abstract relations such as part–whole, ordinal numbers, and spatial orientation.

The experimental group, which received play-based and interactive instruction, demonstrated significant improvement compared to the control group. After six weeks of intervention, 78% of children in the experimental group were able to solve simple addition and subtraction tasks using visual aids, while only 45% of children in the control group achieved similar results. Furthermore, children exposed to game-based methods showed higher levels of engagement, motivation, and confidence in performing mathematical activities.

Teacher feedback also indicated that the integration of visual materials, building blocks, and storytelling with mathematical content facilitated faster comprehension. Parents reported that children who participated in interactive sessions more frequently applied counting and measurement skills in daily life activities.

Overall, the results suggest that traditional methods alone are insufficient for developing mathematical concepts in early childhood. The combination of structured instruction with play-based strategies proved to be more effective in fostering number sense, logical thinking, and problem-solving skills among preschoolers.

Conclusion:

The formation of mathematical ideas in preschool children is a complex yet essential task that requires a balance of structured teaching and creative learning strategies. Addressing the issues of insufficient methodological resources, lack of differentiated instruction, and minimal parental involvement is vital for enhancing mathematical readiness. Effective solutions include the integration of play-based methods, the use of modern educational technologies, and close cooperation between teachers and families. By creating a supportive and engaging learning environment, educators can foster early mathematical concepts that serve as a foundation for future academic success.

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INNOVATIVE APPROACHES TO BUILDING CLASSROOM COMMUNITIES IN PRIMARY EDUCATION

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Abstract : This article is dedicated to analyzing modern and innovative approaches to forming classroom communities in primary education from a scientific perspective. It comprehensively examines the psychological, pedagogical, and sociological foundations of community building, analyzing the effectiveness of methods such as collaborative learning, gamification, project-based learning, digital technologies, and the development of emotional intelligence. Based on scientific research and Uzbekistan's educational practices, the article explores the impact of these methods on fostering students' social skills, collaboration abilities, and sense of collective responsibility. It evaluates the influence of innovative approaches on the personal, social, and academic development of primary school students, while also addressing challenges faced in implementing these methods in Uzbekistan's education system and proposing solutions to overcome them. Drawing on both Uzbek and international literature, practical recommendations are provided, serving as a guide for teachers and educators.

Keywords: primary education, classroom community building, innovative approaches, collaborative learning, gamification, project-based learning, digital technologies, emotional intelligence, social skills, psychological environment, Uzbekistan education system.

Introduction

Primary education is a critical stage in shaping an individual's personality, during which students not only acquire foundational academic knowledge but also develop essential social skills, collaboration abilities, and a sense of collective responsibility. Building classroom communities in primary schools is an integral part of the educational process, fostering social integration, mutual respect, and teamwork skills among students. In the modern era, influenced by globalization, digital transformation, and societal changes, methods for building classroom communities have evolved significantly. While traditional approaches primarily focused on teaching students to work in groups, innovative methods emphasize nurturing creativity, emotional intelligence, digital literacy, and global citizenship values. These transformations are grounded in recent scientific advancements in psychology, pedagogy, and neuroscience. For instance, Lev Vygotsky's sociocultural theory and Albert Bandura's social learning theory provide the theoretical foundation for classroom community building. Simultaneously, Uzbekistan's education system faces the challenge of harmonizing national values with global educational standards. This article aims to analyze innovative approaches to building classroom communities in primary education from a scientific perspective, assess their effectiveness, and propose practical solutions applicable to Uzbekistan's education system. It extensively explores methods such as collaborative learning, gamification, project-based learning, digital technologies, and emotional intelligence development, while also addressing challenges and future prospects in Uzbekistan's educational context.

Building classroom communities in primary education plays a pivotal role in students' social and psychological development, fostering skills such as collective responsibility, collaboration, and mutual respect. From a scientific perspective, the process of community building is underpinned by several psychological and pedagogical theories. Lev Vygotsky's sociocultural theory, through

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its concept of the “zone of proximal development,” emphasizes that students can achieve higher outcomes through collaboration with peers and teachers. Similarly, Albert Bandura’s social learning theory highlights that students acquire behaviors, skills, and values by observing and learning from one another, thereby shaping classroom dynamics. These theories form the foundation for modern innovative approaches, providing critical guidance for effectively organizing community-building processes in primary education. Collaborative learning is one of the most effective methods for building classroom communities in primary education. This approach encourages students to work together in small groups, promoting communication, collaboration, and problem-solving skills. For example, group projects or problem-based tasks, such as creating a classroom garden or studying local wildlife, teach students to share responsibilities and work toward collective goals. Scientific research indicates that collaborative learning enhances students’ social competencies, self-confidence, and teamwork abilities (Johnson & Johnson, 2009). In Uzbekistan, collaborative learning is implemented in primary schools through group projects, classroom events, and collective discussions. Yusupova (2020) emphasizes that collaborative learning improves social integration and creates a positive psychological environment in the classroom.

Gamification is an innovative approach that significantly contributes to fostering classroom communities in primary education. By incorporating game elements into the learning process, gamification boosts students’ motivation and collective engagement. For instance, mechanisms such as point systems, group competitions, or reward badges encourage teamwork. Platforms like ClassDojo utilize gamified systems to promote collaborative behaviors among students. Scientific studies confirm that gamification enhances students’ focus and long-term engagement in collective activities (Deterding et al., 2011). In Uzbekistan, gamification is applied in primary education, particularly in subjects like mathematics and reading, through interactive games that foster teamwork (Rahmonova, 2022). This method is especially effective in sparking interest and engaging young learners in collaborative activities.

Project-based learning (PBL) is an effective method for developing students’ creative and collaborative skills in building classroom communities. In this approach, students work in groups to address real-world problems through projects, such as “Beautifying the Classroom” or “Protecting the Environment.” These projects teach students to distribute tasks, collaborate, and achieve collective goals. Research demonstrates that PBL significantly enhances critical thinking, problem-solving, and teamwork skills (Thomas, 2000). In Uzbekistan, PBL is implemented in primary schools through projects focusing on local traditions or global issues, such as “Uzbek Folk Tales” or “Nature Conservation” (Abdullaev, 2019). These initiatives not only foster teamwork but also connect students to their cultural heritage and global challenges.

Digital technologies are opening new opportunities for building classroom communities. Platforms like Google Classroom, Microsoft Teams, and Zoom enable students to collaborate in virtual environments. Virtual reality (VR) and augmented reality (AR) technologies allow students to engage in immersive group projects, such as virtual nature tours or collaborative scientific experiments. Scientific studies show that digital technologies enhance students’ collective engagement and motivation (Merchant et al., 2014). In Uzbekistan, while digital technologies are not yet widespread in primary education, some schools are adopting interactive whiteboards, tablets, and online platforms to organize collaborative projects (Karimov, 2021). However, the integration of digital tools requires improved teacher training and infrastructure development.

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Developing emotional intelligence is crucial for building classroom communities. Daniel Goleman's theory of emotional intelligence suggests that students' ability to manage their emotions and communicate effectively with others is a key factor in successful teamwork. Activities such as "friendship circles," "group discussions," or "role-playing games" help students develop empathy, mutual respect, and conflict resolution skills (Barras, 2017). Uzbek pedagogical literature highlights the importance of such activities in improving the classroom's psychological environment and fostering collective engagement (Yusupova, 2020). Creating a positive psychological environment is a critical factor in community building, with teachers' guidance and students' active participation ensuring its success. The effectiveness of innovative approaches depends on their proper implementation and adaptation to the classroom environment. Overuse of digital technologies may distract students, while poorly designed gamification can undermine intrinsic motivation. Teachers must consider students' age, psychological characteristics, and social context when applying these methods. In Uzbekistan, challenges in implementing innovative approaches include limited resources, insufficient teacher training, and underdeveloped infrastructure (Ismoilov, 2023). Addressing these issues requires ongoing professional development programs, training in modern technologies, and investment in digital resources for schools. The future of classroom community building in primary education is closely tied to advancements in artificial intelligence (AI), neuroscience, and digital technologies. AI-powered platforms can analyze group dynamics and provide teachers with personalized recommendations to enhance collaboration. Neuroscience research, particularly on brain plasticity (neuroplasticity), offers insights into optimizing students' social and cognitive development. In Uzbekistan, the integration of national values, such as Uzbek folk traditions and culture, with global educational standards will further enhance community-building efforts. For instance, incorporating traditional Uzbek games and cultural activities into classroom projects strengthens students' sense of identity and collective spirit (Ismoilov, 2023).

Conclusion

Innovative approaches to building classroom communities in primary education significantly contribute to students' social, emotional, and cognitive development. Collaborative learning fosters teamwork and communication skills, while gamification boosts motivation and engagement. Project-based learning enhances creativity and critical thinking, and digital technologies open new avenues for collaboration. Developing emotional intelligence creates a positive psychological environment in the classroom. A scientific approach is key to ensuring the effectiveness of these methods, but their success depends on proper implementation and adaptation to students' needs. In Uzbekistan, implementing innovative approaches faces challenges such as limited resources and the need for teacher training, necessitating a systemic approach to address these issues. In the future, advancements in AI, neuroscience, and digital technologies will further personalize community-building efforts, enabling students to fully realize their potential. Harmonizing national values with global educational standards will ensure the success of these efforts in Uzbekistan's education system.

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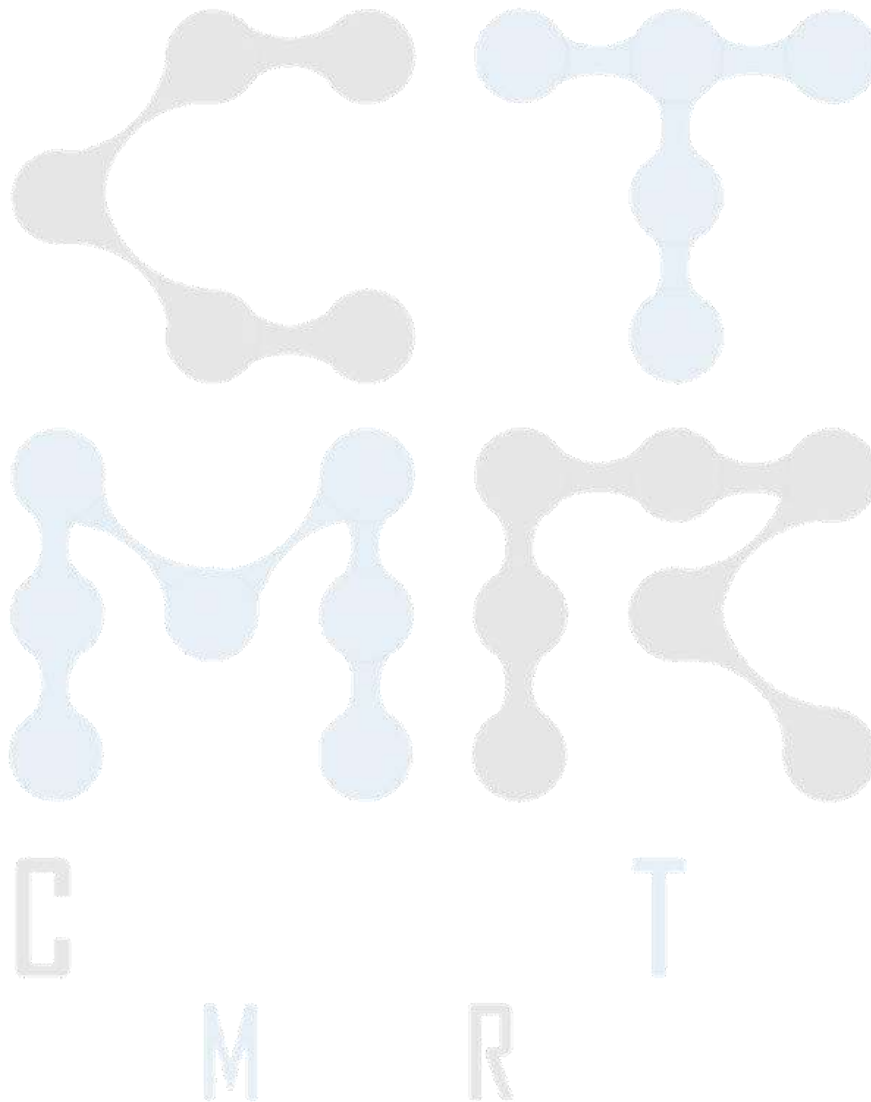
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Annotatsiya: mazkur maqolada ijtimoiy munosabatlarni huquqiy tartibga solishning nazariy va amaliy asoslari tahlil qilingan. Jamiyat taraqqiyotida huquqiy normalarning o'rni, ularning ijtimoiy barqarorlik va fuqarolik jamiyatini shakllantirishdagi ahamiyati yoritilgan. Shuningdek, ijtimoiy munosabatlarning turli shakllarida huquqiy mexanizmlarning ta'siri, ularni tartibga solishda milliy qonunchilik bazasining takomillashuv jarayonlari ko'rib chiqilgan. Tadqiqot davomida huquqiy davlat barpo etish, inson huquq va erkinliklarini ta'minlash hamda huquqiy ongni yuksaltirishda ijtimoiy munosabatlarni tartibga solishning dolzarb masalalari alohida tahlil etiladi.

Kalit so'z: ijtimoiy munosabatlar, huquqiy tartibga solish, qonunchilik bazasi, huquqiy ong, fuqarolik jamiyati, huquqiy davlat, huquqiy normalar.

KIRISH

Jamiyat hayotining barcha sohalarida yuz beradigan o'zgarishlar ijtimoiy munosabatlarning murakkablashuvi va ularni tartibga solish zaruratini keltirib chiqaradi. Insoniyat taraqqiyoti jarayonida huquq ijtimoiy munosabatlarning muhim regulyatori sifatida shakllanib, ularning izchil rivojlanishiga kafolat yaratadi. Shu nuqtai nazardan, huquqiy tartibga solish mexanizmlarining mukammal bo'lishi nafaqat ijtimoiy barqarorlikni ta'minlaydi, balki huquqiy davlat va fuqarolik jamiyati poydevorini ham mustahkamlaydi. O'zbekiston Respublikasida amalga oshirilayotgan huquqiy islohotlar, xususan, qonunchilik bazasining takomillashuvi va huquqni qo'llash amaliyotining samaradorligi ijtimoiy munosabatlarni tartibga solishda muhim ahamiyat kasb etmoqda. Shu bilan birga, zamonaviy davrda ijtimoiy munosabatlarning xilma-xilligi, yangi huquqiy muammolarni yuzaga chiqarishi va ularni hal qilish mexanizmlarini ishlab chiqish ehtiyoji mazkur mavzuni tadqiq etishni dolzarb vazifalardan biriga aylantirmoqda.

Asosiy qism.

Ijtimoiy munosabatlar jamiyat hayotining asosiy tarkibiy qismi sifatida insonlarning kundalik faoliyatini muvofiqlashtiradi. Ushbu munosabatlarning tartibga solinishi huquqiy mexanizmlar orqali amalga oshirilishi ularning barqarorligi va izchilligini ta'minlaydi. Huquqiy tartibga solish, eng avvalo, davlat tomonidan ishlab chiqilgan va rasmiylashtirilgan normalar tizimi orqali ijtimoiy jarayonlarni boshqarishni anglatadi. Shu sababli huquq ijtimoiy tartibning universal kafolati hisoblanadi [Davletov, 2020].

Huquqiy tartibga solish nazariyasida ikki muhim jihat mavjud: birinchidan, ijtimoiy munosabatlarning obyektiv ehtiyojlari; ikkinchidan, ularni tartibga soluvchi huquqiy normalar va mexanizmlar. Bu ikki komponent uyg'unlashgandagina jamiyat barqaror rivojlanishi mumkin bo'ladi [Malikov, 2019]. Huquqiy normalar jamiyatda xatti-harakat me'yorlarini belgilash orqali ijtimoiy tartibni kafolatlaydi. Qonuniy tartibga solinmagan ijtimoiy munosabatlarda turli ixtilof va nizolar yuzaga kelishi tabiiydir. Shu jihatdan huquqiy normalar inson huquq va erkinliklarini himoya qilish, adolatli tartibni ta'minlash hamda ijtimoiy munosabatlarda huquqiy madaniyatni shakllantirishning asosiy vositasi bo'lib xizmat qiladi [Rahmonov, 2021]. O'zbekiston

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Respublikasida huquqiy normalarning ijtimoiy munosabatlarni tartibga solishdagi o'zni ayniqsa mustaqillik yillarida kengayib bordi. Konstitutsiya va qator qonunlarda belgilangan huquqiy kafolatlar jamiyat hayotining barcha sohalarida barqarorlikni ta'minlashga xizmat qilmoqda [Karimov, 2022].

So'nggi yillarda mamlakatimizda huquqiy islohotlarning chuqurlashuvi natijasida ijtimoiy munosabatlarni tartibga solishda milliy qonunchilik bazasi sifat jihatidan yangilandi. "Yangi O'zbekiston" davrida qonunchilik jarayonida shaffoflik, ochiqlik va jamoatchilik ishtirokini ta'minlash bo'yicha qator tashabbuslar amalga oshirildi. Natijada fuqarolik jamiyatining rivojlanishi, inson huquq va erkinliklarini himoya qilishning huquqiy kafolatlari mustahkamlandi [Shodmonov, 2023]. Xususan, ijtimoiy sohadagi munosabatlarni tartibga solishga qaratilgan qonunlar, masalan, "Ijtimoiy xizmatlar to'g'risida"gi Qonun (2019) va boshqa me'yoriy hujjatlar ijtimoiy tenglik va adolatni ta'minlashda muhim rol o'ynamoqda [Oliy Majlis Qonunchilik palatasi, 2019].

Huquqiy mexanizmlarning samaradorligini oshirishda hali mavjud muammolar ham mavjud. Ulardan eng muhimi huquqiy normalarning barcha ijtimoiy qatlamlarda bir xil darajada samarali ishlamasligi bilan bog'liq. Aholining huquqiy ong va madaniyat darajasi ham ijtimoiy munosabatlarning huquqiy tartibga solinishiga bevosita ta'sir ko'rsatadi [Saidov, 2020]. Bundan tashqari, global axborotlashuv jarayonlari va transmilliy muammolarning kuchayishi milliy qonunchilik tizimini doimiy ravishda takomillashtirishni talab qilmoqda. Bu esa huquqshunos olimlar va amaliyotchi mutaxassislar oldida yangi vazifalarni qo'yadi [Islomov, 2021]. Bugungi globallashtirish jarayonida ijtimoiy munosabatlarni tartibga solishda xalqaro huquq normalarining ahamiyati ortib bormoqda. Xalqaro shartnomalar va konvensiyalar inson huquqlarini himoya qilish, iqtisodiy va madaniy aloqalarni tartibga solishda asosiy huquqiy manba hisoblanadi. Masalan, BMTning Inson huquqlari umumjahon deklaratsiyasi ijtimoiy munosabatlarda erkinlik va tenglik prinsiplari uchun umumiy asos yaratgan [United Nations, 1948].

Shuningdek, Yevropa Inson huquqlari sudi amaliyoti ham ijtimoiy munosabatlarning huquqiy tartibga solinishida muhim o'rin tutadi. Ushbu institut milliy qonunchilik tizimlarini xalqaro standartlarga muvofiqlashtirishda muhim rol o'ynaydi [Harris et al., 2018]. O'zbekiston ham qator xalqaro huquqiy hujjatlarni ratifikatsiya qilib, milliy qonunchilik tizimini global standartlarga moslashtirish yo'lida qadamlar tashlamoqda [Tursunov, 2022].

Axborot-kommunikatsiya texnologiyalarining jadal rivojlanishi ijtimoiy munosabatlarda yangi huquqiy muammolarni yuzaga keltirmoqda. Internet, ijtimoiy tarmoqlar va raqamli platformalar orqali shakllanayotgan munosabatlar maxsus huquqiy tartibga solishni talab etadi. Ayniqsa, shaxsiy ma'lumotlarni himoya qilish, kiberxavfsizlikni ta'minlash va elektron tijoratni tartibga solish sohalarida xalqaro va milliy huquqiy mexanizmlarni uyg'unlashtirish zarur [Solove & Schwartz, 2021].

O'zbekistonda "Shaxsiy ma'lumotlar to'g'risida"gi Qonun (2019) va "Elektron hukumat" tizimini rivojlantirishga oid hujjatlar raqamli ijtimoiy munosabatlarni tartibga solishga qaratilgan muhim qadam bo'ldi [O'zbekiston Respublikasi Qonunlari, 2019]. Shu bilan birga, raqamli huquqiy madaniyatni shakllantirish, aholining huquqiy ongini oshirish dolzarb masalalardan biri hisoblanadi [Jalolov, 2023]. Kelajakda ijtimoiy munosabatlarni huquqiy tartibga solish bir necha yo'nalishlarda rivojlanishi kutilmoqda. Birinchidan, qonunchilik tizimida inson huquqlari va erkinliklarini kafolatlashning yanada mustahkamlanishi. Ikkinchidan, raqamli va ekologik huquq

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kabi yangi huquq tarmoqlarining shakllanishi. Uchinchidan, xalqaro hamkorlikni kengaytirish orqali milliy qonunchilikning global standartlarga moslashtirilishi [Svensson, 2020].

O'zbekiston Respublikasida ham "Harakatlar strategiyasi" va "Yangi O'zbekiston taraqqiyot strategiyasi" doirasida huquqiy davlatni yanada rivojlantirish, fuqarolik jamiyatini mustahkamlash hamda huquqiy madaniyatni oshirish ustuvor yo'nalishlardan biri sifatida belgilangan [Prezident qarori, 2022]. Shu bois ijtimoiy munosabatlarni huquqiy tartibga solish masalalarining chuqur tadqiqi nafaqat nazariy, balki amaliy ahamiyat kasb etadi. Ijtimoiy munosabatlarni huquqiy tartibga solishda huquqiy madaniyatning o'rni beqiyosdir. Huquqiy madaniyat — bu nafaqat qonunlarni bilish, balki ularga amal qilish va huquqiy ong orqali ijtimoiy jarayonlarda faol ishtirok etish demakdir. Fuqarolik jamiyatining shakllanishi huquqiy madaniyatning rivojlanishiga bevosita bog'liq bo'lib, u demokratik qadriyatlarining mustahkamlanishida hal qiluvchi omil hisoblanadi [Bekmurodov, 2020].

O'zbekistonda fuqarolik jamiyati institutlari — nodavlat notijorat tashkilotlari, OAV va jamoatchilik kengashlari huquqiy tartibga solish jarayonida faol ishtirok etmoqda. Bu esa huquqiy demokratik davlatning yanada mustahkamlanishiga xizmat qiladi [Mirziyoyev, 2021]. Ijtimoiy munosabatlarni huquqiy tartibga solish faqat jazolash yoki nazorat qilish bilan cheklanmaydi. Aksincha, zamonaviy huquqshunoslikda profilaktika tamoyili tobora ustuvor bo'lib bormoqda. Huquqbuzarliklarning oldini olish, huquqiy tarbiya va targ'ibotni kuchaytirish orqali jamiyatdagi nizolarni huquqiy asosda yechish imkoniyati yaratiladi [Abdurahmonov, 2019].

Profilaktika mexanizmlari, jumladan, huquqiy targ'ibot, huquqiy maslahat markazlari va elektron huquqiy axborot tizimlari aholining huquqiy ongini yuksaltirishda muhim vosita hisoblanadi [Sattarov, 2020].

Huquqiy tartibga solish samaradorligi jamiyat a'zolarining huquqiy ong darajasi bilan chambarchas bog'liqdir. Shu sababli ta'lim tizimida huquqiy tarbiya va huquqiy bilimlarni o'qitishga alohida e'tibor qaratilishi lozim. Maktab va oliy ta'lim muassasalarida huquqiy fanlarning sifatli o'qitilishi kelajak avlodning huquqiy madaniyatini shakllantirishda asosiy omil bo'lib xizmat qiladi [Qodirov, 2018]. Bugungi kunda O'zbekistonda "Huquqiy targ'ibot haftaliklari", "Yoshlar va huquq" kabi dasturlar orqali ta'lim tizimi va huquqiy targ'ibotning uzviyligi ta'minlanmoqda [Adliya vazirligi, 2021]. Shu bilan birga, xalqaro hamkorlik asosida huquqiy ta'limni modernizatsiya qilish masalalari ham dolzarb bo'lib qolmoqda [OECD, 2020]. Huquqiy tartibga solish samaradorligini ta'minlovchi asosiy mexanizmlardan yana biri huquqni qo'llash amaliyotidir. Sud organlari, huquqni muhofaza qiluvchi idoralar va ma'muriy organlarning qarorlari ijtimoiy munosabatlarni huquqiy normalar asosida tartibga solishda hal qiluvchi rol o'ynaydi [Bobojonov, 2022].

Huquqni qo'llashda izchillik va adolatning ta'minlanishi fuqarolarning huquqiy tizimga bo'lgan ishonchini mustahkamlaydi. Shu bois huquqni qo'llash amaliyotini yanada takomillashtirish, sud hokimiyatining mustaqilligini ta'minlash ham dolzarb vazifalardan biri sifatida ko'rilmogda [Habibullayev, 2021].

XXI asrda ijtimoiy munosabatlarning huquqiy tartibga solinishi ko'plab global muammolar — migratsiya jarayonlari, ekologik xavfsizlik, kiberjinoyatchilik, xalqaro terrorizm va pandemiyalar ta'sirida yangi mazmun kasb etmoqda. Bunday vaziyatda milliy qonunchilik tizimlari xalqaro huquq normalari bilan uyg'unlashishi talab etiladi [Held & McGrew, 2007]. Masalan, COVID-19 pandemiyasi davrida sog'liqni saqlash va karantin qoidalarini tartibga soluvchi normativ-huquqiy hujjatlar tezkor qabul qilinishi ijtimoiy munosabatlarning huquqiy ta'minotida moslashuvchanlik

zarurligini ko'rsatdi [Gostin et al., 2020]. Shu bilan birga, ijtimoiy adolat, inson huquqlari va erkinliklari xalqaro huquqiy tartibga solishning markazida qolmoqda [UNDP, 2021].

Huquqiy tartibga solishning samaradorligini oshirish uchun yangi yondashuvlar ishlab chiqilmoqda. "Smart law" konsepsiyasi, ya'ni huquqiy jarayonlarni raqamlashtirish, huquqiy xizmatlarni onlayn ko'rinishda taqdim etish, elektron sud tizimlarini joriy etish bunga yorqin misoldir [Susskind, 2019]. Bundan tashqari, huquqiy tartibga solishda "inklyuziv yondashuv" tobora muhim ahamiyat kasb etmoqda. Ya'ni, qonunchilik jarayonida fuqarolar, fuqarolik jamiyati institutlari va ekspertlarning keng ishtiroki ta'minlanmoqda. Bu esa ijtimoiy munosabatlarning huquqiy tartibga solinishida ochiqlik va ishonchlilikni mustahkamlaydi [Fukuyama, 2014].

Innovatsion huquqiy mexanizmlardan yana biri — sun'iy intellekt va "big data" texnologiyalaridan foydalanib huquqiy monitoringni amalga oshirishdir. Ushbu texnologiyalar ijtimoiy munosabatlardagi real ehtiyojlarni tezkor aniqlash va huquqiy choralarni samarali qo'llash imkonini beradi [Surden, 2020].

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**O‘ZBEKISTONNING MINTAQAVIY SHAROITIDA GIDROENERGETIKA
OBYEKTLARINING ISHONCHLILIK XUSUSIYATLARI**

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Annotatsiya

Mazkur maqolada O‘zbekistonning mintaqaviy sharoitida gidroenergetika ob’ektlarining ishonchlilik xususiyatlari chuqur tahlil qilinadi. Hududning iqlimiy sharoitlari, gidrologik ko‘rsatkichlari, mavjud inshootlarning ekspluatatsiya tajribasi asosida muammolar va ularni hal etish yo‘llari ko‘rib chiqiladi. Shuningdek, gidrotexnika inshootlari xavfsizligi, ishonchlilikni oshirish texnologiyalari, zamonaviy monitoring usullari hamda kelajak istiqbollari haqida ilmiy asoslangan xulosalar beriladi.

Kalit so‘zlar Gidroenergetika, ishonchlilik, gidrotexnika inshootlari, O‘zbekiston, xavfsizlik, energetika tizimi, monitoring.

Kirish

O‘zbekiston Respublikasi energetika tizimida gidroenergetika muhim o‘rin tutadi. Hududning tabiiy-iqlimiy sharoitlari, daryolar va suv resurslari mamlakat energetik xavfsizligini ta‘minlashda asosiy omillardan biridir. So‘nggi yillarda O‘zbekistonda gidroenergetika sohasini modernizatsiya qilish, mavjud inshootlarning samaradorligini oshirish va ularning ishonchliligini ta‘minlash borasida qator loyihalar amalga oshirilmoqda. Mintaqaviy sharoitlarda suv resurslarining mavsumiy taqsimoti, daryolar oqimining notekisligi, iqlim o‘zgarishi va suv tanqisligi kabi omillar inshootlarning barqaror ishlashiga bevosita ta‘sir ko‘rsatadi. Shuningdek, gidroenergetika sohasi ekologik va ijtimoiy masalalar bilan ham uzviy bog‘liqdir. Suv resurslaridan foydalanishda qo‘shni davlatlar bilan hamkorlik, suv taqsimoti bo‘yicha kelishuvlar, ekologik barqarorlikni ta‘minlash – bu boradagi muhim vazifalardandir.

Metodologiya

Ushbu tadqiqotda kompleks yondashuv qo‘llanildi. Birinchidan, mintaqaviy gidrologik va meteorologik ma‘lumotlar tahlil qilindi. Ikkinchidan, mavjud gidrotexnika inshootlarining ekspluatatsiya ko‘rsatkichlari statistik jihatdan o‘rganildi. Uchinchidan, ishonchlilik nazariyasi asosida xavf-xatarlarni modellashtirish amalga oshirildi. To‘rtinchidan, xalqaro tajriba o‘rganilib, O‘zbekistonda qo‘llash mumkin bo‘lgan yechimlar taklif qilindi. Metodologik asos sifatida matematik statistik tahlil, modellashtirish va prognozlash usullari, seysmik barqarorlikni baholash metodlari hamda monitoring texnologiyalarini solishtirish yondashuvlari qo‘llanildi. Tadqiqotda “O‘zbekgidroenergo” ma‘lumotlari, Davlat statistika qo‘mitasi hisobotlari hamda so‘nggi yillarda nashr qilingan ilmiy maqolalar asos qilib olindi.

Gidrotexnika va gidroenergetika inshootlari zamonaviy energetika tizimining muhim qismi hisoblanadi. O‘zbekiston kabi suv resurslariga boy, lekin energiyaga muhtoj mamlakatlarda bu inshootlar iqtisodiy rivojlanish va ekologik barqarorlikni ta‘minlashda katta rol o‘ynaydi. Masalan, Chorvoq gidroelektrostansiyasi (GES) mamlakatning elektr energiyasi ehtiyojlarining muhim qismini qoplaydi. Biroq, ushbu inshootlarning samaradorligi, ishonchliligi va xavfsizligini ta‘minlash ko‘p sonli texnik va ekologik muammolarni keltirib chiqaradi. So‘nggi yillarda

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gidroturbinalarning dizaynini yaxshilash, monitoring tizimlarini joriy etish va xavfsizlik standartlarini oshirish bo'yicha katta ishlar amalga oshirilmoqda. Xalqaro tajribada, masalan, Norvegiyada Fransis va Pelton turbinalarining samaradorligi 95% gacha yetkazilgan. O'zbekistonda ham shunga o'xshash yutuqlarga erishish uchun mahalliy sharoitlarni hisobga olgan holda tadqiqotlar olib borish zarur.

Chorvoq GES ma'lumotlariga ko'ra, muntazam texnik ko'riklar o'tkazilmasa, Pelton turbinalarida pichoqlarning yorilishi ehtimoli 10-15% ga oshadi. Xavfsizlikni ta'minlash uchun quyidagi choralar taklif qilinadi:

Monitoring tizimlari: Har bir turbinada real vaqt rejimida bosim pulsatsiyasi va tebranishlarni o'lchaydigan sensorlar o'rnatilishi kerak.

Bolt ulanishlari: Shushenskaya misolidan kelib chiqib, barcha muhim bolt ulanishlari har yili tekshirilishi va agar kerak bo'lsa, mustahkamroq materiallar bilan almashtirilishi lozim. Favqulodda rejalar: Har bir GES'da falokatlarini oldini olish uchun aniq protokollar ishlab chiqilishi zarur.

Natijalar

Tahlil natijalariga ko'ra, O'zbekistondagi gidroenergetika inshootlarining ishonchligiga ta'sir etuvchi asosiy omillar quyidagilardan iborat:

1. Iqlim o'zgarishi tufayli suv resurslarining notekis taqsimlanishi.
2. Gidrotexnika inshootlarining eskirganligi va modernizatsiyaga ehtiyoji.
3. Ekspluatatsiya jarayonida xavfsizlik standartlariga rioya qilinish darajasi.
4. Hududiy zilzilabardoshlik va geologik xususiyatlar.

So'nggi yillarda amalga oshirilgan modernizatsiya loyihalari tufayli gidroelektr stansiyalarining samaradorligi 10–15% ga oshganligi kuzatildi. Masalan, Farg'ona vodiysi va Surxondaryo hududidagi kichik GESlar modernizatsiya qilinib, ularning ishlab chiqarish quvvati sezilarli ravishda ortgan. Natijalardan ko'rinadiki, avtomatlashtirilgan boshqaruv va monitoring tizimlaridan foydalanish inshootlarning xavfsiz ishlashini ta'minlashda muhim ahamiyatga ega.

Gidrotexnika va gidroenergetika inshootlarini rivojlantirish O'zbekiston uchun nafaqat iqtisodiy jihatdan foydali, balki ekologik barqarorlik va energetik xavfsizlikni ta'minlash nuqtai nazaridan ham strategik ahamiyatga ega. Davlat darajasida ushbu sohada investitsiyalarni ko'paytirish va ilmiy tadqiqotlarni qo'llab-quvvatlash tavsiya etiladi. Ushbu tadqiqot O'zbekiston gidroenergetika sohasining hozirgi holatini tahlil qiladi va kelajakdagi rivojlanish yo'nalishlarini belgilaydi. Pelton va Fransis turbinalarining samaradorligini oshirish, X-Blade va splitter pichoqlar kabi zamonaviy texnologiyalarni joriy etish, shuningdek, monitoring tizimlari va xavfsizlik standartlarini yaxshilash orqali mamlakat energetik imkoniyatlarini sezilarli darajada kengaytirish mumkin.

So'nggi yillarda O'zbekiston Respublikasi Prezidenti tomonidan bir qator muhim xujjatlar qabul qilindi. Xususan, "Qurilish-montaj ishlari sifatini tubdan yaxshilash va qurilishni nazorat qilish tizimini takomillashtirish choralari to'g'risida"gi 2020 yil 5 fevraldagi PQ-4586-sonli Qarori qurilish-montaj ishlari sifatini yanada oshirish, qurilish sohasidagi nazorat qiluvchi inspeksiya rolini kuchaytirish, "Qurilish sohasiga axborot-kommunikatsiya texnologiyalarini keng joriy etish chora-tadbirlari to'g'risida"gi 2019 yil 20 sentyabrdagi PQ-4464-sonli qarori qurilish sohasida korrupsiya va byurokratik to'siqlarni bartaraf etish, zamonaviy axborot-kommunikatsiya

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texnologiyalarini keng joriy etish orqali qurilish jarayonlarining barcha bosqichida jamoatchilik uchun shaffoflikni ta'minlash maqsadida, "Qurilish sohasini davlat tomonidan tartibga solishni takomillashtirish qo'shimcha chora-tadbirlari to'g'risida"gi 2018 yil 14 noyabrdagi PQ-5577-sonli qarori qurilish sohasini davlat tomonidan tartibga solishni takomillashtirish, investisiyalarni jalb qilish uchun qulay shart-sharoitlar yaratish, qurilish tarmog'i kadrlarini professional tayyorlash, qayta tayyorlash va ularning malakasini oshirish tizimining samaradorligini oshirish maqsadida qabul qilingan.

O'zbekiston Respublikasi Prezidentining "Suv resurslarini boshqarish tizimini yanada takomillashtirish chora-tadbirlari to'g'risida" 2019 yil 9 oktyabrdagi PQ-4486-son qarori suv resurslarini boshqarish va suv xo'jaligi ob'ektlaridan foydalanish tizimini yanada takomillashtirish, irrigasiya va meliorasiya loyihalarini amalga oshirish samaradorligini ta'minlash, suv xo'jaligini boshqarish sohasida bozor tamoyillari va mexanizmlarini joriy etish, shuningdek, ushbu sohada ilm-fanni rivojlantirish maqsadida qabul qilingan bo'lib, unda suv resurslaridan oqilona va samarali foydalanish, suv xo'jaligi ob'ektlari (suv olish inshootlari, suv omborlari, nasos stansiyalari hamda irrigasiya va drenaj kanallari)ning ishonchli va xavfsiz ishlashini ta'minlashga, shuningdek, suvni hisobga olish vositalarini yaratish va takomillashtirishga doir ilmiy asoslantirilgan tavsiyalarni ishlab chiqish, tashqi muhitning agressiv ta'siriga uchragan beton va temir-beton kanallari hamda boshqa gidrotexnika inshootlaridan foydalanish mustahkamligini oshirish bo'yicha ilmiy asoslantirilgan tavsiyalarni ishlab chiqish topshiriqlari berilgan.

Muhokama

Gidroenergetika ob'yektlarining ishonchliligini oshirish uchun quyidagi choralar muhim hisoblanadi:

- zamonaviy monitoring tizimlarini joriy qilish;
- eskirgan uskunalarni bosqichma-bosqich yangilash;
- gidrotexnika inshootlarining seysmik barqarorligini oshirish bo'yicha qo'shimcha tadbirlar ko'rish;
- kadrlar malakasini oshirish va ilmiy-tadqiqot ishlari hajmini kengaytirish.

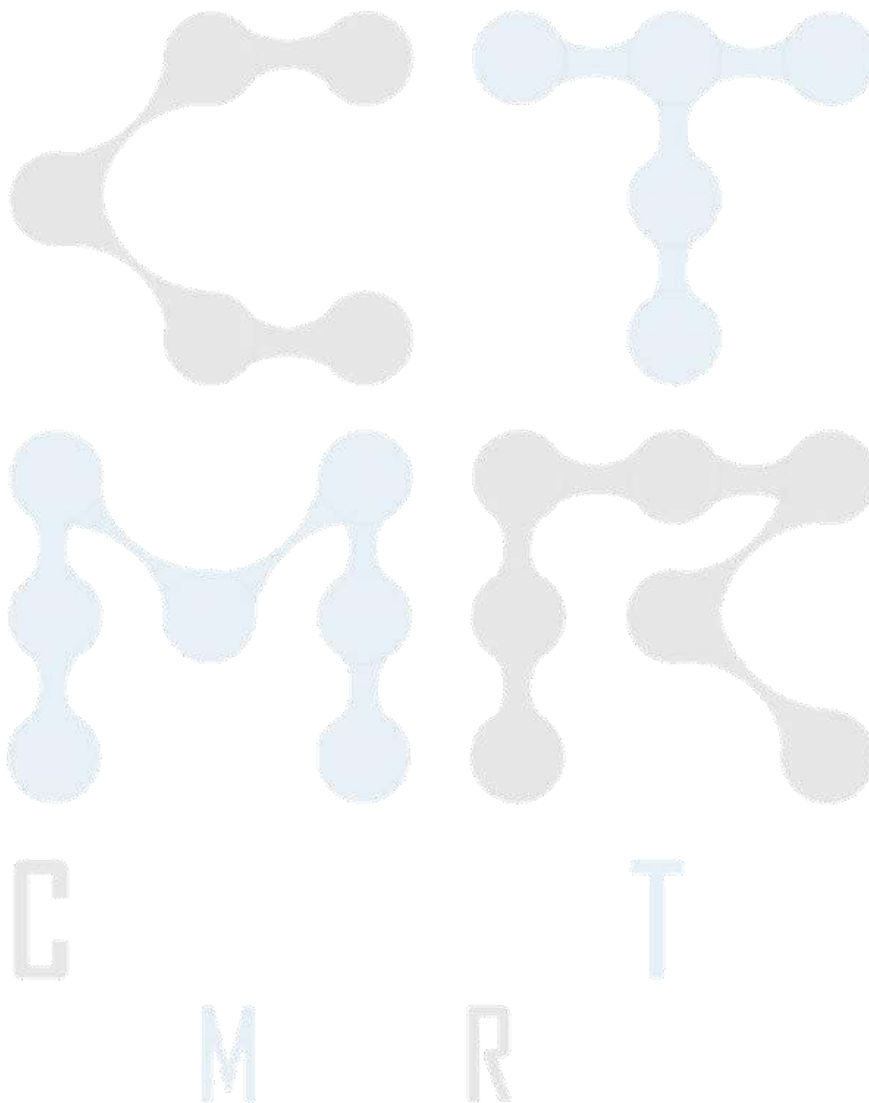
Xalqaro tajriba shuni ko'rsatadiki, ishonchlilikni oshirish uchun avtomatlashtirilgan monitoring va xavfsizlik tizimlaridan foydalanish samarali natijalar beradi. Masalan, Yaponiyada gidrotexnika inshootlari seysmik xavf darajasiga qarab real vaqt monitoringi bilan jihozlangan. Norvegiyada esa gidroenergetika inshootlarida "smart-sensor" texnologiyalaridan foydalaniladi. Ushbu tajribalarni O'zbekiston sharoitiga moslashtirish orqali energetika tizimining xavfsizligi va barqarorligini yanada mustahkamlash mumkin.

Xulosa

O'zbekiston mintaqaviy sharoitida gidroenergetika ob'yektlarining ishonchliligi mamlakat energetika xavfsizligi uchun strategik ahamiyatga ega. Hududiy iqlimiy va geologik omillarni hisobga olgan holda, mavjud inshootlarni modernizatsiya qilish, zamonaviy monitoring tizimlarini tatbiq etish va xavfsizlikni ta'minlash choralari ishonchlilikni sezilarli darajada oshiradi. Kelgusida gidroenergetika ob'yektlarining samaradorligini oshirish barqaror rivojlanishga xizmat qiladi.

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Beruni district of the republic of karakalpakstan

Lobarxon Bazarbaeva

Key words: Tomb of Chirmas Baba, Tomb of Sultan Uvais Baba, Tomb of Chinor Baba, Tomb of Sheikh Abbas Vali, shrine.

Annotation: This article provides information about the famous shrines, ancient shrines and tombs located in the territory of the Beruni district of the Republic of Karakalpakstan, their history, as well as the myths and legends related to them.

Today, mainly pilgrimage tourism is developing around the world. Many travelers go on a trip in order to improve their knowledge of history and expand their worldview, along with recreation and sightseeing. They also go on long journeys to express their respect for great people by visiting the graves and mausoleums of great people who have lived in history. In addition, legends and stories spread among the people about people who lived in the distant past and had extraordinary power and knowledge attract many pilgrims. Today, let's get acquainted with ancient shrines with a long history, located in the Beruni district of the Republic of Karakalpakstan, and the legends associated with them. In the territory of Beruni district, there are famous shrines such as Kechirmas Baba Mausoleum, Sultan Uvais Baba Mausoleum, Chinor Mausoleum, Sheikh Abbas Vali Mausoleum.

In the territory of Beruni district, there are famous shrines such as Kechirmas Baba Mausoleum, Sultan Uvais Baba Mausoleum, Chinor Mausoleum, Sheikh Abbas Vali Mausoleum. Maqbara- (Arabic, marqad, turbat) an architectural structure or a stone coffin, hut, saghana where the body of a corpse is located. The tomb of Kechirmas Baba (or the Shrine of the Unforgiving Father) is a historical monument located in the Beruni district of the Republic of Karakalpakstan. The tomb is considered a historical monument belonging to the 12th-14th and 16th-19th centuries. By the decision of the Cabinet of Ministers of the Republic of Uzbekistan on October 4, 2019, the tomb was designated as a material cultural monument. It is included in the national list of real estate objects of heritage and received state protection. The unforgiving grandfather was one of the saints who lived in this area in ancient times. In ancient times, people suffering from incurable diseases went to Baba Kechirmas for healing. Baba Kechirmas cured them. If the patient commits a sin later, he will not recover and his pain will worsen again. For this reason, his name was called "Unforgiving grandfather". Today, the number of visitors is increasing day by day due to the development of internal and external tourism, the reconstruction of the shrine and the creation of conditions for the visit of tourists.



Sultan Uwais Bobo complex is an architectural monument in Beruni district (17th-19th centuries). Sultan Uwais (real name Suhail ibn Amir ibn Ruman ibn Nahiya ibn Murad) was born in the Muradi tribe of the Qaran village of Yemen (in 625 AD). He was martyred at the age of 32 in the battle of Siffin (657 AD), the soldiers of Hazrat Ali and Muaviya. He was buried in the village of Safa, Syria. Sultan Uwais was engaged in collecting hadiths (7a. 1st half). In the 17th century, his followers built a symbolic tomb (in present-day Beruni) and a shrine. Olloquli Khan's father built a large mosque and 10 separate chapels for the sheikh (19th century). The complex is rectangular in shape (21.5x53 m), oriented from north to south. Mausoleum of Sultan Baba, mausoleums made of stone (mostly with domes), etc. It is surrounded by a brick wall to the north of the courtyard. In the south there is a mosque, a porch, a room and visits. The complex is approached from the west. Sultan Uwais Baba complex is based on the medieval Khorezm architectural tradition (fired brick) level. On the initiative of Khorezm region hokimity, the shrine, the entrance part was renovated (2002). The mausoleum of Grandfather Sultan Uwais is not only a favorite place of the people of the lower Amudarya, but also a tourist center.



Chinor Baba Mausoleum (or Shinor Baba Mausoleum) is a historical and architectural monument in the Beruni district of the Republic of Karakalpakstan. The historical object dates back to the 14th and 19th centuries, and today it is located in the cemetery of Grandfather Sultan Uvais in the territory of the "Dostlik" settlement. The mausoleum of Chinor Baba is also part of the complex of Sultan Uwais Baba. Traditionally, pilgrims visit this mausoleum first and then the tomb of Sultan Uvais. The reason for following this tradition is that, according to some reports, Chinor Baba was the mentor of Sultan Uwais. According to other sources, it is assumed that Chinor Baba was his muezzin or barber - the saint's personal barber. Because of his respect for his teacher, Sultan Uwais bequeathed him to be buried next to his teacher's feet after his death. Therefore, the mausoleum of Chinor Baba is located at the top of the complex, and pilgrims visit it first. It is also possible that St. Chinor Baba was a textile character, since the word "shinor" means "sycamore", it is also more likely to be a nickname. There are no biographical data confirming the existence of Chinor Baba's personality and sources of his being a saint. According to the legends spread among the local population, Chinor Baba's original name was Abdullah Yamani, and he was the person who gave his hand to Sultan Uvais Baba and entered his sect. He also worked as a barber. In the narrations, Sultan Uvais said during his lifetime: "No one's hand has touched my head except the hand of Master Chinor." Therefore, if that person dies, let him be buried in a higher place than me.



The mausoleum of Sheikh Abbas Wali (or the mausoleum of Sheikh Abbas Wali, the shrine of Shobboz Baba) is a historical monument in Beruni district of the Republic of Karakalpakstan. It is located. Sheikh Abbas Wali's real name is Sheikh Mazguruiddin ibn Musa ibn Muhammad ibn Abdullah ibn Abbas. It is said that the family of this person goes back to Abbas, the uncle of the Prophet Muhammad. Sheikh Abbas Wali was born in Arabia in 732 AD. At the age of 40, that is, in 772, Sheikh Abbas moved with his mother to Khorezm, to the capital city Qat, which was one of the centers of culture at that time. The sheikh settled here, got married and had ten children. The era in which Sheikh Abbas lived corresponds to the period when Zoroastrianism still existed. For this reason, it is mentioned in the sources that Sheikh Abbas spent all his energy to convert some of the Zoroastrians to Islam by explaining the Qur'an, Hadith, and Sharia. At the beginning of the 19th century, when the fortress built by Anusha Khan was washed away by the Amudarya river, the inhabitants of the new Kat settled near the tomb of Sheikh Abbas Wali, located on the right bank of the river. After that, these lands were called Shabboz. After 1957, the town of Shabboz was named Beruni. It can be seen that the territory of the mausoleum formed the basis of today's city of Beruni.



In short, in all shrines, people whose names were etched in history because of their extraordinary qualities, knowledge, good deeds and many other good deeds were buried in ancient times. Therefore, every person should visit not only the graves of such great people, but also the areas where they lived at least once in their lifetime.

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Abstract. Research purpose was to assess the possibilities of creating and transplanting a cornea to hu- mans.

Materials and methods: reviewed the current publications of Russian and foreign authors on such bases as PubMed, Medline, e-Library. Were studied information about the methods of keratoprosthetics, the structure of the keratoprostheses used today, modern developments in the field of replacing the donor cornea with an equivalent created by using 3D bioprinting technologies, as well as the possibility of transplanting keratoxenografts to human, have been analyzed.

Results and their discussion: The cornea is a complex structure of an eye. It consists of 5 layers: epithelium, Bowman's layer, stroma, Descemet's membrane and endothelium. Some authors also distinguish 6-th layer - pre-Descemet's membrane. Each of these layers has their own functions. Cornea is a transparent, avascular and highly innervated tissue. Its primary functions are to transmit and refract light entering the eye and to protect the eye. Today there is an acute problem of lack of donor corneas, as a result of which the development of analogs is required, that can completely replace the human cornea. Keratoprostheses are widely used all over the world, some types of which are entirely made of synthetic materi- als and show good engraftment, as well as a high percentage of vision restoration in patients. However, their use is limited to strict indications. The use of modern technologies in the field of tissue engineering - 3D-bioprinting allows you to create the cornea in artificial conditions. However, selection of material for bio-ink is difficult. Such material must have sufficient mechanical strength, biocompatibility, transparency, bioinertness, suitable biodegradability, and must comply with clinical requirements. Collagen and silk fibroin have been found to be the most suitable materials. However, collagen is not strong enough, therefore it is combined with alginate, and silk fibroin is not sufficiently similar to the proteins of the human extracellular matrix. Nevertheless, the printed structures have shown good vitality, and in the future, they are planned to be engrafted in humans. Another ex- perimental method that allows replacing the donor cornea is

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the use of kerat xenografts taken from a pig. However, in the experiments carried out, it was found that not all prostheses were engrafted, and those that were engrafted required further keratoplasty or keratoprosthesis.

Conclusions: today there are prostheses that can replace the donor cornea - keratoprosthesis, but their use is strictly limited and is decided in each case individually. Developments in the field of bioprinting of the cornea have shown that it is possible to synthesize a model of the cornea, but requires careful selection of materials, and existing models show good results when engrafted in rabbits. Kerat xenografts can be transplanted in urgent cases. Such operations are effective as organ-preserving ones. Thus, to date, there is no anatomical and functional replacement for the donor cornea, but there is a lot of research in this area.

Keywords: donor cornea, keratoprosthesis, keratoprosthesis, 3D bioprinting, kerat xenograft.

Аннотация. *Цель исследования* – оценить возможности создания и трансплантации роговицы человеку. *Материалы и методы исследования.* Проанализированы актуальные публикации российских и зарубежных авторов на ресурсах *PubMed, Medline, E-library*. Критерием выбора были материалы, содержащие информацию о способах кератопротезирования, строении используемых сегодня кератопротезов, современных разработках в области трансплантации донорской роговицы эквивалентом, созданным с использованием технологий 3D-биопринтинга, а также возможность пересадки кератоксеноимплантов. *Результаты и их обсуждение.* Роговица – это сложная структура зрительного анализатора человека, состоящая из 5 слоев: эпителий, Боуменова мембрана, строма, Десцеметова мембрана, эндотелий. Некоторые авторы также выделяют 6 слой – пре-Десцеметова мембрана. Каждый из этих слоев выполняет свою функцию. Роговица – прозрачная, богато иннервируемая, аваскулярная ткань. Она является важным компонентом преломляющей системы зрительного аппарата глаза, также выполняет защитную функцию. Сегодня остро стоит проблема нехватки донорских роговиц, вследствие чего требуется разработка аналогов, способных полностью замещать роговицу человека. Широкое применение во всем мире получили кератопротезы, некоторые виды которых полностью состоят из синтетических материалов и показывают хорошую приживляемость, а также высокий процент восстановления зрения у пациентов. Однако их применение ограничивается строгими показаниями. Использование современных технологий в области тканевой инженерии – 3D-биопринтинга позволяет создать роговицу в искусственных условиях. Сложность заключается в подборе материала для

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био-чернил. Материал должен отвечать следующим критериям: иметь достаточную механическую прочность, биосовместимость, прозрачность, биоинертность, подходящую биоразлагаемость и должен соответствовать клиническим требованиям. Установлено, что наиболее подходящими материалами являются коллаген и фиброин шелка. Коллаген отличается недостаточной прочностью, поэтому его комбинируют с альгинатом; а фиброин шелка в свою очередь недостаточно схож с белками внеклеточного матрикса человека. Тем не менее напечатанные структуры согласно литературным данным показали хорошую жизнеспособность и в перспективе планируется их практическое применение. Еще одним экспериментальным методом, позволяющим заменить донорскую роговицу, является использования кератоксеноимплантов взятых от свиньи. В проведенных экспериментах установлено, что не все протезы приживались, а прижившиеся требовали проведения в дальнейшем кератопластики или повторного кератопротезирования. **Выводы.** В настоящее время существуют протезы, способные заменить донорскую роговицу – кератопротезы, однако их использование строго ограничено и решается в каждом случае индивидуально. Разработки в области биопечати роговицы глаза показали, что синтезировать модель роговицы возможно, однако требуется тщательный подбор материалов, а уже существующие модели показывают хорошие результаты при приживлении их кроликам. Кератоксеноимпланты возможно пересаживать в urgentных случаях. Такие операции эффективны как органосохраняющие. Таким образом, на сегодняшний день не разработано соответствующей донорской анатомической и функциональной замены донорской роговице, но ведется множество исследований в этой области.

Ключевые слова: донорская роговица, кератопротезирование, кератопротез, 3D-биопринтинг, кератоксеноимплант.

Introduction. The cornea is a complex multilayered structure of the visual analyzer. It performs a number of important functions, namely, it provides mechanical protection for the eye and, at the same time, is one of the main refractive systems of the visual organ, therefore, it cannot be completely removed in case of its pathologies. Damage or pathology of the cornea carries a high risk of developing blindness or a significant decrease in visual acuity. In 2010, there were 200,000 visually impaired people in the Republic of Uzbekistan. Keratoplasty is included in the mandatory list of surgical procedures for the rehabilitation of such patients. However, due to an acute shortage of transplants, they are placed on the "Waiting List for Donor Corneas". Every year, approximately 17 thousand patients are included on such lists, while only 1 in 70

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patients in need receives a donor cornea. In 72% of patients, vision improves after keratoplasty, further demonstrating the need for a larger number of grafts. Despite the lack of replacement of the donor cornea, keratoprotheses are widely used worldwide today for severe damage. These prostheses are made of artificial materials that integrate well into the eye, but their use is limited by strict indications.

To address the problem of corneal transplantation for improving vision when donor corneas are limited, numerous studies are being conducted aimed at creating artificial corneas. For this purpose, modern tissue engineering techniques such as 3D bioprinting are ideal. This method allows for layer-by-layer reproduction of human structures. With the correct selection of bio-inks, it is possible to create a graft that closely resembles the native cornea. In recent years, the possibility of transplanting such a cornea into humans has been explored. The described transplant is based on collagen, which is characterized by good biocompatibility with human tissue, the absence of an immune response, and the material is transparent, which is necessary for the refraction of light. Another material that can be used for bioprinting is silk fibroin, obtained from silkworm cocoons. This protein has all the properties suitable for the synthesis of the cornea. A completely different direction is the use of animal corneas for transplantation to humans. Clinical trials have been conducted on the implantation of a pig keratoxen implant in humans. The aim of the study was to evaluate the feasibility of creating and transplanting a cornea into humans.

Materials and methods: We analyzed relevant publications by Russian and international authors over the past 10 years, including those published in PubMed, Medline, and E-library. The selection criteria included materials containing information on keratoprosthetic techniques, the structure of currently used keratoprotheses, current developments in replacing donor corneas with equivalents created using 3D bioprinting technologies, and the feasibility of keratoxin implants.

Results and discussion. The cornea is a transparent, avascular, well-innervated structure of the eye, located in its anterior part. It is the most important element of the refractive system of the visual apparatus. In addition, it performs a protective function, preventing the impact of harmful environmental factors on the eye. The cornea occupies approximately 1/16 of the area of the outer shell of the eye. It has the appearance of a convex-concave lens, with the concave part facing backward. It is the first tissue through which light enters the eye and is directed to the pupil. The cornea is divided into 5 layers: epithelium, Bowman's membrane, stroma, Descemet's membrane, and endothelium. Some authors also distinguish a 6th layer - the pre-Descemet's membrane [14]. Among them, the epithelium, stroma, and endothelium are the cellular layers, and Bowman's membrane, pre-Descemet's membrane, and Descemet's membrane are the acellular layers. The anterior layer is a multilayered

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squamous nonkeratinizing epithelium that prevents tear fluid, toxins, and microorganisms from entering. The basal cell layer of the corneal epithelium is the only one with the ability to mitose, which allows it to quickly renew itself and not leave opacities with minor injuries. Between the epithelium and the stroma is Bowman's membrane, which consists mainly of collagen types I and III, as well as inclusions of collagen fibers types V and VI. It contains numerous pores for the passage of nerve fibers. The thickness of this layer decreases with age and does not regenerate with injury and its removal. The stroma makes up 80-85% of the thickness of the cornea. It consists of a cellular component – keratocytes, which synthesize its extracellular component – collagen. The stroma determines such properties of the cornea as transparency, stretchability, strength, and stability. The pre-Descemet's membrane consists mainly of type I collagen, but also contains type VI collagen, which is organized in 5-8 layers with elastic fibers originating in the peripheral parts of the cornea and in the limbus region. This structure is important for corneal attachment. Descemet's membrane consists mainly of type IV collagen. Its thickness increases with age and provides mechanical protection of the endothelium [22]. The corneal endothelium is a single layer of specialized hexagonal cells capable of mitosis. However, they lose their ability to divide immediately after the final formation of the endothelium. The number of cells in this layer of the cornea decreases with age as the cell area increases. This layer prevents the destruction of the stroma by maintaining a certain water balance—78% water—through the K^+ , Na^+ , and adenosine triphosphate pump, which moves water ions from the hypotonic stroma to the hypertonic aqueous humor. This is essential for nourishing all layers of the cornea, as it is an avascular structure. Therefore, the primary criterion for selecting donor corneas is the density of endothelial cells, which are capable of providing the transplant with nutrients.

Corneal pathologies account for 17-25% of all eye diseases. According to the World Health Organization (WHO), there are over 50 million people worldwide in need of a corneal transplant. In 2010, the WHO also estimated that 39 million people suffer from blindness, 12% of which are due to corneal pathology.

A corneal transplant is a microsurgical procedure during which a damaged corneal area is replaced with a donor graft. This procedure is called keratoplasty. The goal of this surgical treatment is to improve vision deteriorating due to diseases affecting the cornea or injuries. The shortage of cadaveric donor corneas is a pressing issue and has remained relevant for several years. The creation of an artificial cornea would solve the problem of its shortage for all patients in need. However, the development of such a transplant faces several challenges, including the toxicity and allergenicity of the materials, as well as the impossibility of fully restoring the original corneal geometry and optical functions of the eye. Nevertheless, grafts based on

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synthetic materials—keratoprotheses—are used in clinical practice worldwide. Their use is limited by strict indications, which include recurrent graft rejection, category 4-5 opacity, herpetic keratitis, Stevens-Johnson syndrome, cicatricial pemphigoid, etc. The idea of implanting a transparent artificial, alloplastic material into a opacity to restore vision—keratoprosthesis—belongs to Guillaume Pellier de Quengsi, who in 1789 proposed inserting a glass plate into a hole made in the opacity. J. Nussbaum was the first to perform experimental corneal prosthetics in 1853. His intralamellar glass plate remained in the cornea of a rabbit for three years. He also attempted to insert rock crystal prostheses, shaped like cufflinks, into a hole made in a leukoma, but all of them were soon rejected. In the USSR, keratoprosthesis were first performed by V.P. Filatov in 1936.

Keratoprosthesis surgery is performed in two stages. In the first stage, the affected cornea is separated, and a support plate of the prosthesis, shaped to match the curvature of the cornea, is implanted between the layers. Peripheral openings are created in the support plate to allow the separated cornea to fuse and the keratoprosthesis to be secured. The center of this structure contains an opening for the optical portion of the prosthesis, which is closed with a plug at this stage of the surgery. Two to three months pass between surgeries. In the second stage of keratoprosthesis, trepanation of the clouded portions of the cornea above the opening for the optical portion of the prosthesis is performed. The plug is removed, the inner layers of the cornea are excised, and the optical cylinder of the keratoprosthesis is inserted. To prevent the optic portion from becoming fused, it has a projection on the anterior and posterior surfaces. Non-penetrating keratoprosthesis is also possible and is prescribed for bullous dystrophic lesions of the cornea. This condition is accompanied by severe tissue swelling, the formation of blisters on the corneal surface, and severe pain. Unlike penetrating keratoprosthesis, this procedure prevents excessive moisture absorption in the anterior chamber and the anterior layers of the cornea. After its implementation, corneal swelling and epithelial bullosity are reduced, relieving the patient of pain. Non-penetrating keratoprosthesis improves vision only for a short period of time, as the posterior layers of the cornea remain edematous, while the anterior layers lose their transparency and thicken. Penetrating keratoplasty is indicated for these patients in the future. Today, such prostheses as the Boston keratoprosthesis (B-KPP) types I and II, the Fedorov-Zuev keratoprosthesis, the Osteo-odonto-keratoprosthesis, and the AlphaCor are widely used worldwide. One of the most commonly used is the B-KPP type I, due to its simple design and ease of use. In Russia, the Fedorov-Zuev keratoprosthesis, manufactured by the Eye Microsurgery Company, is most commonly used.

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B-Кппо was developed by Dr. Claes Dohlman in 1968. It has been modified several times and was approved by the US Food and Drug Administration in 1992. More than 12,000 implantations have been performed worldwide. There are two types of B-Кппо, which differ in their structure and indications for use. B-Кппо type I is more often used for patients with sufficient tear production, providing lubrication of the ocular surface. Type II is used for patients with very dry and keratinized ocular surface. Type I consists of an anterior and posterior plate made of polymethyl methacrylate. The anterior plate consists of a cap, which acts as an optical lens, where the dioptric power is calculated by substituting the value of the axial length of the eye, and a cylinder on which the donor cornea is placed, and then the posterior plate. The posterior plate has 16 holes necessary to maintain corneal metabolism and hydration. B-Кппо Type II differs from Type I by an additional optical element, which is implanted after eyelid suturing and remains on the ocular surface. Another difference is that B-Кппо Type I provides a field of view of up to 60 degrees, while Type II provides a narrower field of view—40 degrees.

The Fedorov-Zuev keratoprosthesis consists of a non-porous tantalum plate support base and a cylindrical optical element made of Dacryl plexiglass, threaded to a sleeve rigidly attached to the base. A drawback of the device is its low engraftment rate due to the imperfections of the base. The impermeable base plate separates the anterior and posterior corneal layers over a large area, disrupting their anatomical and physiological relationship, disrupting trophic conditions, and leading to the development of aseptic necrosis. In 1963, Benedetto Strampelli developed the Osteo-odonto-keratoprosthesis, the supporting base of which consists of alveolar tissue previously taken from the recipient. Despite the complexity of the procedure, which requires several surgeries spread over several months, Osteo-odonto-keratoprosthesis is becoming increasingly popular, as it has a relatively high success rate and allows for the restoration of vision in cases where other methods are inapplicable for a variety of reasons.

To date, there is no universal prosthesis that could completely replace a donor cornea and solve the problem of graft shortages. Much research is being conducted in this area, aimed at finding materials that could reproduce the structural and functional properties of the native human cornea. Such compounds must have sufficient mechanical strength, biocompatibility with the potential recipient's tissues, transparency, bioinertness, suitable biodegradability, and must meet clinical requirements.

The development of artificial materials for corneal flap replacement has been underway for over fifty years. In 1966, a group of scientists led by Barraquer J. performed one of the first intrastromal implantations using celloidin lenses. Due to

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pronounced neovascularization of the cornea, these lenses did not find application in ophthalmology. In 1994, Ferrata de Chunha proposed polymethyl acrylate for intracorneal implantation. It had many positive characteristics: high biocompatibility, a refractive index close to that of the cornea, ease of processing, and adequate plasticity and elasticity. However, it was found that polymethyl acrylate, when implanted, caused visual aberrations and impaired twilight vision in the postoperative period, limiting its use in clinical practice.

Gelatin films were considered another promising material due to their good biocompatibility and bioinertness. Russian ophthalmologists M.M. Dronov and V.S. Karanov In 2008, this material was tested as an intrastromal implant in the treatment of various corneal dystrophies; however, its use required the use of interrupted sutures, which led to the formation of induced corneal astigmatism.

A corneal transplant with the closest properties and shape to a corneal transplant can be obtained using modern tissue engineering technologies such as 3D bioprinting. This method allows for the layer-by-layer application of biomaterial with micrometer accuracy according to a predetermined template, previously obtained by scanning living tissue or the structure of the human body.

When using this technology to create an artificial cornea model, studies describe the use of collagen for bio-inks, as it is the main extracellular component of the corneal stroma. Type I collagen is most commonly used; it is inexpensive to manufacture and promotes good nerve growth in the tissue. However, this material is not strong and elastic enough to maintain the desired shape. To address this issue, hydrogels, which are widely used in tissue engineering due to their low toxicity, similarity to the extracellular matrix, and tunable biophysical properties, have been added to the bio-ink. In studies, structures printed with such inks demonstrated high mechanical stability, which increased with increasing alginate concentration in the bio-ink. This composition provides a favorable environment necessary for the growth of keratocytes, which are used as the cellular component of the synthesized cornea. These cells, in turn, are obtained from human cadaveric corneal tissue and cultured under specific conditions. Furthermore, the cell morphology depends on the rigidity of the material in which the cell cultures are placed. The rigidity of the material must be such that, when transferred to the surface of the keratocytes, they are able to align the collagen so that its structure is as close as possible to that of the human cornea.

Other studies have suggested the possibility of replacing collagen with silk fibroin, obtained from the cocoon of the *Bombyx mori* silkworm. This protein, like collagen, is widely used in tissue engineering and regenerative medicine due to its ability to virtually not provoke an immune response, controlled degradation rate, and mechanical properties suitable for 3D bioprinting. In experiments, silk fibroin was used

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as a basis for bio-ink and showed good results. Structures printed using this material are capable of supporting the multilayer structure of the epithelium, provide a good medium for the growth of human corneal epithelial cells, and are also characterized by sufficient ingrowth of nerve fibers. However, in its pure form, it is inferior to human collagen due to the lack of natural extracellular matrix proteins. Nevertheless, silk fibroin films implanted in rabbits for six months did not produce an immune response and remained transparent. However, the engraftment of such transplants in humans has not yet been carried out.

An advantage of 3D bioprinting is that the composition and structure of the created corneal equivalent can be modified, allowing for the reproduction of anatomical features of the cornea, such as Bowman's membrane or the limbal zone. However, research in this area currently requires further analysis of biocompatibility after human transplantation and, equally importantly, the ability of the graft to functionally replace the cornea.

To date, there have been cases of human transplantation of a keratoben implant taken from a healthy, freshly slaughtered pig raised in special conditions. This cornea is removed along with the scleral rim, treated with a cryoprotectant, and preserved in liquid nitrogen, followed by vacuum drying. After passing technical inspection, the keratoben implant is sterilized using radiation. The results of the studies showed that this keratoplasty method is effective in urgent cases as an organ-preserving surgery that alleviates the inflammatory process. This group of patients is recommended for subsequent keratoplasty or keratoprosthesis, depending on the severity of the corneal damage.

Conclusions. A significant percentage of people worldwide suffer from bilateral blindness due to corneal pathology, and most of them require corneal replacement surgery to restore vision. Many patients are forced to spend extended periods on a waiting list for donor corneas. Keratoprostheses based on synthetic materials have been developed for patients with severe corneal transparency defects; however, these are installed strictly according to indications and are not suitable for keratoplasty. To address the shortage of donor corneas, 3D bioprinting can be used. This method allows for the layer-by-layer creation of a predetermined structure with micrometer precision. However, the complexity of the method lies in the selection of substrates for the bio-ink. These components must meet the following requirements: sufficient mechanical strength, biocompatibility, transparency, bioinertness, suitable biodegradability, and create a favorable environment for cell proliferation. This is why all research into creating artificial corneas is in the development stage. Existing studies have established that collagen and silk fibroin are the most suitable materials. However, using collagen requires the addition of alginate to the substrate to increase mechanical strength, and

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silk fibroin lacks similarity to human extracellular matrix proteins. However, both materials have demonstrated good viability, and clinical trials for human corneal implantation based on them are planned. Porcine corneal transplantation is another experimental method, but results have shown that it is only suitable as an organ-preserving procedure necessary to relieve ocular inflammation and requires subsequent keratoplasty or keratoprosthesis. Therefore, there is currently no optimal polymer material for the treatment of various corneal diseases, nor a keratoxin implant capable of fully replacing donor material. The choice of a particular polymer is determined by the need to balance clinical and functional efficacy with the risk of postoperative complications and should be decided on an individual basis.

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IMMUNITETNI MUSTAHKAMLASH: TABIIY USULLAR VA ZAMONAVIY TIBBIY
YONDASHUVLAR

Ilmiy rahbar: G'afus Usarov

Biokimyo o'qituvchisi

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Samarqand Davlat Tibbiyot Universiteti 2- bosqich talabasi

Anotatsiya: Ushbu maqola immun tizimini mustahkamlashning tabiiy usullari va zamonaviy tibbiy yondashuvlarini ilmiy nuqtai nazardan yoritadi. Immun tizimining tug'ma va orttirilgan komponentlari, ularning fiziologik mexanizmlari va salomatlikdagi roli ko'rib chiqiladi. To'g'ri ovqatlanish, jismoniy faollik, sifatli uyqu va stressni boshqarish kabi tabiiy usullar immunitetni qo'llab-quvvatlashdagi samaradorligi bo'yicha tahlil qilinadi. Shu bilan birga, vaktsinatsiya, immunomodulyatorlar, genetik tadqiqotlar va shaxsiy tibbiyot kabi zamonaviy yondashuvlarning immun tizimiga ta'siri muhokama qilinadi. Ilmiy tadqiqotlarga asoslangan holda, tabiiy va tibbiy usullarning integratsiyasi immunitetni mustahkamlashda eng samarali strategiya sifatida ta'kidlanadi. Maqola umumiy salomatlikni yaxshilash va kasalliklarning oldini olishga qaratilgan amaliy va ilmiy yondashuvlarni taklif etadi.

Kalit so'zlar: Immun tizimi, tabiiy usullar, zamonaviy tibbiyot, to'g'ri ovqatlanish, D vitamini, C vitamini, probiotiklar, jismoniy faollik, uyqu, stressni boshqarish, vaktsinatsiya, immunomodulyatorlar, shaxsiy tibbiyot, nutrigenomika, immunoterapiya.

Inson salomatligining asosi sifatida immun tizimi organizmni tashqi va ichki tahdidlardan, jumladan viruslar, bakteriyalar, parazitlar va hatto saraton hujayralaridan himoya qilishda muhim rol o'ynaydi. Immunitetni mustahkamlash nafaqat kasalliklarning oldini olish, balki umumiy hayot sifatini oshirish uchun ham muhimdir. So'nggi yillarda tabiiy usullar va zamonaviy tibbiy yondashuvlarning integratsiyasi immun tizimini qo'llab-quvvatlashda samarali strategiya sifatida keng o'rganilmoqda. Ushbu maqola immunitetni mustahkamlashning ilmiy asoslarini, tabiiy usullarning fiziologik mexanizmlarini va zamonaviy tibbiy yutuqlarni kengroq yoritishga bag'ishlanadi. Immun tizimi ikki asosiy komponentdan iborat: tug'ma (innate) va orttirilgan (adaptive) immunitet. Tug'ma immunitet organizmning birinchi himoya chizig'i bo'lib, patogenlarni tezda aniqlaydi va ularga qarshi umumiy javob beradi. Orttirilgan immunitet esa o'ziga xos patogenlarga qarshi antitelalar ishlab chiqarish orqali uzoq muddatli himoya ta'minlaydi. Immun tizimining samarali ishlashi ko'plab omillarga, jumladan genetikaga, yoshga, atrof-muhitga va turmush tarziga bog'liq. Tadqiqotlar shuni ko'rsatadiki, immunitetni mustahkamlash uchun tabiiy usullar va tibbiy yondashuvlar birgalikda qo'llanilganda eng yaxshi natijalarni beradi. Tabiiy usullardan boshlasak, to'g'ri ovqatlanish immun tizimini mustahkamlashda markaziy o'rin tutadi. Vitaminlar va minerallar, xususan, C vitamini, D vitamini, sink va selen kabi mikroelementlar immun hujayralarining faolligini oshiradi. Masalan, C vitamini antioksidant sifatida hujayra shikastlanishini kamaytiradi va fagotsitlarning faolligini rag'batlantiradi. Tadqiqotlar shuni ko'rsatadiki, C vitamini etishmovchiligi organizmning infeksiyalarga qarshi kurash qobiliyatini pasaytiradi (Carr & Maggini, 2017). D vitamini esa T-hujayralar va B-hujayralar faolligini tartibga soladi, bu esa immun javobning muvozanatligini ta'minlaydi. D vitamini darajasining pastligi gripp va boshqa nafas yo'llari infeksiyalariga moyillikni oshirishi isbotlangan (Martineau et al., 2017). Oziq-ovqatda probiotiklar va prebiotiklar ham muhim

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ahamiyatga ega, chunki ular ichak mikrobiotasini muvozanatlash orqali immun tizimiga bilvosita ta'sir ko'rsatadi. Ichak mikrobiotasi immun tizimining taxminan 70% ini tashkil etadi, shuning uchun yogurt, kefir va fermentlangan ovqatlar kabi probiotik mahsulotlar iste'moli immunitetni mustahkamlashda foydalidir.

Jismoniy faollik immun tizimiga ijobiy ta'sir ko'rsatadi. Muntazam o'rtacha jismoniy mashqlar, masalan, tez yurish yoki yoga, yallig'lanishni kamaytiradi va immun hujayralarining sirkulyatsiyasini yaxshilaydi. Tadqiqotlar shuni ko'rsatadiki, haftasiga 150 daqiqa o'rtacha intensivlikdagi aerobik mashqlar yuqori nafas yo'llari infeksiyalari xavfini 30% ga kamaytirishi mumkin (Nieman & Wentz, 2019). Biroq, haddan tashqari jismoniy yuklanish aksincha, immunitetni zaiflashtirishi mumkin, chunki u kortizol va boshqa stress gormonlarining ko'payishiga olib keladi. Uyqu immunitetni mustahkamlashda muhim omil hisoblanadi. Uyqusizlik yoki sifatsiz uyqu sitokinlar ishlab chiqarishni kamaytiradi, bu esa immun javobni susaytiradi. Masalan, bir tadqiqot shuni ko'rsatdiki, kechasi 6 soatdan kam uxlaydigan odamlarda gripp vaktsinasiga qarshi antitelalar ishlab chiqarish darajasi sezilarli darajada past bo'ladi (Prather et al., 2015). Shunday ekan, kechasi 7-9 soatlik sifatli uyqu immun tizimining optimal ishlashi uchun zarurdir.

Stressni boshqarish immunitetni mustahkamlashning yana bir muhim jihati hisoblanadi. Surunkali stress kortizol gormoni darajasini oshiradi, bu esa limfotsitlar faolligini pasaytiradi va yallig'lanishni kuchaytiradi. Meditatsiya, chuqur nafas olish mashqlari va mindfulness kabi usullar stressni kamaytirish orqali immun tizimiga ijobiy ta'sir ko'rsatadi. Bir tadqiqotda meditatsiya bilan shug'ullangan odamlarda yallig'lanish belgisi bo'lgan C-reaktiv oqsil darajasi sezilarli darajada pasaygani aniqlangan (Black & Slavich, 2016).

Tabiiy usullardan tashqari, zamonaviy tibbiy yondashuvlar immunitetni mustahkamlashda muhim o'rin tutadi. Vaktsinatsiya orttirilgan immunitetni rivojlantirishning eng samarali usullaridan biridir. Vaktsinalar organizmga patogenlarni tanishtirmasdan ularga qarshi antitelalar ishlab chiqarish imkonini beradi, bu esa gripp, gepatit va HPV kabi kasalliklarga qarshi uzoq muddatli himoya ta'minlaydi. So'nggi yillarda mRNK vaktsinalari, masalan, COVID-19 ga qarshi ishlab chiqilgan vaktsinalar, immun tizimini faollashtirishda yangi imkoniyatlar ochdi. Ushbu vaktsinalar organizmda o'ziga xos oqsillarni sintez qilish orqali immun javobni kuchaytiradi (Polack et al., 2020). Immunomodulyatorlar va immunoterapiya sohasidagi yutuqlar ham e'tiborga molik. Masalan, monoklonal antitelalar saraton va surunkali yallig'lanish kasalliklarini davolashda ishlatilmoqda. Bu preparatlar immun tizimining ma'lum bir komponentini nishonga olib, uning faolligini oshiradi yoki tartibga soladi. Shuningdek, sitokin terapiyasi va CAR-T hujayra terapiyasi kabi yangi usullar saraton va boshqa immunitet bilan bog'liq kasalliklarni davolashda muhim yutuqlarni ko'rsatmoqda. Bundan tashqari, genetik tadqiqotlar va shaxsiy tibbiyot immunitetni mustahkamlashda yangi imkoniyatlar yaratmoqda. Genomik tahlillar yordamida shaxsiy immun tizimining o'ziga xos xususiyatlari aniqlanmoqda, bu esa individual ovqatlanish rejimlari va davolash strategiyalarini ishlab chiqish imkonini beradi. Masalan, nutrigenomika sohasi oziq-ovqat va genetik omillar o'rtasidagi o'zaro ta'sirni o'rganib, immunitetni optimallashtirish uchun shaxsiy ovqatlanish rejimlarini taklif qilmoqda. Xulosa qilib aytganda, immunitetni mustahkamlash tabiiy usullar va zamonaviy tibbiy yondashuvlarning sinergiyasiga asoslanadi. To'g'ri ovqatlanish, jismoniy faollik, sifatli uyqu va stressni boshqarish kabi tabiiy usullar immun tizimining asosiy funksiyalarini qo'llab-quvvatlaydi. Shu bilan birga, vaktsinatsiya, immunomodulyatorlar va genetik tadqiqotlar kabi zamonaviy yondashuvlar immunitetni yanada samarali boshqarish imkonini beradi. Ilmiy tadqiqotlar shuni ko'rsatadiki, ushbu yondashuvlarni integratsiya qilish nafaqat kasalliklarning oldini olish, balki

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umumiy salomatlikni mustahkamlash uchun eng samarali strategiya hisoblanadi. Kelajakda shaxsiy tibbiyot va biotexnologiyadagi yutuqlar immunitetni mustahkamlashda yangi imkoniyatlar ochadi, ammo hozirgi kunda har bir shaxs tabiiy usullar orqali o'z salomatligini sezilarli darajada yaxshilashi mumkin.

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COVID AND CHANGES IN BLOOD CLOTTING

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Abstract. This article explores the relationship between COVID-19 infection and alterations in blood clotting mechanisms. Since the onset of the pandemic, clinical evidence has demonstrated that COVID-19 is not only a respiratory disease but also a systemic condition with significant hematological complications. Patients with severe forms of COVID-19 frequently exhibit abnormalities in coagulation, including increased risk of venous thromboembolism, disseminated intravascular coagulation (DIC), and microthrombi in vital organs. The article examines the underlying pathophysiological mechanisms, clinical manifestations, diagnostic challenges, and therapeutic strategies related to coagulation disorders in COVID-19. Particular attention is given to the role of endothelial dysfunction, hyperinflammatory response, and cytokine storm in promoting a hypercoagulable state.

Keywords: COVID-19, coagulation, thrombosis, blood clotting, D-dimer, endothelial dysfunction, hypercoagulability, cytokine storm.

INTRODUCTION

The COVID-19 pandemic, caused by the SARS-CoV-2 virus, has presented unprecedented challenges to global healthcare. While initial attention focused primarily on respiratory symptoms and complications, ongoing clinical observations revealed that COVID-19 also exerts profound effects on the hematological system. Altered blood clotting emerged as one of the most serious and life-threatening complications of the disease. Increased incidence of pulmonary embolism, deep vein thrombosis, and ischemic strokes among COVID-19 patients pointed to the existence of a hypercoagulable state triggered by viral infection. Understanding these changes in blood clotting is crucial for improving treatment outcomes, preventing fatalities, and developing long-term management strategies for survivors.

MATERIALS AND METHODS

COVID-19 is associated with a hypercoagulable state, in which the balance of the hemostatic system is shifted toward excessive clot formation. Clinical studies have shown elevated levels of D-dimer, fibrinogen, and other coagulation markers in many hospitalized patients. High D-dimer levels, in particular, are strongly correlated with poor prognosis and increased risk of mortality. These laboratory findings suggest that COVID-19 triggers widespread activation of the clotting cascade, resulting in the formation of thrombi in both large vessels and microcirculation [1].

The underlying mechanisms of these clotting abnormalities are multifactorial. One key factor is endothelial dysfunction caused by the direct invasion of SARS-CoV-2 into endothelial cells via ACE2 receptors. This damages the vascular lining, exposing procoagulant factors and triggering platelet aggregation. Simultaneously, the so-called cytokine storm, characterized by elevated levels of interleukins and tumor necrosis factor-alpha (TNF- α), amplifies the inflammatory response, further activating the coagulation cascade. The combined effects of endothelial injury, systemic inflammation, and platelet hyperactivation create conditions conducive to thrombosis.

RESULTS AND DISCUSSION

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Another important aspect of COVID-related coagulation changes is the occurrence of microvascular thrombosis. Autopsy studies have revealed the presence of widespread microthrombi in the lungs, kidneys, liver, and brain of deceased patients. These microclots impair organ perfusion, contributing to multi-organ dysfunction and increasing mortality. Unlike traditional thromboembolic diseases, COVID-19-related microthrombosis appears to be linked more closely to immune-mediated mechanisms, such as complement activation, than to conventional clotting disorders. This immune-thrombotic interaction is now recognized as a hallmark of severe COVID-19 pathology [2].

Clinical manifestations of altered blood clotting in COVID-19 are diverse. Patients may develop venous thromboembolism (VTE), including deep vein thrombosis and pulmonary embolism, often without classic symptoms. Some also experience arterial thrombotic events, such as myocardial infarction or ischemic stroke, even in the absence of pre-existing cardiovascular disease. Disseminated intravascular coagulation (DIC), though less common, has been reported in critically ill patients, characterized by simultaneous clotting and bleeding due to exhaustion of clotting factors. Such wide-ranging manifestations highlight the complexity of COVID-associated coagulopathy.

Diagnosis of coagulation changes in COVID-19 requires careful laboratory and imaging evaluation. Routine monitoring of D-dimer, prothrombin time (PT), activated partial thromboplastin time (aPTT), fibrinogen, and platelet count is essential in hospitalized patients. Doppler ultrasound and CT angiography may be used to detect thrombotic complications. However, the unpredictable nature of COVID-19-related thrombosis poses challenges, as clotting events can develop rapidly and unexpectedly, even in patients receiving anticoagulant therapy [3].

Therapeutic strategies for managing coagulation disorders in COVID-19 include anticoagulant therapy, most commonly with low-molecular-weight heparin (LMWH). Prophylactic anticoagulation has become standard practice for hospitalized COVID-19 patients to prevent thromboembolic complications. In severe cases with significantly elevated D-dimer levels, intermediate or therapeutic doses may be considered. Additionally, anti-inflammatory treatments, such as corticosteroids and immunomodulators, indirectly reduce thrombotic risk by dampening the cytokine storm. Nevertheless, balancing anticoagulation with bleeding risk remains a major challenge, requiring individualized treatment plans.

Long-term consequences of COVID-related clotting abnormalities are still being studied. Some survivors report persistent symptoms linked to post-COVID syndrome, including fatigue, chest pain, and cognitive impairment, which may be related to microvascular damage from previous thrombotic events. The recognition of COVID-19 as a systemic disease with significant hematological implications emphasizes the need for long-term follow-up and rehabilitation of patients [4].

One important area of discussion in COVID-associated clotting abnormalities is the influence of genetic and individual susceptibility. Not all patients infected with SARS-CoV-2 develop thrombotic complications, suggesting that inherited differences in coagulation pathways may play a role. Variations in genes related to clotting factors, such as Factor V Leiden mutation or prothrombin G20210A, may predispose individuals to thrombosis when combined with the pro-inflammatory environment induced by COVID-19. Similarly, polymorphisms affecting ACE2 receptor expression could influence viral entry and vascular injury, thereby modifying the risk of coagulopathy. These observations highlight the importance of personalized medicine approaches in predicting and managing clotting risks in COVID-19 patients.

Another key factor is the impact of comorbidities, particularly diabetes mellitus, obesity, and hypertension, which are highly prevalent among patients with severe COVID-19. These conditions

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are already associated with endothelial dysfunction and chronic low-grade inflammation, both of which enhance the risk of clot formation. For instance, obese individuals often exhibit elevated levels of procoagulant factors such as fibrinogen and plasminogen activator inhibitor-1 (PAI-1), predisposing them to thrombosis. When combined with the acute inflammatory surge of COVID-19, this baseline vulnerability intensifies the likelihood of venous and arterial thromboembolic events. Thus, patients with metabolic and cardiovascular comorbidities represent a particularly high-risk group requiring vigilant monitoring of coagulation parameters.

Although most reports have focused on adults, pediatric and young adult patients also exhibit unique clotting challenges in the context of COVID-19. While children typically present with milder respiratory symptoms, some develop multisystem inflammatory syndrome in children (MIS-C), a rare but serious condition characterized by hyperinflammation and cardiovascular involvement. MIS-C has been linked to thrombotic events, myocardial injury, and coagulopathy despite the absence of traditional risk factors. In adolescents and young adults, thrombotic complications such as stroke have been documented, underscoring that age alone does not provide immunity against COVID-associated coagulopathies. These findings reinforce the need for clinicians to remain alert to clotting abnormalities even in younger populations [5].

Gender and hormonal influences also play a role in shaping clotting risks during COVID-19. Men are generally observed to have higher rates of severe disease and thrombotic complications, potentially due to differences in immune response, hormonal regulation, and prevalence of comorbidities. At the same time, women, particularly those using hormonal contraceptives or undergoing hormone replacement therapy, may also face increased thrombotic risk. Estrogen is known to enhance coagulability, and in the context of COVID-19, it may act as an additional trigger for thrombotic events. Understanding these gender-specific differences is essential for tailoring prevention and treatment strategies, especially in populations with overlapping risk factors.

Finally, an emerging area of research concerns the impact of vaccination and antiviral therapies on clotting dynamics. While rare cases of vaccine-induced immune thrombotic thrombocytopenia (VITT) have been reported with certain adenovirus-vector vaccines, the overall benefits of vaccination in reducing COVID-related clotting far outweigh the risks. Vaccinated individuals who contract COVID-19 generally experience milder disease, with reduced incidence of hypercoagulable complications. Similarly, early administration of antiviral agents such as remdesivir or nirmatrelvir/ritonavir may limit viral replication, attenuate systemic inflammation, and indirectly reduce thrombotic burden. These developments illustrate how preventive and therapeutic strategies can reshape the landscape of COVID-associated coagulation disorders, offering hope for improved outcomes in future waves of the pandemic.

CONCLUSION

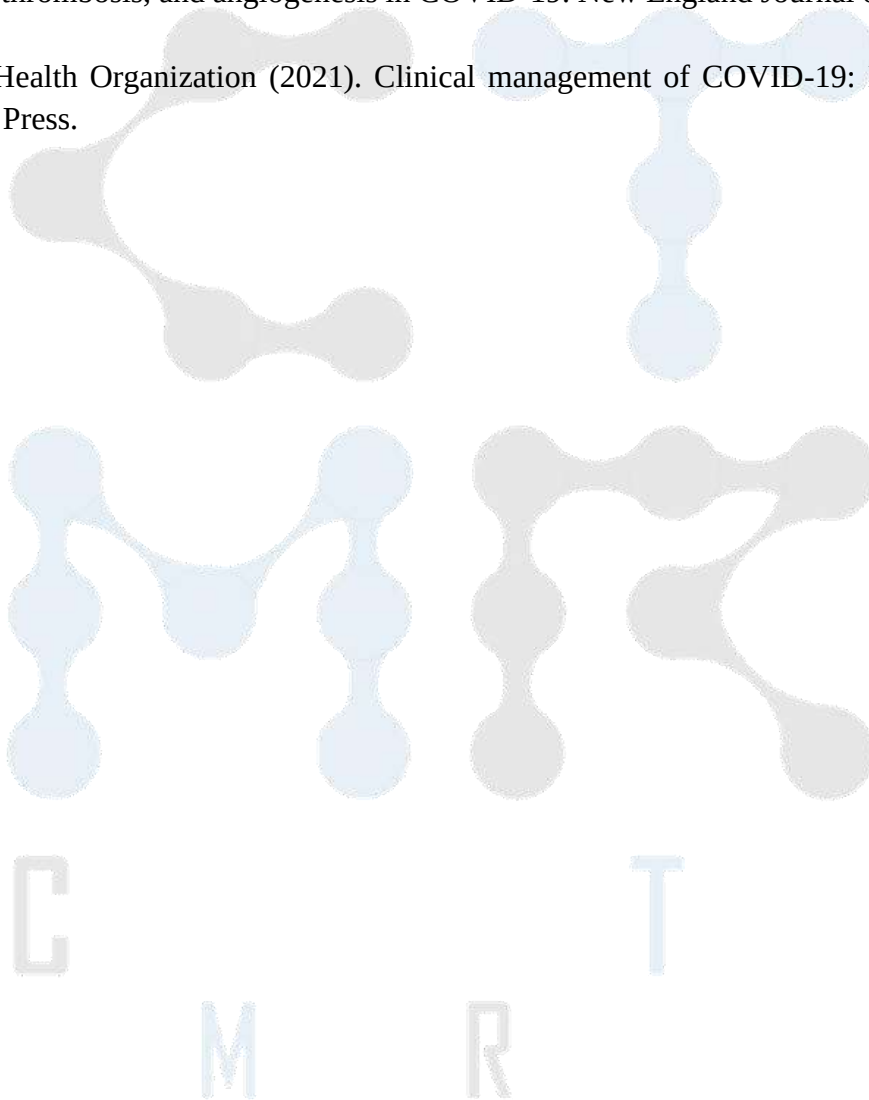
COVID-19 has redefined the understanding of viral infections by demonstrating how a respiratory illness can profoundly affect the blood clotting system. The disease induces a hypercoagulable state through mechanisms involving endothelial dysfunction, systemic inflammation, and immune-mediated thrombosis. Clinical outcomes are heavily influenced by the presence of coagulation abnormalities, which significantly increase morbidity and mortality. Effective management requires early recognition, continuous monitoring, and appropriate anticoagulant therapy. Future research should focus on refining treatment protocols, understanding long-term consequences, and developing targeted therapies to address the unique coagulopathies associated with COVID-19.

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БОЛАЛАР ОРАСИДА ШИФОХОНАДАН ТАШКАРИ ЗОТИЛЖАМНИНГ КЛИНИК-ПАТОГЕНЕТИК ХУСУСИЯТЛАРИ ВА МИКРОНУТРИТИВ ХОЛАТИ

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КАРИМОВ ЖАВОХИР ИЛХОМ УГЛИ

Аннотация: Шифохонадан ташкари зотилжам (ШТЗ) болалар орасида юқумли касалликларнинг асосий сабабларидан бири бўлиб, глобал миқёсда юқори ўлим ва касаллик кўрсаткичларига эга. Ушбу мақола болаларда ШТЗнинг клиник белгилари, патогенетик механизмлари ва микронутриентлар етишмаслигининг ушбу касалликка таъсирини чуқур ўрганишга бағишланган. Мақолада микронутриентлар, хусусан, Д витамини, цинк, селен, А витамини ва темир етишмовчилигининг иммун тизимига таъсири, касаллик оғирлиги, чўзилувчан кечиши, ҳосил бўлиш хавфи ва даволаниш натижаларига алоқаси кўриб чиқилади. Шунингдек, патогенларнинг турли хиллиги (*Streptococcus pneumoniae*, *Haemophilus influenzae*, *Staphylococcus aureus*, *Mycoplasma pneumoniae*, респиратор синцитиал вирус), уларнинг антибиотикларга резистентлиги, вирулентлик омиллари ва болаларда касалликнинг ёшга хос хусусиятлари таҳлил қилинади. Ўзбекистонда ўтказилган тадқиқотларга асосланиб, ШТЗнинг чўзилувчан шакллариининг 10,8-11,3% гача тарқалганлиги, перинатал хавф омиллари (анемия, онанинг ҳомиладорлик даврида ўткир респиратор инфекциялари), фондов касалликлар (астма, аллергия) ва экологик омилларнинг роли таъкидланади. Микронутриентлар етишмаслигининг касаллик чўзилишига таъсири, масалан, Д витамини етишмаслиги 53,1% ҳолатларда, цинк ҳамда селен даражасининг 2,6-3,0 баравар пасайиши, шунингдек, А витамини ва темир етишмаслигининг инфекция хавфини ошириши кўрсатилади. Тадқиқотда ШТЗни даволаш ва профилактика қилишда комплекс ёндашувнинг, шу жумладан, антибиотиклар билан бирга микронутриентлар қўшимчалари (цинк 10-20 мг/кун, Д витамини 1000-2000 ХБ/кун, А витамини) ва иммуномодуляторларнинг муҳимлиги таъкидланади. Мақола илмий адабиётларга асосланиб, замонавий маълумотларни таҳлил қилиш, диагностика ва даволашнинг персонайлаштирилган усуллариини тақдим этишга қаратилган, бу эса болаларда ШТЗ юқини камайтиришга хизмат қилади. Шунингдек, COVID-19 пандемияси даврида микронутриентлар етишмаслигининг роли ва вакцинациянинг аҳамияти кўриб чиқилади.

Калит сўзлар: шифохонадан ташкари зотилжам, болалар, клиник хусусиятлар, патогенез, микронутриентлар, Д витамини, цинк, селен, А витамини, темир, иммун тизими, антибиотик резистентлиги, чўзилувчан зотилжам, диагностика, даволаш, профилактика, этиология.

CLINICAL AND PATHOGENETIC FEATURES OF COMMUNITY-BASED INFECTION AND MICRONUTRITIVE STATUS AMONG CHILDREN

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Annotation: Community-based infection (CIP) is one of the main causes of infectious diseases among children, with high mortality and morbidity rates globally. This article is devoted to an in-depth study of the clinical signs, pathogenetic mechanisms of CIP in children, and the impact of

micronutrient deficiencies on this disease. The article reviews the impact of micronutrient deficiencies, in particular, vitamin D, zinc, selenium, vitamin A, and iron deficiencies on the immune system, disease severity, protracted course, risk of recurrence, and treatment outcomes. The diversity of pathogens (*Streptococcus pneumoniae*, *Haemophilus influenzae*, *Staphylococcus aureus*, *Mycoplasma pneumoniae*, respiratory syncytial virus), their resistance to antibiotics, virulence factors, and age-specific characteristics of the disease in children are also analyzed. Based on studies conducted in Uzbekistan, the prevalence of chronic forms of SLE is 10.8-11.3%, the role of perinatal risk factors (anemia, acute respiratory infections of the mother during pregnancy), underlying diseases (asthma, allergies), and environmental factors is emphasized. The impact of micronutrient deficiencies on the course of the disease is shown, for example, vitamin D deficiency in 53.1% of cases, a 2.6-3.0-fold decrease in zinc and selenium levels, as well as an increase in the risk of infection with vitamin A and iron deficiency. The study emphasizes the importance of a comprehensive approach to the treatment and prevention of SLE, including antibiotics, micronutrient supplementation (zinc 10-20 mg/day, vitamin D 1000-2000 IU/day, vitamin A) and immunomodulators. The article is based on the scientific literature and aims to analyze current data, present personalized methods of diagnosis and treatment, which will help reduce the burden of SLE in children. The role of micronutrient deficiencies and the importance of vaccination during the COVID-19 pandemic are also reviewed.

Keywords: community-acquired pneumonia, children, clinical features, pathogenesis, micronutrients, vitamin D, zinc, selenium, vitamin A, iron, immune system, antibiotic resistance, persistent pneumonia, diagnosis, treatment, prevention, etiology.

КЛИНИКО-ПАТОГЕНЕТИЧЕСКИЕ ОСОБЕННОСТИ ВНЕБОЛЬНИЧНОЙ ИНФЕКЦИИ И МИКРОНУТРИТИВНЫЙ СТАТУС У ДЕТЕЙ

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КАРИМОВ ДЖАВОХИР ИЛХОМ УГЛИ

Аннотация: Внебольничная инфекция (ВБИ) является одной из основных причин инфекционных заболеваний у детей, определяя высокие показатели смертности и заболеваемости во всем мире. Статья посвящена углубленному изучению клинических проявлений, патогенетических механизмов ВБИ у детей и влиянию дефицита микронутриентов на течение данного заболевания. В статье рассматривается влияние дефицита микронутриентов, в частности витамина D, цинка, селена, витамина A и железа, на иммунную систему, тяжесть заболевания, продолжительность течения, риск рецидива и результаты лечения. Проанализированы разнообразие возбудителей (*Streptococcus pneumoniae*, *Haemophilus influenzae*, *Staphylococcus aureus*, *Mycoplasma pneumoniae*, респираторно-синцитиальный вирус), их резистентность к антибиотикам, факторы вирулентности, возрастные особенности течения заболевания у детей. На основании проведенных в Узбекистане исследований распространенность хронических форм СКВ составляет 10,8–11,3%, подчеркнута роль перинатальных факторов риска (анемия, острые респираторные инфекции матери во время беременности), сопутствующих заболеваний (бронхиальная астма, аллергии) и факторов окружающей среды. Показано влияние дефицита микронутриентов на течение заболевания, например, дефицит витамина D в 53,1% случаев, снижение уровня цинка и селена в 2,6–3,0 раза, а также увеличение риска инфицирования при дефиците витамина A и железа. В исследовании подчеркивается важность комплексного

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подхода к лечению и профилактике СКВ, включающего применение антибиотиков, микронутриентов (цинк 10–20 мг/сут, витамин D 1000–2000 МЕ/сут, витамин А) и иммуномодуляторов. Статья основана на данных научной литературы и направлена на анализ современных данных, представление персонализированных методов диагностики и лечения, которые помогут снизить бремя СКВ у детей. Также рассматривается роль дефицита микронутриентов и важность вакцинации во время пандемии COVID-19.

Ключевые слова: внебольничная пневмония, дети, клинические проявления, патогенез, микронутриенты, витамин D, цинк, селен, витамин А, железо, иммунная система, антибиотикорезистентность, персистирующая пневмония, диагностика, лечение, профилактика, этиология.

КИРИШ

Шифохонадан ташкари зотилжам (ШТЗ) болалар орасида юкумли касалликларнинг асосий сабабларидан бири бўлиб, дунё бўйича миллионлаб болаларнинг касалхонага ётқизилиши ва ўлимга олиб келишига сабаб бўлади. Ушбу касаллик ўпка паренхимасининг вирусли, бактериал ёки атипик патогенлар томонидан қўзғатиладиган яллиғланиш жараёни сифатида таснифланади. Ўзбекистонда ўтказилган тадқиқотларга кўра, ШТЗ болалар орасида 36,7% ҳолатларда учрайди, шунингдек, чўзилувчан шакллари 10,8-11,3% ни ташкил этади. ШТЗнинг клиник кўринишлари боланинг ёши, умумий соғлиқ ҳолати, фонов касалликлар (масалан, бронхит астма, аллергия, юрак нуқсонлари), экологик омиллар (ҳаво ифлосланиши, иқлим ўзгариши) ва озиқланиш даражасига боғлиқ равишда ўзгариб туради. Хусусан, ёш болаларда касаллик кўпинча неспецифик симптомлар, масалан, иситма, йўтал, тахипноэ ва нафас қисилиши билан намоён бўлади, бу эса эрта ташхис қўйишни қийинлаштиради. Чакалоқларда ШТЗ интенсив жаҳл (58,4%), анемия (66,7%) ва марказий нерв тизими бузилишлари (ҳаяжонланиш 55,2%, бостирилганлик 24,3%) билан кечади. Перинатал хавф омиллари, масалан, онанинг ҳомиладорлик даврида ўткир респиратор инфекциялари, туғруқ вақтида гипоксия, ҳамда боланинг туғилишда паст вазни бўлиши ШТЗга мойилликни оширади. Патогенетик жиҳатдан, ШТЗ патогенларнинг нафас йўлларида кириши, мукоцилиар тозаланишнинг бузилиши ва иммун жавобининг фаоллашуви натижасида ривожланади. *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Staphylococcus aureus* ва респиратор синцитиал вирус (RSV) каби патогенлар касалликнинг асосий қўзғатувчилари сифатида эътироф этилади, шунингдек, чўзилувчан шаклларда *Staphylococcus aureus* 41,2% ҳолатларда устунлик қилади. Сўнгги йилларда антибиотикларга резистентликнинг ошиши (масалан, макролидларга 88,1%, аминогликозидларга 83,3%) ШТЗнинг даволанишини қийинлаштирмоқда. Сўнгги йилларда микронутриентлар етишмаслиги ШТЗга мойиллик, оғирлик даражаси ва даволаниш натижаларига сезиларли таъсир кўрсатадиган муҳим омил сифатида кўриб чиқилмоқда. Д витамини, цинк, селен, А витамини ва темир каби элементларнинг етишмаслиги иммун тизимининг самарадорлигини пасайтиради, бу эса инфекцияга қарши курашиш қобилиятининг заифлашувига олиб келади. Масалан, чўзилувчан ШТЗда Д витамини етишмаслиги 53,1% ва етишмовчилиги 40,6% ҳолатларда кузатилади, цинк ва селен даражаси эса назорат гуруҳига нисбатан 2,6-3,0 баравар паст бўлади ($p<0,001$). А витамини етишмаслиги пневмония ҳолатларида юқори частотада (субклиник даражада) кузатилади ва инфекция хавфини оширади. Шунингдек, экологик ноқулай ҳудудларда (масалан, Приарале) яшовчи болаларда цитокинлар ва гемостаз тизими бузилишлари

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ШТЗнинг патогенезида муҳим рол ўйнайди. COVID-19 пандемияси даврида микронутриентлар етишмаслигининг роли янада кучайди, чунки карантин чоралари ва озикланиш ўзгаришлари витаминлар даражасини пасайтирди. Ушбу мақола ШТЗнинг болалардаги клиник ва патогенетик хусусиятларини, шунингдек, микронутриентларнинг ушбу касаллик билан боғлиқлигини чуқур таҳлил қилишга қаратилган. Мақсад – микронутриентлар етишмаслигини бартараф қилиш орқали ШТЗнинг профилактикаси ва даволанишини яхшилаш бўйича амалий тавсияларни тақдим этиш, шу жумладан, персонайлаштирилган даволаш схемаларини ишлаб чиқиш ва вакцинациянинг аҳамиятини таъкидлаш. Шифохонадан ташқари зотилжамнинг клиник кўринишлари боланинг ёшига қараб ўзгаради. Чақалоқларда касаллик кўпинча неспецифик симптомлар, масалан, нафас қисилиши, бурун қанотларининг қимирлаши ва кўкрак қафасининг тортилиши билан намоён бўлади. Мактабгача ёшдаги болаларда йўтал ва иситма устунлик қилади, катта ёшдаги болалар эса кўкрак қафасидаги оғриқ ва балағам чиқаришни қайд этиши мумкин. Чўзилувчан ШТЗда симптомлар узок давом этади, масалан, йўтал 100%, нафас қисилиши 94,1%, иситма 81,6%, иштаҳа пасайиши 92,2% ва летаргия 97,1% ҳолатларда кузатилади. Чақалоқларда ШТЗ интенсив жаҳл, анемия ва марказий нерв тизими бузилишлари билан кечади. Оғир шаклларда плевра эффузияси, эмпиема ёки некротик зотилжам ривожланиши мумкин. Рентгенологик тадқиқотлар бактериал зотилжамда лобар консолидацияларни, вирусли зотилжамда эса диффуз интерстициал намуналарни кўрсатади, аммо бу белгилар доимо патогномоник эмас. Диагностикада ПЦР, қон таҳлили (CRP, прокальцитонин) ва микробиологик тестлар қўлланилади, аммо этиологияни аниқлаш қийин. Патогенетик жиҳатдан, ШТЗ патогенларнинг нафас йўллариغا кириши ва уларнинг вирулентлик омиллари орқали мукоцилиар тозаланишни бузиши натижасида ривожланади. Масалан, *Streptococcus pneumoniae* пневмолизин ва капсуляр полисахаридлар орқали ўпка альвеолаларига ёпишиш ва яллиғланишни кўзғатиш қобилиятига эга. Респиратор синцитиал вирус (RSV) ва грипп вируси эпителий хужайраларининг тўғридан-тўғри цитопатик таъсири орқали тўсик функциясини бузади, бу эса иккиламчи бактериал инфекцияларга олиб келади. Чўзилувчан шаклларда антибиотикларга резистентлик (макролидларга 88,1%, аминогликозидларга 83,3%) ва цитокинлар фаоллиги (IL-1 β , IL-4, IL-6, IL-8, TNF- α ортиши, IFN- γ пасайиши) муҳим рол ўйнайди. Экологик ноқулай ҳудудларда яшовчи болаларда цитокинлар ва гемостаз тизими ўзгаришлари касалликнинг оғирлашувини келтириб чиқаради.

Микронутриентлар етишмаслиги ШТЗнинг патогенезидан муҳим ўрин эгаллайди. Д витамини етишмаслиги болаларда ШТЗнинг юқори частотаси билан боғлиқ бўлиб, 25-гидроксивитамин Д даражаси 20 нг/мл дан паст бўлганда макрофаглар фаоллиги ва кателицидин ишлаб чиқарилиши пасаяди, бу эса *S. pneumoniae* ва RSV каби патогенларга қарши иммун жавобни заифлаштиради. Чўзилувчан ШТЗда Д витамини етишмаслиги 53,1% ҳолатларда, цинк ва селен пасайиши эса яллиғланиш маркерлари (CRP, PCT) билан мусбат корреляция кўрсатади ($r=+0.434$ дан $+0.716$ гача, $p<0.01$). Цинк етишмаслиги эпителий тўсиғи функциясини бузади, нейтрофиллар хемотаксиси ва цитокин сигнализациясини пасайтиради, бу эса *Mycoplasma pneumoniae* инфекцияларининг оғирлашуви ва касалхонада ётиш муддатининг узайишига олиб келади. А витамини етишмаслиги нафас йўллариининг шиллик қаватининг бутунлигини сақлаш ва иммун хужайралари дифференциациясини таъминлашда муҳим рол ўйнайди. Гипоретинолемия (20 мкг/дл дан паст) болаларда ШТЗга мойилликни оширади, хусусан, озикланиш даражаси паст бўлган популяцияларда, бу ерда А витамини қўшимчаси

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симптомлар давомийлигини 20-30% га камайтиради. Темир етишмаслиги гипоксия орқали касалликка мойилликни ошириши мумкин, аммо ортиқча темир бактериал ўсишни рағбатлантиради. Бундан ташқари, В2, В6, С витаминлари ва калций етишмаслиги пандемия даврларида ёки мавсумий ўзгаришларда кузатилади, калцийнинг паст даражаси (оддс нисбати ~12) оғир натижаларга олиб келади. Микронутриентлар етишмаслигининг комбинацияси (масалан, цинк ва А витамини) ШТЗнинг оғир шаклларига олиб келади ва даволанишни қийинлаштиради.

ШТЗни даволашда микронутриентлар етишмаслигини бартараф қилиш муҳим аҳамиятга эга. Цинк (10-20 мг/кун), селен, А витамини ва Д витамини (1000-2000 ХБ/кун) қўшимчалари антибиотиклар билан бирга қўлланганда касаллик давомийлигини 1-2 кунга камайтиради ва рецидивларни 15-25% га қисқартиради. Амоксициллин ёки азитромицин каби эмпирик антибиотиклар билан бирга микронутриентларнинг таркибий қўлланиши касалликнинг оғирлигини камайтириш ва тезроқ тикланишни таъминлашда самаралидир. Чўзилувчан шаклларда персонайлаштирилган даволаш, масалан, cholecalciferol ва Polyoxidonium қўллаш, CRP ва PCT даражасини пасайтириб, касалхонада ётиш муддатини 10 кундан 8 кунга қисқартиради. Бронхомунал П каби иммуномодуляторларни қўшиш клиник белгиларни тезроқ бартараф қилишга ёрдам беради. Профилактикада вакцинация (пневмококк ва гриппга қарши), озикланишни яхшилаш ва микронутриентлар даражасини мунтазам текшириш муҳим. Шунингдек, микронутриентлар даражасини мунтазам текшириш ва уларни тўлдириш ШТЗнинг глобал юкини камайтиришда муҳим стратегия сифатида кўрилади.

Хулоса

Шифохонадан ташқари зотилжам болалар орасида юқори касаллик ва ўлим кўрсаткичларига эга бўлган мураккаб юқумли касалликдир. Унинг клиник кўринишлари ва патогенетик хусусиятлари боланинг ёши, соғлиқ ҳолати, фонов касалликлар, экологик омиллар ва озикланиш даражасига қараб ўзгаради. Микронутриентлар, хусусан, Д витамини, цинк, селен, А витамини ва темир етишмаслиги ШТЗга мойиллик ва оғирлик даражасини оширади, бу иммун тизимининг заифлашуви, цитокинлар дисбаланси ва антибиотик резистентлиги билан боғлиқ. Ушбу етишмовчиликни бартараф қилиш, антибиотиклар билан бирга қўшимча даволаш сифатида қўлланганда, касалликнинг давомийлигини ва рецидивларни камайтиради. Микронутриентлар даражасини мунтазам мониторинг қилиш ва уларни тўлдириш, шунингдек, персонайлаштирилган даволаш схемалари (масалан, cholecalciferol, иммуномодуляторлар) ва вакцинация ШТЗнинг профилактикаси ва даволанишида муҳим аҳамиятга эга. Келгусидаги тадқиқотлар микронутриентларнинг таркибий қўлланиши ва уларнинг ШТЗнинг узок муддатли натижаларига таъсирини янада чуқур ўрганишга қаратилмоқда, хусусан, Ўзбекистоннинг экологик ноқулай ҳудудларида. Шу билан бирга, глобал саломатлик ташаббуслари орқали микронутриентлар етишмаслигининг олдини олиш болалар ўлимини камайтиришга хизмат қилади.

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НАФАС ТИЗИМИ КАСАЛЛИКЛАРИДА БЕМОРЛАР ПАРВАРИШИ ВА НАЗОРАТИ

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Анотация: Ушбу мақола нафас тизими касалликлари, хусусан сурункали обструктив ўпка касаллиги (СЎОК), бронхиал астма, пневмония, ўткир респиратор инфекциялар ва ўпка фибрози каби касалликларнинг эпидемиологияси, патофизиологияси, клиник кўринишлари, замонавий парвариш усуллари ва мониторинг чоралари ҳақида кенг қамровли маълумот беради. Илмий ёндашувга асосланган ҳолда, касалликларнинг олдини олиш, асоратларни камайтириш, беморларнинг функционал ҳолатини яхшилаш, тикланиш жараёнини тезлаштириш ва ҳаёт сифатини ошириш бўйича аниқ ва амалий тавсиялар келтирилади. Ўзбекистон шароитида касалликларнинг тарқалишига таъсир қилувчи экологик омиллар (Оролбўйи минтақасидаги шўрланиш ва чанг), касбий хавфлар (пахта чанги ва кимёвий моддалар), ижтимоий-иқтисодий муаммолар ва соғлиқни сақлаш тизимининг чекловлари (ресурслар ва малакали кадрлар етишмаслиги) алоҳида эътиборга олинган. Мақола халқаро клиник кўрсатмалар (ААРС, АТС, ЭРС), сўнгги илмий тадқиқотлар ва Ўзбекистоннинг маҳаллий соғлиқни сақлаш тажрибасига асосланади. Замонавий технологиялар, масалан, масофавий бемор мониторинги (РПМ) ва телемедицинанинг қўлланилиши, шунингдек, соғлиқни сақлаш тизимидаги муаммоларни бартараф этиш бўйича таклифлар келтирилади. Мақола интеграцияланган парвариш ёндашувини ривожлантириш, профилактика чораларини кучайтириш ва аҳоли саломатлигини яхшилашга қаратилган.

Калит сўзлар: нафас тизими касалликлари, беморлар парвариши, назорат чоралари, сурункали обструктив ўпка касаллиги (СЎОК), бронхиал астма, пневмония, ўткир респиратор инфекциялар, ўпка фибрози, кислород терапияси, ҳамширалик иши, профилактика, масофавий мониторинг, телемедицина, Ўзбекистон соғлиқни сақлаш тизими, экологик омиллар, касбий хавфлар, ижтимоий-иқтисодий омиллар, спирометрия, пульсоксиметрия, ўпка вентилизацияси, соғлом турмуш тарзи, тамаки чекмаслик.

**УХОД И КОНТРОЛЬ ЗА ПАЦИЕНТАМИ С ЗАБОЛЕВАНИЯМИ ОРГАНОВ
ДЫХАНИЯ**

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Аннотация: В статье представлена комплексная информация по эпидемиологии, патофизиологии, клиническим проявлениям, современным методам лечения и мониторингу заболеваний органов дыхания, в частности хронической обструктивной болезни легких (ХОБЛ), бронхиальной астмы, пневмонии, острых респираторных инфекций и легочного фиброза. На основе научного подхода даны четкие и практичные рекомендации по профилактике заболеваний, снижению осложнений, улучшению функционального состояния пациентов, ускорению процесса выздоровления и повышению качества жизни. Особое внимание уделено факторам окружающей среды (засоление и запыленность в Приаралье), профессиональным вредностям (хлопковая пыль и химические вещества), социально-экономическим проблемам и ограничениям системы здравоохранения (нехватка ресурсов и

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квалифицированных кадров), влияющим на распространение заболеваний в условиях Узбекистана. Статья основана на международных клинических рекомендациях (AARP, ATS, ERS), последних научных исследованиях и опыте здравоохранения Узбекистана. Представлены примеры применения современных технологий, таких как дистанционный мониторинг пациентов (ДМП) и телемедицина, а также предложения по устранению проблем в системе здравоохранения. Цель статьи – разработка комплексного подхода к оказанию медицинской помощи, усиление профилактических мер и улучшение здоровья населения.

Ключевые слова: респираторные заболевания, уход за пациентами, меры контроля, хроническая обструктивная болезнь легких (ХОБЛ), бронхиальная астма, пневмония, острые респираторные инфекции, легочный фиброз, кислородотерапия, сестринское дело, профилактика, дистанционный мониторинг, телемедицина, система здравоохранения Узбекистана, факторы окружающей среды, профессиональные вредности, социально-экономические факторы, спирометрия, пульсоксиметрия, вентиляция легких, здоровый образ жизни, отказ от курения.

PATIENT CARE AND CONTROL IN RESPIRATORY DISEASES

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Annotation: This article provides comprehensive information on the epidemiology, pathophysiology, clinical manifestations, modern care methods and monitoring measures of diseases of the respiratory system, in particular chronic obstructive pulmonary disease (COPD), bronchial asthma, pneumonia, acute respiratory infections and pulmonary fibrosis. Based on a scientific approach, clear and practical recommendations are given on the prevention of diseases, reducing complications, improving the functional state of patients, accelerating the recovery process and improving the quality of life. Particular attention is paid to environmental factors (salinity and dust in the Aral Sea region), occupational hazards (cotton dust and chemicals), socio-economic problems and limitations of the healthcare system (lack of resources and qualified personnel) that affect the spread of diseases in the conditions of Uzbekistan. The article is based on international clinical guidelines (AARP, ATS, ERS), recent scientific research and local healthcare experience of Uzbekistan. The application of modern technologies, such as remote patient monitoring (RPM) and telemedicine, as well as proposals for eliminating problems in the healthcare system are presented. The article is aimed at developing an integrated approach to care, strengthening preventive measures and improving population health.

Keywords: respiratory diseases, patient care, control measures, chronic obstructive pulmonary disease (COPD), bronchial asthma, pneumonia, acute respiratory infections, pulmonary fibrosis, oxygen therapy, nursing, prevention, remote monitoring, telemedicine, Uzbek healthcare system, environmental factors, occupational hazards, socio-economic factors, spirometry, pulse oximetry, pulmonary ventilation, healthy lifestyle, non-smoking.

КИРИШ

Нафас тизими касалликлари замонавий тиббиётда энг муҳим соғлиқни сақлаш муаммоларидан бири бўлиб, глобал микёсда аҳоли орасида юқори ўлим ва ногиронлик даражасига олиб келади. Жаҳон Соғлиқни Сақлаш Ташкилоти (ЖССТ) маълумотларига кўра, сурункали

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обструктив ўпка касаллиги (СЎОК) ва пневмония дунёда ўлим сабаблари орасида учинчи ўринни эгаллайди, ҳар йили 3 миллиондан ортиқ одамнинг ҳаётига таҳдид солади. Ўзбекистонда сўнгги ўн йил ичида нафас тизими касалликлари 2,5 барабар кўпайди, бу эса экологик муҳитнинг ифлосланиши, саноат чиқиндилари, пахта чанги, тамаки чекиш ва касбий хавфлар билан бевосита боғлиқ. Айниқса, Оролбўйи минтақасида шўрланган тупроқ, ҳаводаги чанг зарралари ва сув сифатининг ёмонлашиши туфайли нафас йўллари касалликлари 3-4 барабар юқори даражада қайд этилмоқда. Эркакларда бу касалликлар аёлларга нисбатан 2-3 марта кўпроқ учраса, аёлларда ҳомиладорлик, туғруқ, сурункали анемия ва эндокрин бузилишлар каби омиллар касалликларнинг ривожланиш хавфини оширади. Болаларда ўткир респиратор инфекциялар сурункали шаклларга ўтиши эҳтимоли юқори бўлиб, бу эрта профилактика ва мониторинг зарурлигини таъкидлайди.

Беморлар парвариши ва назорати нафас тизими касалликларида ҳал қилувчи аҳамиятга эга, чунки улар касалликнинг оғир асоратларини олдини олиш, беморнинг функционал ҳолатини яхшилаш ва ҳаёт сифатини оширишга хизмат қилади. Илмий асосланган ёндашувлар, масалан, Америка Респиратор Терапия Ассоциацияси (ААРС), Америка Торакс Жамияти (АТС), Европа Респиратор Жамияти (ЭРС) ва Ўзбекистон Соғлиқни Сақлаш Вазирлиги томонидан ишлаб чиқилган клиник кўрсатмалар, парвариш жараёнини оптимallasштиришга ёрдам беради. Ўзбекистон шароитида соғлиқни сақлаш тизимининг чекланган ресурслари, малакали кадрлар етишмаслиги, тиббий жиҳозларнинг эскирганлиги ва инфратузилма муаммолари парвариш сифатига таъсир кўрсатади. Шу билан бирга, замонавий технологиялар, масалан, масофавий мониторинг ва телемедицина, халқаро тажрибаларни жорий этиш орқали ушбу муаммоларни бартараф этиш имконини беради. Ушбу мақола нафас тизими касалликларининг патофизиологияси, клиник бошқарув усуллари, замонавий мониторинг технологиялари ва Ўзбекистоннинг эпидемиологик хусусиятларини кенгрок кўриб чиқади, шунингдек, маҳаллий соғлиқни сақлаш тизимидаги муаммоларни таҳлил қилиб, уларни ечиш бўйича таклифлар беради. Нафас тизими касалликларида беморлар парвариши инфекцияларни олдини олишдан бошланади. Вирусли ва бактериал патогенларнинг тарқалишини камайтириш учун беморларни изоляция қилиш, қаттиқ гигиена қоидаларига риоя қилиш, шу жумладан қўл ювиш, ниқоб тақиш ва касалхона шароитларида шовкин даражасини пасайтириш муҳимдир. Масалан, пневмонияда беморларнинг алоҳида палаталарда жойлашиши инфекция тарқалишини 30-50% га камайтириши мумкин, бу Ўзбекистоннинг кўпгина вилоят касалхоналарида қўлланиладиган амалиётдир. Беморларнинг ҳаётий кўрсаткичларини мунтазам кузатиш, жумладан юрак уриши (одатий ҳолда 60-100 марта/минут), нафас олиш частотаси (12-20 марта/минут соғлом одамларда, астмада 26-40 марта/минут), артериал босим ва кислород сатурациясини пульсоксиметрия ёрдамида ўлчаш клиник ёмонлашувни эрта аниқлашга имкон беради. Сурункали касалликларда, масалан, СЎОК ва бронхиал астмада, мониторинг узоқ муддатли асоратларни кузатишни талаб қилади. Бунга беморларнинг тана вазни, овқатланиш ҳолати, жисмоний фаоллик даражаси, спирометрия натижалари (масалан, мажбурий экспиратор ҳажм, ФЕВ1, ва ўпка ҳажмининг умумий кўрсаткичи, ФВС) ва қон газлари таҳлили (PaO_2 ва $PaCO_2$) киради. Оғир ҳолатларда ҳар 3-6 ойда мунтазам ташрифлар тавсия этилади, бу кўрсатмалар Ўзбекистон Соғлиқни Сақлаш Вазирлигининг пулмонология бўйича миллий йўриқномаларида ҳам акс этган.

Парвариш жараёнида беморларга кислород терапияси (100% кислород ёки гипербарик оксигенация), бронходилататорлар (салбутамол, ипратропиум бромид), антиинфламатор

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дорилар (инҳалацион кортикостероидлар, масалан, будесонид ёки флутиказон) ва муколитиклар (асетилсистеин, амброксол) қўлланилади. Нафас олиш машқлари, масалан, диафрагма нафаси, лаблар орқали нафас олиш, перкуссив массаж ва постурал дренаж, ўпка функциясини яхшилаш ва бронхоспазмни бартараф этишда муҳим аҳамиятга эга. Масалан, астматик ҳолатда постурал дренаж ва инфузион терапия қўлланилиши симптомларни 70% гача юмшатиши мумкин. Уй шароитида парвариш беморларнинг ҳаёт сифатини оширишга қаратилган бўлиб, бу жараёнда беморлар ва уларнинг оила аъзоларига касалликни бошқариш бўйича таълим бериш муҳимдир. Масалан, астма билан оғриган беморларга пеак флоу метр ёрдамида ўпка функциясини мустақил равишда кузатишни ўргатиш касалхонага ётқизиш частотасини 25% га камайтириши мумкин. Америка Торакс Жамияти (АТС) кўрсатмаларига кўра, беморларнинг ўз-ўзини бошқариш кўникмалари ўлим даражасини 20-30% га камайтиради.

Замонавий технологиялар, масалан, масофавий бемор мониторинги (РПМ), Ўзбекистоннинг йирик шаҳарларида, масалан, Тошкент, Самарқанд, Бухоро ва Андижонда синов тариқасида қўлланилмоқда. Бу тизимлар пульсоксиметрлар, смартфон иловалари, портатив спирометрлар ва телемедицина платформалари орқали маълумотлар оқимини таъминлайди, шифокорларга беморларнинг ҳолатини масофадан кузатиш ва эрта аралашувлар қилиш имконини беради. Илмий тадқиқотлар шуни кўрсатадики, РПМ тизимлари касалхонага ётқизиш частотасини 15-20% га ва шошилиш ёрдамга мурожаат қилишни 10-15% га камайтиради. Ўзбекистонда бу тизимларнинг кенг жорий этилиши малакали кадрлар етишмаслиги, инфратузилма муаммолари ва молиявий ресурсларнинг чекланганлиги туфайли секин кечмоқда. Шу билан бирга, халқаро тажрибаларни, масалан, Европа Респиратор Жамиятининг (ЭРС) РПМ бўйича кўрсатмаларини қўллаш орқали бу соҳада сезиларли ютуқларга эришиш мумкин. Масалан, Австралия ва Канадада телемедицина қишлоқ ҳудудларида парвариш сифатини 30% га яхшилаган, бу Ўзбекистоннинг чекка ҳудудлари учун фойдали модель бўлиши мумкин. Патофизиологик нуқтаи назардан, нафас тизими касалликлари вентилизация бузилиши, газ алмашинуви пасайиши ва гипоксия билан характерланади. СЎОҚда ҳаво йўллариининг обструкцияси ва ўпка тўқималарининг эластиклиги пасайиши, астмада бронхоспазм ва яллиғланиш жараёнлари, пневмонияда эса алвеолар тўқималарнинг шикастланиши ва эксудатив жараёнлар нафас етишмовчилигига олиб келади. Ўпка фиброзида тўқималарнинг склеротик ўзгариши газ алмашинуви сифатини янада пасайтиради. Парваришда беморларга қулай позиция (ярим ўтирган ҳолат, бош 30-45 даража кўтарилган), ҳаво йўллариини тозалаш (перкуссив массаж, аспирация) ва кислород терапияси муҳим ҳисобланади. Ўткир нафас етишмовчилиги (ЎНЕ) ҳолатларида трахея интубацияси ва ўпка сунъий вентилизацияси (ЎСВ) қўлланилади, назоратда эса қон газлари таҳлили (PaO_2 60-80 мм сим.уст., $PaCO_2$ 35-45 мм сим.уст.) ва нафас частотаси (астмада 26-40 марта/минут) асосий ўрин тутди. Антибиотик терапияси (амоксисиллин, сефтриаксон ёки левофлоксасин) пневмония ва бошқа бактериал инфекцияларда қўлланилади, бу эса Ўзбекистоннинг кўпгина клиникаларида стандарт амалиётдир. Касалликларнинг олдини олишда соғлом турмуш тарзи, тамаки чекмаслик, экологик муҳитни яхшилаш ва касбий гигиена чоралари муҳимдир. Ўзбекистоннинг пахтачилик ҳудудларида, масалан, Фарғона, Андижон ва Хоразмда, пахта тозалаш заводларида ишлайдиган ишчилар орасида бронхиал астма ва СЎОҚ 2-3 барабар кўпроқ учрайди, чунки пахта чанги ва кимёвий моддалар нафас йўлларида зарар етказди. Профилактика дастурлари аҳоли орасида соғлиқни сақлаш бўйича маърифий ишларни

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кучайтириш, тамаки чекишга қарши кампаниялар, чангни камайтиришга қаратилган экологик мониторинг ва касбий хавфсизлик чораларини жорий этишни ўз ичига олиши керак. Ўзбекистон Соғлиқни Сақлаш Вазирлиги маълумотларига кўра, тамаки чекишни чеклаш бўйича чоралар нафас тизими касалликлари частотасини 10-15% га камайтириши мумкин. Шу билан бирга, Оролбўйи минтақасида ҳаво сифатини яхшилашга қаратилган давлат дастурлари касалликларнинг 20-30% ини олдини олишга ёрдам беради.

Соғлиқни сақлаш тизимида малакали ҳамширалар ва пулмонологларнинг етишмаслиги парвариш сифатига таъсир кўрсатади. Масалан, Ўзбекистоннинг қишлоқ ҳудудларида бир пулмонологга 5000-7000 бемор тўғри келади, бу халқаро стандартлардан (1000-1500 беморга 1 шифокор) анча юқори. Шу сабабли, ҳамширалик иши ва бошланғич тиббий ёрдамни ривожлантириш, шунингдек, телемедицина ва масофавий консультацияларни кенгайтириш зарур. Ўзбекистонда телемедицина тизимлари ҳозирда фақат йирик шаҳарларда синов тариқасида қўлланилмоқда, аммо уларни қишлоқ ҳудудларига кенгайтириш беморларнинг тиббий хизматлардан тенг фойдаланишини таъминлайди. Халқаро тажрибага кўра, масалан, Буюк Британияда телемедицина сурункали касалликлар билан оғриган беморларнинг мониторингини 40% га самарали қилган, бу Ўзбекистон учун фойдали модель бўлиши мумкин.

Хулоса

Нафас тизими касалликларида беморлар парвариши ва назорати касалликнинг оғир асоратларини олдини олиш, беморларнинг функционал ҳолатини яхшилаш ва ҳаёт сифатини оширишда муҳим аҳамиятга эга. Илмий асосланган клиник кўрсатмалар, замонавий мониторинг технологиялари (РПМ, телемедицина) ва интеграцияланган парвариш ёндашуви беморларнинг натижаларини оптимallashtiради. Ўзбекистон шароитида касалликларнинг тарқалишига экологик омиллар (Оролбўйи минтақасидаги ифлосланиш), касбий хавфлар (пахта чанги) ва ижтимоий-иқтисодий муаммолар (ресурслар етишмаслиги) катта таъсир кўрсатади. Профилактика чораларини кучайтириш, айниқса, тамаки чекишга қарши кампаниялар, экологик мониторинг ва касбий хавфсизлик дастурлари касалликлар частотасини 20-30% га камайтириши мумкин. Келгусида масофавий мониторинг, сунъий интеллект асосидаги тизимлар ва телемедицинани кенг жорий этиш орқали парвариш самарадорлигини ошириш мумкин. Ўзбекистон соғлиқни сақлаш тизимида малакали кадрлар тайёрлаш, тиббий жиҳозларни янгилаш, ресурсларни кўпайтириш ва халқаро тажрибаларни жорий этиш орқали нафас тизими касалликлари билан курашишда сезиларли ютуқларга эришиш мумкин. Аҳоли орасида соғлиқни сақлаш бўйича маърифий ишларни кучайтириш ва давлат томонидан экологик муҳитни яхшилашга қаратилган дастурларни қўллаб-қувватлаш касалликларнинг олдини олишда муҳим роль ўйнайди.

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**ЮҚУМСИЗ КАСАЛЛИКЛАР БИЛАН КАСАЛЛАНГАН БЕМОРЛАРНИ
ПАРВАРИШЛАШДА ЎРТА ТИББИЁТ ХОДИМЛАРИНИ РОЛИ**

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Анотация; Ушбу илмий мақола юқумсиз касалликлар (юқумли бўлмаган касалликлар) билан касалланган беморларнинг парваришлашида орта тиббиёт ходимларининг роли ва аҳамиятини чуқур таҳлил қилади. Мақолада глобал ва Ўзбекистон миқёсидаги статистик маълумотлар, касалликларнинг сабаблари, орта тиббиёт ходимларининг (жумладан, ҳамширалар ва фельдшерларнинг) профилактика, мониторинг ва таълимдаги вазифалари, шунингдек, уларнинг фаолиятидаги қийинчиликлар ва ечимлар кўриб чиқилади. Тадқиқот илмий далиллар ва Ўзбекистон қонунчилиги асосида юқумсиз касалликларнинг олдини олиш ва бошқаришда орта тиббиёт ходимларининг марказий ўрнини таъкидлайди, бу эса сифатли тиббий ёрдамни таъминлаш ва аҳолининг ҳаёт сифатини яхшилашга қаратилган.

Калит сўзлар: Юқумсиз касалликлар, юқумли бўлмаган касалликлар, орта тиббиёт ходимлари, ҳамширалар, парваришлаш, профилактика, мониторинг, таълим, Ўзбекистон, соғлиқни сақлаш тизими.

**РОЛЬ МЕДИЦИНСКОГО ПЕРСОНАЛА В УХОДЕ ЗА ПАЦИЕНТАМИ С
НЕИНФЕКЦИОННЫМИ ЗАБОЛЕВАНИЯМИ**

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Аннотация: В данной научной статье представлен углубленный анализ роли и значения медицинского персонала в уходе за пациентами с неинфекционными заболеваниями (НИЗ). В статье рассматриваются мировые и узбекские статистические данные, причины возникновения заболеваний, задачи медицинского персонала (включая медсестер и фельдшеров) по профилактике, мониторингу и обучению, а также трудности и пути их решения в их деятельности. В исследовании подчеркивается центральная роль фельдшеров в профилактике и лечении неинфекционных заболеваний, основанная на научных данных и законодательстве Узбекистана, направленная на обеспечение качественной медицинской помощи и повышение качества жизни населения.

Ключевые слова: Неинфекционные заболевания, неинфекционные заболевания, фельдшеры, медсестры, уход, профилактика, мониторинг, образование, Узбекистан, система здравоохранения.

**THE ROLE OF MEDICAL STAFF IN THE CARE OF PATIENTS WITH NON-
COMMUNICABLE DISEASES**

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Abstract; This scientific article provides an in-depth analysis of the role and importance of medical staff in the care of patients with non-communicable diseases (non-communicable diseases). The article considers global and Uzbek statistical data, the causes of diseases, the tasks of medical staff (including nurses and paramedics) in prevention, monitoring and education, as well as difficulties and solutions in their activities. The study emphasizes the central role of paramedics in the prevention and management of noncommunicable diseases, based on scientific evidence and Uzbek legislation, aimed at ensuring quality medical care and improving the quality of life of the population.

Keywords: Noncommunicable diseases, noncommunicable diseases, paramedics, nurses, care, prevention, monitoring, education, Uzbekistan, healthcare system.

Юқумсиз касалликлар (юқумли бўлмаган касалликлар, ЙБК) глобал саломатлик тизимининг энг жиддий муаммоларидан бири бўлиб, улар одамларнинг ўлим сабабларининг 71% ни ташкил этади, хусусан, юрак-қон томир касалликлари, саратон, қандли диабет ва ўпка касалликлари кабилари. Жаҳон саломатлик ташкилоти (ЖСТ) маълумотларига кўра, юқумсиз касалликлар ҳар йили 41 миллиондан ортиқ одамнинг ҳаётини олади, бу эса аҳолининг қарийб учдан бирини таъсир қилади, айниқса, кам даромадли ва ўрта даромадли мамлакатларда. Ўзбекистон Республикасида ҳам юқумсиз касалликлар ўлим ҳолатларининг 78% га яқинини ташкил қилади, бу мамлакат соғлиқни сақлаш тизимида катта юклама келтириб чиқармоқда. Масалан, 2019 йил маълумотларига кўра, юрак-қон томир касалликлари ва қандли диабет Ўзбекистон аҳолисининг асосий ўлим сабаблари ҳисобланади. Бу касалликларнинг кўпайишига урбанизация, ҳаракатсизлик, нотўғри овқатланиш ва тамаки истеъмоли каби омиллар ҳисса қўшади, бу эса саломатлик тизимларига жиддий юкни туширади. Ўзбекистон Республикаси Президентининг 2018 йилги қарорига кўра, юқумсиз касалликлар профилактикаси миллий даражада устувор йўналиш сифатида белгиланган бўлиб, бу тизимда орта тиббиёт ходимларининг ролини кучайтиришни назарда тутди. Юқумсиз касалликлар билан касалланган беморларнинг парваришлашида орта тиббиёт ходимларининг роли ҳар қачонгидан ҳам муҳимдир, чунки улар бирламчи тиббий ёрдам тизимининг асосий қисми сифатида ишлайдилар ва беморлар билан доимий алоқада бўлиб, касалликнинг ўткирланишининг олдини олиш, даволашнинг самарадорлигини ошириш ва беморларнинг ҳаёт сифатини яхшилашга ҳисса қўшадилар. Ўзбекистонда орта тиббиёт ходимлари, хусусан ҳамширалар, касалликларнинг олдини олиш ва назорат қилишда марказий ўрин эгаллайди, чунки улар аҳолига биринчи тиббий маслаҳат бериш ва профилактик текширувларни ўтказишда фаол иштирок этадилар. Орта тиббиёт ходимлари, масалан, ҳамширалар, фельдшерлар ва тиббий ёрдамчилар, юқумсиз касалликларни бошқаришда муҳим вазифаларни бажарадилар: улар беморларнинг ҳолатини кузатиш, дори-дармонларни тайинлаш ва қабул қилишни назорат қилиш, ҳаёт тарзини ўзгартириш бўйича маслаҳатлар бериш ва касалликнинг илк белгиларини аниқлашда иштирок этадилар. Илмий тадқиқотлар кўрсатишича, орта тиббиёт ходимларининг фаолияти юқумсиз касалликларнинг даволаш самарадорлигини 20-30% га ошириши мумкин, хусусан, гипертония ва диабет каби касалликларда, чунки улар беморлар билан индивидуал ишлаш имкониятига эга. Ўзбекистонда ўтказилган тадқиқотлар ва миллий дастурлар, масалан, юқумсиз касалликлар профилактикаси бўйича миллий концепция, орта тиббиёт ходимларининг аҳолини врачдан олдин кўриқдан ўтказиш ва хавф омилларини баҳолашдаги

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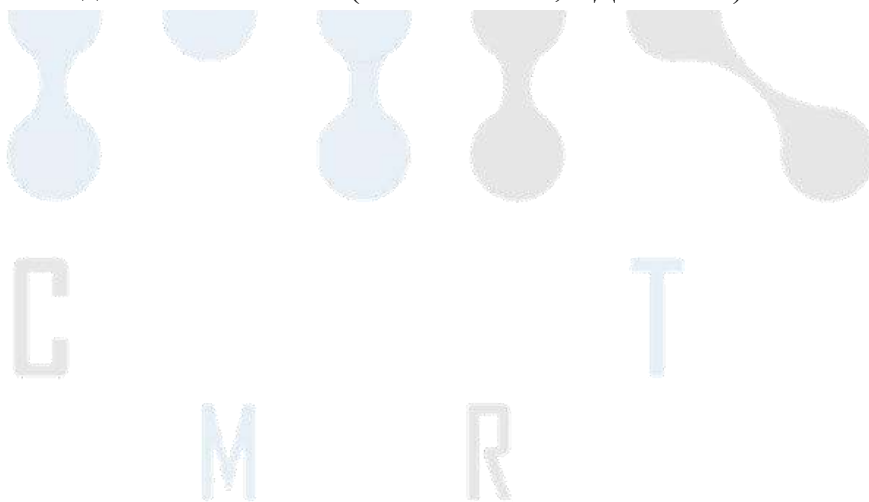
ролини таъкидлайди. Масалан, Ўсиё ва Африка мамлакатларида ўтказилган тадқиқотларда ҳамшираларнинг юқумсиз касалликлар бўйича махсус тайёргарликдан ўтган ҳолда ишлаши беморларнинг ҳолатини яхшилаш ва касалхонага ётқизиш ҳолатларини камайтиришга олиб келгани кўрсатилган. Бу ходимларнинг роли бирламчи тиббий ёрдамда кўпроқ намоён бўлади, чунки улар шифокорларнинг ишини энгиллаштиради ва саломатлик тизимининг самарадорлигини оширади, айниқса, шифокорлар сони етишмаётган ҳудудларда. Ўзбекистон контекстида, ҳамширалар юқумсиз касалликлар бўйича жамоавий ишларда, масалан, касалликларнинг олдини олиш ва беморлар таълимида муҳим роль ўйнайдилар, бу миллий клиник протоколлар ва стандартларга асосланади. Илмий далилларга асосланиб, орта тиббиёт ходимларининг юқумсиз касалликларни бошқаришдаги ролини самарадорлиги кўплаб рандомлаштирилган назоратли тадқиқотларда исботланган: масалан, ҳамширалар томонидан олиб борилган диабет беморларининг ҳолатини кузатиш қон шакар даражасини 1-2% га пасайтириши ва асоратлар хавфини камайтириши мумкин. Бунинг учун уларга махсус ўқув дастурлари керак, уларда юқумсиз касалликларнинг патогенези, профилактикаси ва беморлар билан ишлаш методлари ўргатилади. Ўзбекистонда юқумсиз касалликларнинг хавф омилларини ўрганиш бўйича тадқиқотлар, масалан, ижтимоий ва биологик омилларни таҳлил қилиш, орта тиббиёт ходимларининг профилактикадаги ролини кучайтириш зарурлигини кўрсатади. Шунингдек, орта тиббиёт ходимлари беморларнинг таълим олишида муҳим ролини ўйнайдилар: улар ҳаёт тарзини ўзгартириш, овқатланиш ва жисмоний фаоллик бўйича маслаҳатлар берадилар, бу эса касалликнинг ривожланишини секинлаштиради. Масалан, Покистонда ўтказилган тадқиқотда маҳаллий саломатлик ходимлари томонидан олиб борилган гипертензия бўйича таълим ишлари қон босимини самарали пасайтиришга олиб келгани кўрсатилган. Ўзбекистонда ҳам шунга ўхшаш дастурлар, масалан, юқумсиз касалликларнинг олдини олиш бўйича лойиҳалар, ҳамширалар томонидан амалга оширилмоқда. Бундан ташқари, улар мултидисциплинар жамоаларнинг бир қисми сифатида ишлайдилар, шифокорлар, фармацевтлар ва ижтимоий ходимлар билан ҳамкорликда беморларнинг ҳолатини комплекс ҳолда бошқарадилар, бу эса даволашнинг самарадорлигини оширади. Илмий адабиётларда кўрсатилишича, орта тиббиёт ходимларининг юқумсиз касалликлар бўйича билим даражаси ҳозирги пайтда етарли эмас, шунинг учун уларни доимий ўқитиш зарур: масалан, электрон ўқув дастурлари орқали билимни ошириш самарадорликни 30% гача ошириши мумкин. Бироқ, бу ролини амалга оширишда қийинчиликлар мавжуд: юқори иш юки, ресурслар етишмаслиги ва ҳамкорликнинг етарли эмаслиги қабилар. Масалан, кам даромадли мамлакатларда орта тиббиёт ходимларининг юқумсиз касалликлар бўйича билим даражаси паст бўлиб, бу касалликларнинг илк босқичида аниқлашни қийинлаштиради. Ўзбекистонда ҳам шунга ўхшаш муаммолар мавжуд бўлиб, миллий дастурларда бу масалаларни ҳал қилиш чоралари кўзда тутилган, масалан, ҳамширалар учун махсус ўқувлар ва касбий ривожланиш. Шунга қарамай, илмий далиллар кўрсатишича, уларнинг махсус тайёргарликдан ўтган ҳолда ишлаши юқумсиз касалликларнинг ўлим даражасини камайтиришга ва саломатлик тизимининг самарадорлигини оширишга ҳисса қўшади. Масалан, ҳамширалар томонидан олиб борилган профилактика чоралари беморларнинг ҳаёт сифатини яхшилаш ва асоратларни олдини олишда самарали эканлиги исботланган.

Хулоса қилиб айтганда, орта тиббиёт ходимлари юқумсиз касалликлар билан касалланган беморларнинг парваришлашида марказий ўринни эгаллайдилар, уларнинг

илмий асосланган фаолияти саломатлик тизимининг барқарорлигини таъминлайди ва глобал саломатлик мақсадларига эришишга ёрдам беради, шунинг учун уларнинг ролини кучайтириш ва ўқитишга сармоя киритиш зарур. Ўзбекистон контекстида бу роль миллий қонунчилик ва илмий тадқиқотлар орқали қўллаб-қувватланмоқда, бу эса юқумсиз касалликларнинг олдини олиш ва бошқаришда самарали натижаларга олиб келади. Келажакда орта тиббиёт ходимларининг рақамли технологиялар ва мултидисциплинар ёндашув орқали ролини янада кенгайтириш, касалликларнинг ўлим даражасини пасайтириш ва аҳолининг ҳаёт умрини узайтиришга ҳисса қўшади. Шу билан бирга, давлат даражасида ўқитиш дастурларини ривожлантириш ва ресурсларни ошириш орқали бу соҳадаги муаммоларни ҳал қилиш мумкин.

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**СОВРЕМЕННЫЕ МОДЕЛИ ПОДГОТОВКИ МЕНЕДЖЕРОВ СЕСТРИНСКОГО
ДЕЛА И СОЗДАНИЕ ЭФФЕКТИВНЫХ ИНФОРМАЦИОННЫХ СИСТЕМ ДЛЯ
УПРАВЛЕНИЯ СЕСТРИНСКИМ ПЕРСОНАЛОМ**

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ИЛХАМОВА ЛОЛА МАКСУДЖАНОВНА

Аннотация: Статья посвящена анализу современных подходов к подготовке менеджеров сестринского дела и разработке информационных систем (ИС) для эффективного управления сестринским персоналом. Рассматриваются инновационные образовательные модели, интегрирующие лидерские, управленческие и цифровые компетенции, а также их влияние на повышение качества медицинской помощи. Особое внимание уделяется информационным системам, включая стандарты HL-7 и OpenEHR, которые оптимизируют управление ресурсами, снижают административную нагрузку и способствуют принятию данных-ориентированных решений. Подчеркивается синергия между подготовкой менеджеров и внедрением ИС, способствующая устойчивости систем здравоохранения. На основе анализа научной литературы, включая узбекские источники, и практических примеров выявлены ключевые направления развития сестринского менеджмента в условиях цифровизации, а также перспективы их внедрения в национальных системах здравоохранения.

Ключевые слова: сестринское дело, менеджмент, подготовка кадров, информационные системы, цифровизация здравоохранения, лидерство, управление персоналом, HL-7, OpenEHR, цифровая трансформация.

**MODERN MODELS OF TRAINING NURSING MANAGERS AND THE CREATION OF
EFFECTIVE INFORMATION SYSTEMS FOR NURSING STAFF MANAGEMENT**

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Abstract: This article analyzes modern approaches to training nursing managers and developing information systems (IS) for effective nursing staff management. Innovative educational models integrating leadership, management, and digital competencies are discussed, as well as their impact on improving the quality of medical care. Particular attention is paid to information systems, including HL-7 and OpenEHR standards, which optimize resource management, reduce administrative burdens, and facilitate data-driven decision-making. The synergy between manager training and information system implementation, which contributes to the sustainability of healthcare systems, is emphasized. Based on an analysis of scientific literature, including Uzbek sources, and practical examples, key areas for the development of nursing management in the context of digitalization are identified, as well as prospects for their implementation in national healthcare systems.

Keywords: nursing, management, training, information systems, healthcare digitalization, leadership, human resources management, HL-7, OpenEHR, digital transformation.

**ҲАМШИРА МЕНЕЖЕРЛАРИНИ ТАЙЁРЛАШНИНГ ЗАМОНАВИЙ МОДЕЛЛАРИ
ВА ҲАМШИРА ҲОЛЛАРИНИ БОШҚАРИШ УЧУН САМАРАЛИ АХБОРОТ
ТИЗИМЛАРИНИ ЯРАТИШ.**

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Болалар касалликлари пропедевтикаси кафедраси ассистенти

ЛОЛА МАҚСУДЖАНОВНА ИЛҲАМОВА

Анотация: Ушбу мақолада ҳамширалик менежерларини тайёрлаш ва ҳамширалар ходимларини самарали бошқариш учун ахборот тизимларини (ИС) ривожлантиришга замонавий ёндашувлар таҳлил қилинади. Этакчилик, бошқарув ва рақамли компетенцияларни бирлаштирувчи инновацион таълим моделлари ҳамда уларнинг тиббий ёрдам сифатини оширишга таъсири муҳокама қилинади. Ахборот тизимларига, жумладан, ХЛ-7 ва ОпенЕХР стандартларига алоҳида эътибор қаратилади, улар ресурсларни бошқаришни оптималлаштиради, маъмурий юкларни камайтиради ва маълумотларга асосланган қарорларни қабул қилишни осонлаштиради. Менежерларни тайёрлаш ва соғлиқни сақлаш тизимларининг барқарорлигига ҳисса қўшадиган ахборот тизимини жорий этиш ўртасидаги синергия таъкидланган. Илмий адабиётлар, жумладан, ўзбек манбалари таҳлили ва амалий мисоллар асосида рақамлаштириш шароитида ҳамширалик ишини бошқаришни ривожлантиришнинг асосий йўналишлари ҳамда уларни миллий соғлиқни сақлаш тизимларига жорий этиш истиқболлари белгилаб берилди.

Калит сўзлар: ҳамширалик, менежмент, тренинг, ахборот тизимлари, соғлиқни сақлашни рақамлаштириш, этакчилик, инсон ресурсларини бошқариш, ХЛ-7, ОпенЕХР, рақамли трансформация.

ВВЕДЕНИЕ

Современное здравоохранение находится на этапе активной трансформации, обусловленной глобальными вызовами, такими как технологический прогресс, демографические изменения, нехватка квалифицированных кадров и необходимость повышения качества медицинской помощи. В этом контексте роль менеджеров сестринского дела становится критически важной для обеспечения эффективного функционирования медицинских организаций и улучшения исходов для пациентов. Традиционные подходы к подготовке сестринского персонала, ориентированные преимущественно на клинические навыки, уже не отвечают требованиям времени. Современные реалии требуют от менеджеров сестринского дела комплексных компетенций, включающих управленческие навыки, лидерство, эмоциональный интеллект и владение цифровыми технологиями. Новые образовательные модели, основанные на андрагогических принципах, трансформационном лидерстве и междисциплинарном подходе, направлены на формирование профессионалов, способных адаптироваться к динамичным условиям и эффективно управлять персоналом в условиях высокой нагрузки и ограниченных ресурсов. Параллельно, внедрение информационных систем (ИС) в управление сестринским делом трансформирует процессы планирования, мониторинга и принятия решений, минимизируя ошибки, повышая производительность и улучшая коммуникацию внутри медицинских учреждений. Развитие таких систем, соответствующих международным стандартам, таких как HL-7 и OpenEHR, обеспечивает интероперабельность и безопасность данных, что особенно актуально в условиях цифровизации здравоохранения.

Настоящая статья анализирует современные модели подготовки менеджеров сестринского дела и роль ИС в оптимизации управления персоналом, подчеркивая их взаимосвязь и вклад в устойчивое развитие систем здравоохранения. Особое внимание уделяется интеграции международного опыта и локальных подходов, включая узбекские исследования, для формирования целостной картины развития сестринского менеджмента.

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Современные модели подготовки менеджеров сестринского дела ориентированы на интеграцию управленческих, лидерских и цифровых компетенций, необходимых для эффективного функционирования медицинских организаций в условиях глобальных вызовов. Одной из ключевых моделей является *empowering education*, разработанная для внутрислужбового обучения медсестер. Эта модель акцентирует внимание на андрагогических принципах, стимулируя самостоятельное обучение, мотивацию и развитие критического мышления. Исследования показывают, что такие подходы способствуют формированию навыков самостоятельного принятия решений, что критически важно для менеджеров в условиях высокой ответственности и ограниченных ресурсов.

Программы подготовки, такие как Nurse Manager Competencies от American Organization for Nursing Leadership (AONL), выделяют три ключевых домена: наука управления (финансовое планирование, управление ресурсами), лидерство (стратегическое мышление, эмоциональный интеллект) и искусство управления (этическое лидерство, управление изменениями). Эмпирические данные подтверждают, что эти компетенции особенно востребованы в малых и средних больницах, где менеджеры часто выполняют многозадачные роли, сочетая клиническую и административную деятельность. Например, исследования в узбекском контексте подчеркивают необходимость интеграции финансовых навыков в программы подготовки, учитывая ограниченные бюджеты государственных медицинских учреждений. Инновационные подходы к обучению включают трансформационный стиль лидерства, который способствует повышению вовлеченности персонала, снижению уровня профессионального выгорания и созданию благоприятной рабочей среды. Трансформационное лидерство, основанное на вдохновении и мотивации, позволяет менеджерам эффективно управлять командами, особенно в условиях стресса, таких как пандемии. Командно-ориентированные модели подготовки, внедренные в период пандемии COVID-19, доказали свою эффективность в управлении пиковыми нагрузками, позволяя менеджерам быстро координировать действия персонала и адаптироваться к кризисным ситуациям. Переходные программы для будущих лидеров, такие как структурированные курсы по расширению ролей, демонстрируют положительные результаты в развитии навыков распознавания и поощрения желаемых поведений среди сотрудников. Например, программы, реализованные в Узбекистане, включают модули по развитию эмоционального интеллекта и управлению конфликтами, что способствует формированию корпоративной культуры в медицинских учреждениях. Кроме того, высшее сестринское образование, ориентированное на обеспечение комфортных условий для пациентов и их реабилитации, интегрирует лидерские компетенции, описанные в рекомендациях по развитию главных медицинских сестер. Такие подходы, как *thriving leadership*, создают условия для процветания менеджеров, усиливая их способность справляться со стрессом и повышать удовлетворенность персонала. Параллельно с развитием образовательных моделей, внедрение информационных систем (ИС) в управление сестринским персоналом становится критическим фактором повышения операционной эффективности и качества ухода. Медицинские информационные системы (МИС), такие как nursing management information systems (NMIS), оптимизируют планирование ресурсов, управление нагрузкой и кадровым составом. Систематические обзоры подтверждают, что NMIS снижают административную нагрузку на менеджеров, улучшают коммуникацию между отделениями и способствуют принятию данных-ориентированных решений. Например, внедрение электронных систем документооборота позволяет сократить

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время на административные задачи на 20–30%, освобождая ресурсы для клинической работы. Современные платформы, такие как Medesk, интегрируют функции управления пациентами, персоналом и финансовыми потоками, автоматизируя процессы и снижая операционные затраты. Это особенно актуально для частных медицинских учреждений, где конкуренция требует высокой эффективности. В Узбекистане внедрение подобных систем, таких как автоматизированные платформы для управления клиниками, демонстрирует положительные результаты, включая снижение ошибок в документации и улучшение планирования смен. Стандарты интероперабельности, такие как HL-7 и OpenEHR, обеспечивают безопасность данных и их совместимость между различными системами, что критически важно для интеграции в национальные и международные сети здравоохранения.

Мобильные nursing information systems (MNIS) предоставляют дополнительные преимущества, снижая бремя документирования и повышая мобильность менеджеров. Исследования показывают, что MNIS улучшают доступ к информации в реальном времени, позволяя менеджерам оперативно реагировать на изменения в состоянии пациентов или потребности персонала. Например, в условиях стационаров использование MNIS сокращает время на обработку запросов на 15–20%, что повышает удовлетворенность персонала. Внедрение ИС в государственных и частных медицинских учреждениях, соответствующее регуляторным требованиям, позволяет создавать единые базы данных для анализа и прогнозирования потребностей в персонале. Такие системы также поддерживают мониторинг производительности, позволяя менеджерам выявлять вариации в работе и активно вовлекать сотрудников в процесс принятия решений. Синергия между современными моделями подготовки менеджеров и внедрением ИС заключается в создании экосистемы, где обученные лидеры используют цифровые инструменты для оптимизации процессов. Например, использование ИС для прогнозирования кадровых потребностей позволяет менеджерам эффективно распределять ресурсы, минимизируя дефицит персонала в периоды пиковых нагрузок. В то же время, образовательные программы, включающие модули по цифровой грамотности, позволяют менеджерам эффективно использовать ИС, усиливая их лидерский потенциал. В узбекском контексте исследования подчеркивают необходимость интеграции цифровых компетенций в программы подготовки, учитывая активное внедрение ИС в национальной системе здравоохранения.

Примером успешной синергии является использование ИС для мониторинга ключевых показателей эффективности (KPI) персонала, таких как соблюдение клинических протоколов и уровень удовлетворенности пациентов. Обученные менеджеры, владеющие навыками анализа данных, могут использовать эту информацию для разработки стратегий улучшения качества ухода. Кроме того, ИС позволяют автоматизировать рутинные задачи, такие как составление графиков смен, что дает менеджерам больше времени для стратегического планирования и лидерской деятельности. Внедрение таких систем в Узбекистане, начатое в рамках национальных программ цифровизации здравоохранения, демонстрирует потенциал для масштабирования в региональных медицинских учреждениях.

Несмотря на очевидные преимущества, внедрение современных моделей подготовки и ИС сталкивается с рядом проблем. Во-первых, недостаточная цифровая грамотность среди менеджеров сестринского дела, особенно в регионах, ограничивает эффективность использования ИС. Во-вторых, высокая стоимость разработки и внедрения ИС может быть барьером для малых медицинских учреждений. В-третьих, сопротивление изменениям со

стороны персонала требует дополнительных усилий по обучению и мотивации. В узбекском контексте эти проблемы усугубляются неравномерным распределением ресурсов между городскими и сельскими медицинскими учреждениями.

Перспективы развития включают создание унифицированных образовательных стандартов, интегрирующих цифровые компетенции, и разработку доступных ИС, адаптированных к локальным условиям. Например, модульные платформы, позволяющие масштабировать функционал в зависимости от потребностей учреждения, могут стать решением для малых больниц. Кроме того, международное сотрудничество в области обмена опытом по подготовке менеджеров и внедрению ИС может ускорить прогресс в этой области.

Современные модели подготовки менеджеров сестринского дела и внедрение информационных систем представляют собой взаимодополняющие направления, направленные на повышение качества медицинской помощи и эффективности управления персоналом. Образовательные программы, интегрирующие лидерские, управленческие и цифровые компетенции, готовят менеджеров к динамичным условиям здравоохранения, в то время как ИС оптимизируют процессы планирования, мониторинга и принятия решений. Синергия этих подходов способствует созданию устойчивых систем здравоохранения, способных адаптироваться к глобальным и локальным вызовам. В узбекском контексте дальнейшее развитие требует акцента на цифровую грамотность, адаптацию ИС к локальным условиям и интеграцию международного опыта. Будущие исследования должны быть направлены на разработку унифицированных стандартов подготовки и масштабируемых ИС, учитывающих региональные особенности и потребности медицинских учреждений.

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TO‘QIMACHILIK SANOATI XOMASHYOSIDAN SAMARALI FOYDALANISH ORQALI
YANGI TARKIBLI PISHITILGAN IPLAR ISHLAB CHIQRISHNING AYRIM
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Annotatsiya. mazkur ilmiy maqolada to‘qimachilikning mavjud xomashyolaridan yangi turdagi ip ishlab chiqarish texnologiyalari uchun tolalar aralashma tarkiblarining bir necha variantlari, laboratoriya tekshiruvlari natijalari va tahlillari berilgan. Berilgan variantlarning optimallik kriteriyalari bo‘yicha xulosalar keltirilgan.

Kalit so‘zlar: aralashma, ip, chiziqli zichlik, shtapel tola, xomashyo tabiiy, bikomponent, polikomponent, paxta, ipak, jun, viskoza, laykra, ipak momig‘i.

Аннотация: В научной статье представлены варианты составов смесевых волокон для новых технологий производства пряжи из существующего текстильного сырья, результаты и анализы лабораторных испытаний. Сделаны выводы о критериях оптимальности данных вариантов.

Annotation. The scientific article presents variants of compositions of blended fibers for new technologies of yarn production from existing textile raw materials, results and analysis of laboratory tests. Conclusions are made on the criteria for the optimality of these variants.

Ключевые слова: смесь, нить, линейная плотность, штапельное волокно, сырье натуральное, бикомпонентное, поликомпонентное, хлопок, шелк, шерсть, вискоза, лайкра, шелковая вата

Key words: mixture, thread, linear density, staple fiber, natural raw materials, bicomponent, multicomponent, cotton, silk, wool, viscose, lycra, silk wool

KIRISH

Jahonda to‘qimachilik xomashyosining tabiiy tarkibli qismi ulushi tobora kamayib borishi tarkib jihatidan tabiiy tolalar xossalriga yaqin kimyoviy yoki sun‘iy tolalardan aralash tarkibli iplar ishlab chiqarish zarurati tug‘iladi. Aralash tarkibli iplar ikki yoki ko‘p komponentlardan iborat bo‘lganligi uchun bikomponent yoki polikomponent iplar deb yuritiladi. Polikomponent yigirilgan iplari turli tabiiy va kimyoviy tolalardan juda ko‘plab ulishli qatnashuvchilar bilan turli xil usullarda ishlab chiqarilishi mumkin. Polikomponent iplari asosan tabiiy va kimyoviy iplarning aralashmalaridan ishlab chiqariladi. Ularning aralashmadagi ulushlari turli xil bo‘lishi mumkin. 2023 yildan tabiiy va kimyoviy tolalarning tabiiy ipakning tolali chiqindilaridan olingan ipak momig‘i ishtirokidagi polikomponent yigirilgan iplarning quyidagi yangi turlarini *paxta+ipak+viskoza*, *paxta+ipak+laykra*, *paxta+ipak+jun*, *paxta+ipak+poliefir*, *paxta+ipak+jun+poliefir*, *ipak+jun+poli-efir*; *ipak+paxta+poliefir* ishlab chiqarish texnologiyalarini ishlab chiqish yo‘nalishida ilmiy tadqiqot ishlari o‘tkazildi. Yaratilayotgan polikomponent iplaridagi tolalarning ulushlari tajriba yo‘li bilan aniqlandi va asosiy e‘tibor aralash polikomponent ipning sifat ko‘rsatkichlariga qaratildi.

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Aralashmadagi kimyoviy tolalarning ulishi 33 %-dan oshib ketmasligi kerak, shunda polikomponent yigirilgan ip o'zida tabiiy tolalar xususiyatlarini saqlab qoladi. Dastlab polikomponent iplarini ishlab chiqarishda qatnashayotgan tolalarning ba'zi bir asosiy fizik-mexanik xususiyatlari laboratoriya sinovlaridan o'tkazildi va olingan natijalar tahlil qilinib mutaxassislar tomonidan o'rganib chiqildi. Tolalarning ko'rsatkichlarini tahlili shuni ko'rsatadiki, aralashmalarda qatnashadigan tabiiy va kimyoviy tolalarning ko'rsatkichlari bir-birlardan ancha farq qiladi. Misol uchun tolalarning chiziqli zichliklari 0,18 texdan (ipak momig'i) 0,38 texgacha (jun tolasi), nisbiy uzilish kuchi 4,5 cN/texdan (paxta tolasi) 33,0 cN/texgacha (PEV tolasi), uzilishdagi cho'zilish esa 5,0 % dan (paxta tolasi) 45 % gacha (PEV tolasi) ni tashkil etadi. Shulardan kelib chiqib polikomponent iplarini ishlab chiqarishning asosiy maqsadi aralashmada qatnashayotgan tolalarning barcha ijobiy xossalardan to'liq foydalanish va ularning ba'zi bir salbiy xossalarni bartaraf etishdan iborat bo'ladi.

Tajriba sinovlarining tahlillari asosida yuqorida keltirilgan tabiiy va kimyoviy tolalar ishtirok etgan tarkibdagi polikomponent yigirilgan iplarni ishlab chiqarish texnologiyalari ishlab chiqildi va polikomponent ipdagi tolalarning optimal ulushlari aniqlandi. Polikomponent yigirilgan iplarning barcha assortimentlari tarkibida tabiiy ipakning tolali chiqindilardan ishlab chiqarilgan ipak momig'i ishtiroki ta'minlandi. Polikomponent yigirilgan ipining tarkibida ipak momig'i tolalarni qatnashishi ipga tabiiy ipakka xos bo'lgan tovlanish jilosini berish bilan birga unga g'ijimlanmaslik xususiyatini xam beradi.

Tarkibi paxta+ipak+viskoza tolalaridan iborat bo'lgan polikomponent iplarini ishlab chiqarish texnologiyasi. Bu texnologiyani ishlab chiqish vaqtida aralashma tolalarning shtapel uzunliklarini paxta tolasining shtapel uzunligiga qarab o'rnatiladi. Aralashmada ishtirok etayotgan tolalar uzunliklari iloji boricha bir-birlariga yaqin bo'lishi kerak, bizning polikomplnent ipida qatnashayotgan paxta tolasining shtapel uzunligi 32-34 mm-ni tashkil etadi. Shuning uchun viskoza va ipak to'shama tolalari xam shu uzunlikda shtapellanadi, ya'ni qirg'iladi.

Tajriba variantlari bo'yicha ishlab chiqarilgan yigirilgan polikomponent iplarini laboratoriya sinovlari natijalari

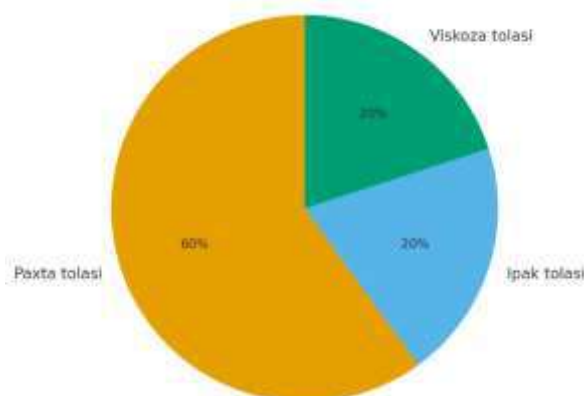
1 - jadval

T/r	Ko'rsatkichlarning nomlanishi	Tajriba variantlari				
		I	II	III	IV	V
1	Chiziqli zichlik, tex	20,1	20,3	20,0	20,4	20,0
2	Chiziqli zichlik bo'yicha variatsiya koeffitsienti, %	3,1	3,3	3,0	3,5	3,1
3	Nisbiy uzush kuchi, cN/tex	26,8	25,9	26,8	25,1	26,1
4	Uzishdagi cho'zilish, %	30,9	30,5	30,9	25,8	28,5

Yuqorida keltirilgan jadvaldagi ko'rsatkichlar tahlilidan uchunchi variant bo'yicha tayyorlangan polikomponent iplarining ko'rsatkichlari boshqalarga nisbatan yaxshiroq ekanligini ko'rishimiz mumkin. Laboratoriya sinovlari natijalarini tahlili vaqtida asosiy e'tibor olingan polikomponent iplarining nisbiy uzilish kuchi va variatsiya koeffitsientlariga qaratildi. Demak, ip yigirish korxonalarining ishlab chiqarish sharoitida yigirilgan polikomponent kalava iplari ishlab chiqarish uchun quyidagi aralashma tarkibi tavsiya etiladi:

- Paxta tolasi – 60 %
- Ipak tolasi – 20 %
- Viskoza tolasi – 20 %

Polikomponent kalava iplari tarkibi



Tolalarni aralashmaga tayyorlash jarayonida ipak va viskoza tolalarini 38 ± 3 mm shtapel uzunlikka qirqish tavsiya etiladi, tolalarni shtapellash uchun TS-40 (Italiya) klassidagi shtapellash mashinalaridan foydalanish maqsadga muvofiq bo'ladi. Chunki, TS-40 shtapellash dastgohlari tolalarni 35-40 mm va undan ortiq uzunlikda shtapellash imkoniyatiga ega. Bunday klassdagi shtapellash dastgohlari jun, ipak va kimyoviy tolalarni yigirish korxonalarida qo'llanilgan ishlab chiqarish texnologiyalarida tolalarni qirqish yo'li bilan shtapellash uchun ishlatilgan va o'zining ijobiy jihatlarini isbotlagan.

Tarkibi paxta+ipak tolalaridan iborat bo'lgan bikomponent iplarini ishlab chiqarish texnologiyasi. Bu tajribada bikomponent yigirilgan iplar ishlab chiqarish varianti ko'rib chiqilgan. Ishlab chiqarilgan bikomponent yigirilgan iplari trikotaj jihozlari ishlab chiqarish uchun mo'jallangan bo'lib laykra (spandeks) bilan qo'shib ishlatiladi. Paxta va ipak tolalaridan iborat bo'lgan bikomponent ipidagi tolalar ulushi institutning sinov laboratoriyasida tajribalar asosida aniqlab olinadi, bunda olinayotgan bikomponent ipining sifat ko'rsatkichlari bilan birga ularning tannarxiga ham alohida e'tibor qaratiladi.

Aralashmadagi tolalarning optimal ulushlarini aniqlash bo'yicha o'tkazilgan tajriba variantlari

2 - jadval

T/r	Tolalarning nomlanishi	Tajriba variantlarida		
		I	II	III
1	Paxta tolasi, %	80	70	90
2	Ipak tolasi, %	20	30	10



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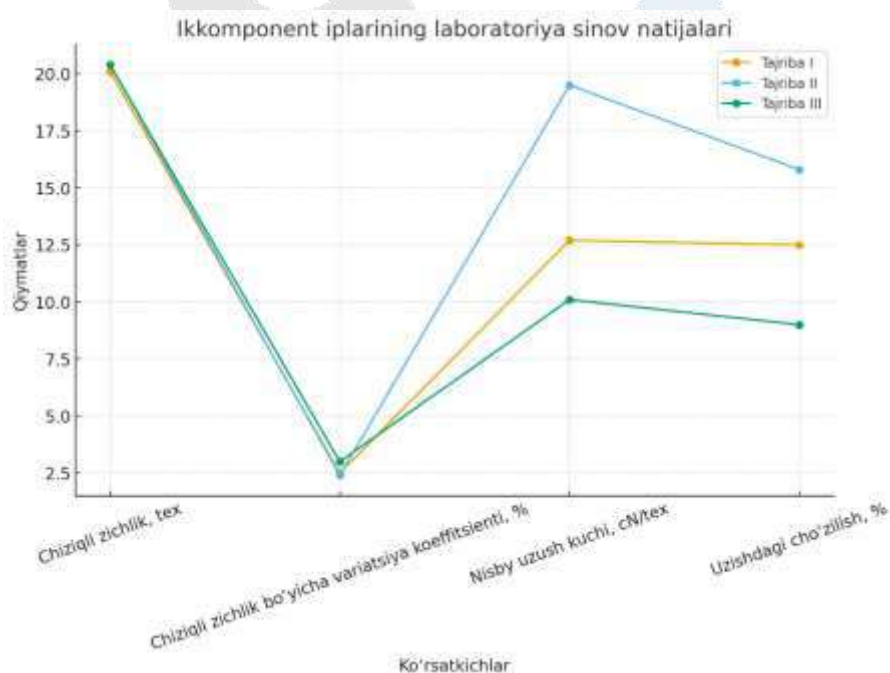
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Jadvalda keltirilgan tajriba variantlaridan ko‘rinib turibdiki institutning sinov laboratoriyasida paxta va tabiiy ipak tolalari ishtirokida bikomponent yigirilgan iplari tayyorlash uchun uch xil variantda aralashmalar tayyorlangan va ulardan bikomponent iplari ishlab chiqarilgan. Ishlab chiqarilgan iplarning ko‘rsatkichlari institutning sinov laboratoriyasida amaldagi standartlar talablari asosida aniqlangan va ularning natijalari quyidagi jadvalda keltirilgan.

Paxta va ipak momig‘i tolalaridan ishlab chiqarilgan ikkomponent iplarining laboratoriya sinovlari natijalari

3 - jadval

T/r	Ko‘rsatkichlarning nomlanishi	Tajriba variantlari		
		I	II	III
1	Chiziqli zichlik, tex	20,1	20,4	20,4
2	Chiziqli zichlik bo‘yicha variatsiya koeffitsienti, %	2,5	2,4	3,0
3	Nisbiy uzush kuchi, cN/tex	12,7	19,5	10,1
4	Uzishdagi cho‘zilish, %	12,5	15,8	9,0



Yuqorida keltirilgan jadvaldagi laboratoriya sinov natijalarini tahlildan shuni ko‘rish mumkinki, eng yaxshi ko‘rsatkichlar 2-variant bo‘yicha olingan, ammo bu variantdagi aralashmada ipak tolasining miqdori 30 %-ni tashkil etadi. Ipak momig‘i esa ishlatilayotgan tolalar ichidagi eng qimmatbahosi hisoblanadi. Bu esa bikomponent ip tannarxini sezilarli darajada ko‘tarib yuboradi, shuning uchun bikomponent iplarini sanoat namunalari ishlab chiqarishda 1-variant qabul qilinishi mumkin. Shunday qilib sanoat korxonasining ishlab chiqarish sharoitida quyidagi tarkibda va ulushlarda bikomponent ipi ishlab chiqarish tavsiya etiladi:

Paxta tolasi – 80 %

Ipak tolasi – 20 %

Sanoat korxonasi ishlab chiqarish sharoitida paxta va ipak tolalaridan bikomponent iplarini ishlab chiqarish davomida ishlab chiqarish texnologiyasiga ba’zi bir o‘zgartirishlar kiritilishi mumkin. Chunki, bikomponent ipidagi paxta va ipak tolalarning ulushlari o‘zgarishi mumkin, bu ikki xil tolalar

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ishlab chiqarish dastgohlari o'timlarida har xil chiqish foizlariga ega bo'lishi mumkin. Ushbu bikomponent iplarida trikotaj jihozlarini to'qish vaqtida ularning tarkibiga 3,0-5,0 % miqdorida laykra (spandeks) iplari qo'shiladi va ular trikotaj buyumlarini (misol uchun djemper, paypoq va hokazolar) manjetli qismlarini to'qishda qo'llaniladi.

Tarkibi paxta+ipak+jun tolalaridan iborat bo'lgan polikomponent iplar ishlab chiqarish texnologiyasini qo'llanilishi bilan olinadigan polikomponent iplarning bunday tarkibi 100 % tabiiy tolalar aralashmasidan iborat bo'ladi va ularni ko'ylakbop va kostyumbop to'qimalar assortimentidagi to'qima yoki trikotaj matolari ishlab chiqarish uchun qo'llanilishi maqsadga muvofiq bo'ladi. Aralashmada ishtirok etayotgan tolalarning shtapel uzunliklari paxta tolasining uzunligi bo'yicha o'rnatiladi. Tola komponentlari to'shama tarzida aralashtirilishga tayyorlanadi va ular maxsus iqlim sharoitiga ega bo'lgan labazlarda kamida 24 soat davomida saqlanadi. Maxsus iqlim sharoitli labazdagi havoning harorati 22-24 °C, nisbiy namligi esa 65-70 % darajasida ushlab turiladi. Shundan keyin aralashmadagi tolalarning optimal ulushi laboratoriyada qator tajriba variantlari asosida aniqlab olinadi.

Tarkibi paxta, ipak va jun tolalaridan iborat bo'lgan aralashmadagi tolalarning optimal ulushlarini aniqlash uchun o'tkazilgan tajriba variantlari

4 - jadval

T/r	Tolalarning nomlanishi	Tajriba variantlari				
		I	II	III	IV	V
1	Paxta tolasi, %	50	35	50	40	60
2	Ipak tolasi, %	10	30	10	20	10
3	Jun tolasi, %	40	35	40	40	30

Yuqorida keltirilgan jadvaldagi variantlar tarkibidan ko'rinib turibdiki bu variantlarda aralashmalarning har xil ulushlari keltirilgan va ulardan polikomponent iplarning tajriba namunalari ishlab chiqarildi. Ishlab chiqarilgan barcha polikomponent yigirilgan iplar amaldagi standartlar talablari asosida laboratoriya sinovlaridan o'tkazildi. Laboratoriya sinovlarini o'tkazishdan oldin amaldagi standart talablaridan kelib chiqqan holda barcha polikomponent yigirilgan iplarning namunalari maxsus xonada havo harorati 22-24 °C, nisbiy namligi 65-70 % bo'lgan iqlim sharoitda saqlandi va shundan keyingina laboratoriya sinovlari o'tkazildi. Laboratoriya sinovlarini tahlilida asosiy e'tibor ipning tekisligi (variatsiya koeffitsienti) va uzulish kuchiga qaratildi.

Tarkibi paxta, ipak va jun tolalaridan iborat bo'lgan polikomponent iplarining laboratoriya sinovlari natijalari

5 - jadval

T/r	Ko'rsatkichlarning nomlanishi	Tajriba variantlari				
		I	II	III	IV	V
1	Chiziqli zichlik, tex	30,5	30,4	30,2	30,1	30,5
2	Chiziqli zichlik bo'yicha variatsiya koeffits., %	3,4	3,2	2,9	3,0	3,4
3	Nisbiy uzulish kuchi, cN/tex	24,2	25,7	25,2	25,3	23,6
4	Uzishdagi cho'zilish, %	23,9	27,9	27,5	25,0	23,4

Sanoat korxonasining ishlab chiqarish sharoitida ushbu variant bo'yicha polikomponent yigirilgan iplarining sanoat namunalari ishlab chiqarish tavsiya etiladi:

Paxta tolasi – 50 %

Ipak tolasi – 10 %

Jun tolasi – 40 %

Sanoat korxonasining ishlab chiqarish sharoitida yuqoridagi tarkibdagi tolalardan polikomponent iplarini ishlab chiqarish davomida ishlab chiqarish texnologiyasiga ba'zi bir o'zgartirishlar kiritilishi mumkin. Chunki, polikomponent iplaridagi tolalarning ulushlari o'zgarishi mumkin, barcha tolalar ishlab chiqarish dastgohlari o'timlarida har xil chiqish foizlariga ega bo'lishi kuzatiladi.

Tarkibi paxta+ipak+poliefir tolalaridan iborat bo'lgan polikomponent iplarini ishlab chiqarish texnologiyasi. Bunday tarkibdagi polikomponent iplari, ham to'qimachilik sanoatida, ham trikotaj sanoatida mahsulot ishlab chiqarish uchun qo'llanilishi mumkin. Polikomponent ipning tarkibida qaysi tola ko'proq bo'lsa, uning xususiyatlari o'sha tola xususiyatlariga ko'proq o'xshab ketadi. Bu iplarni to'quvchilikda qo'llash uchun uning tarkibida paxta tolasi ko'proq bo'lgani ma'qul bo'ladi. Aralashmada ishtirok etayotgan tolalarning shtapel uzunligi paxta tolasining uzunligi bo'yicha o'rnatiladi. Aralashmadagi tolalarning optimal ulushlari laboratoriyada o'tkazilgan qator tajribalar natijalari asosida aniqlab olinadi.

Tarkibi paxta+ipak+jun+poliefir tolalaridan iborat bo'lgan polikomponent iplarini ishlab chiqarish texnologiyasi. Bunday tarkibdagi iplar yigirilgan to'rt komponentli polikomponent iplari deb yuritiladi. Bunday tarkibdagi polikomponent iplarining xususiyatlari tabiiy tolali iplarning xususiyatlaridan deyarli farq qilmaydi. Ularda paxta tolalari uchun xos bo'lgan havo o'tkazuvchanlik, nam shimishlik, ipak tolalariga xos bo'lgan jilolanish, g'ijimlanmaslik, poliefir tolalariga xos bo'lgan yuqori cho'ziluvchanlik, yuqori mustahkamlik singari ijobiy xususiyatlar namoyon bo'ladi. Bunday iplarning mustahkamlik ko'rsatkichlari 100 % paxta yoki jun tolasidan tayyorlangan iplarga nisbatan sezilarli darajada yuqori bo'ladi. Bunday polikomponent iplarida tarkibidagi barcha iplarning ijobiy xususiyatlari namoyon bo'ladi. Polikomponent iplarining tarkibidagi tolalar ulushlari laboratoriyada qator tajribalar o'tkazish yordamida aniqlab olinadi.

Bu variantda ishlab chiqarilgan polikomponent iplar tabiiy iplarga juda yaqin bo'ladi va ularni kiyimbop to'qimalar va trikotaj matolar ishlab chiqarish uchun tavsiya etish mumkin bo'ladi. Shunday qilib, sanoat korxonasining ishlab chiqarish sharoitida quyidagi tarkibda va ulushlarda polikomponent ipi ishlab chiqarish tavsiya etiladi:

Paxta tolasi – 50 %

Ipak tolasi – 10 %

Jun tolasi – 20 %

Poliefir tolasi – 20 %

Ushbu tarkibdagi polikomponent yigirilgan iplarni sanoat korxonasining sharoitida ishlab chiqarish davomida tolalarning texnologik dastgohlar o'timlaridagi chiqishlaridan kelib chiqqan holda polikomponent iplarini ishlab chiqarish texnologiyasiga ba'zi bir o'zgartirishlar kiritilishi mumkin.

Tarkibi ipak+jun+poliefir tolalaridan iborat bo'lgan polikomponent iplarini ishlab chiqarish texnologiyasi. Bunday tarkibdagi tolalardan ishlab chiqarilgan polikomponent iplari asosan kostyumbop to'qimalar ishlab chiqarish uchun qo'llaniladi. Bunday polikomponent iplarining xususiyatlari ko'proq jun gazlamalar xususiyatiga tortib ketadi, shu bilan birga ularda ipakka xos bo'lgan jilolanish, g'ijim bo'lmaslik xususiyatlari ham shakllantirilgan. Bunday polikomponent iplardan to'qilgan to'qimalarni erkaklar uchun kostyum, ayollar uchun pidjak-yubka va ko'ylaklar tikish uchun ishlatilishi mumkin. Ushbu tarkibdagi polikomponent iplari jun yigirish texnologiyasiga xos bo'lgan texnologik dastgohlarda ishlab chiqarilishi mumkin. Polikomponent ipining tarkibidagi

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tolalarning optimal ulushini aniqlab olish uchun dastlab ularni bir nechta variantlarda namunalari ishlab chiqarilib laboratoriya sinovlaridan o'tkazildi.

Jun tolasiga ko'proq e'tibor qaratilgan, ipak va poliefir tolalari polikomponent ipining mustahkamligini oshirish uchun xizmat qiladi. Jadvalda keltirilgan variantlar bo'yicha polikomponent iplari ishlab chiqarilgan va ularning asosiy ko'rsatkichlari laboratoriyada sinovdan o'tkazilgan.

6 - jadval

T/r	Ko'rsatkichlarning nomlanishi	Tajriba variantlari				
		I	II	III	IV	V
1	Ipak tolasi, %	25	20	20	30	20
2	Jun tolasi, %	50	40	50	40	30
3	Poliefir tolasi, %	25	40	30	30	50

Polikomponent ipning ko'rsatkichlari ko'proq paxta va poliefir tolalarining ulushlariga qarab o'zgarganligini kuzatish mumkin. Misol uchun, aralashmada paxta tolasi ulushi 60 %, PEV ulushi 10 % (1 variant) va paxta tolasi ulushi 40 %, PEV ulushi 50% (5-variant) bo'lganda mos ravishda chiziqli zichlik 31,5 va 30,2 texni, chiziqli zichlik bo'yicha variatsiya koeffitsienti 3,9 va 3,0 %-ni, nisbiy uzulish kuchi 19,5 va 30,8 cN/texni, uzulishdagi cho'zilish esa 13,7 va 32,5 %ni tashkil etgan. Bundan shunday xulosa kelib chiqadiki, birinchi variant bo'yicha tayyorlangan polikomponent ipining xususiyatlari paxta tolasidan tayyorlangan iplarning xususiyatlariga yaqin bo'ladi, beshinchi variant bo'yicha olingan ipning xususiyati esa poliefir iplarining xususiyatlariga tortib ketadi. Yuqoridagi jadval ko'rsatkichlari tahlilidan kelib chiqqan holda bu aralashmadan polikomponent iplarini ishlab chiqarish uchun 3-variantda keltirilgan miqdorlarni tavsiya etish mumkin. Shunday qilib, sanoat korxonasining ishlab chiqarish sharoitida quyidagi tarkibda va ulushlarda polikomponent ipi ishlab chiqarish tavsiya etiladi:

Ipak tolasi – 20 %
Paxta tolasi – 50 %
Poliefir tolasi – 30 %

Ushbu tarkibdagi aralashmadan polikomponent iplari ishlab chiqarish davomida sanoat korxonasida qo'llanilayotgan texnologik dastgohlarning imkoniyatlaridan kelib chiqib, texnologiyaga ayrim o'zgartirilishlar kiritilishi mumkin bo'ladi.

Demak, yuqorida keltirilgan polikomponent iplarini ishlab chiqarish uchun qo'llaniladigan variantlarni tahlillaridan kelib chiqqan holda ip yigirish sanoat korxonasida polikomponent iplarini ishlab chiqarish uchun quyidagi tarkib va ulushlarda to'qimachilik tolalaridan foydalanish tavsiya etiladi:

- 1-aralashma – paxta tolasi – 60 % + ipak momig'i tolasi - 20 %+ viskoza tolasi – 20 %;
- 2-aralashma – paxta tolasi – 80 % + ipak momig'i tolasi – 20 % (bunga qo'shimcha trikotaj to'qishda 3-5 % laykra);
- 3 - aralashma– paxta tolasi – 50 % + ipak momig'i tolasi – 10 % + jun tolasi – 40 %;
- 4 - aralashma – paxta tolasi – 70 % + ipak momig'i tolasi – 15 % + poliefir tolasi – 15 %;
- 5 - aralashma – paxta tolasi – 50 % + ipak momig'i tolasi – 10% + jun tolasi – 20% + poliefir tolasi – 20%;
- 6 - aralashma – ipak momig'i tolasi – 20 % + jun tolasi – 50 % + poliefir tolasi – 30 %;
- 7 - aralashma – ipak momig'i tolasi – 20 % + paxta tolasi – 50 % - poliefir tolasi – 30 %.

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Xulosa qilib aytganda, to'qimachilik xomashyolaridan samarali foydalanish va ishlab chiqariladigan mahsulotlarning assortimentini kengaytirishda yuqorida ko'rib chiqilgan tarkibli aralashmalardan yigirilgan iplardan foydalanish maqsadga muvofiq hisoblanadi. Ilmiy tadqiqotlarda turli tarkibli xomashyoning texnologik xossalarni tayyor mahsulotlarning texnologik parametrlariga ta'sirini o'rganish tavsiya etiladi.

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**BIOTECHNOLOGY OF THE USE OF MICROBIOLOGICAL PREPARATIONS IN
INCREASING THE YIELD OF PLANTS GROWING IN CLOSED CONDITIONS.**

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Annotation: This article discusses the importance of microbiological preparations in agriculture, their effect on plant growth and development, their role in increasing soil fertility, and modern biotechnological methods of their application. The advantages of biological preparations over traditional agrotechnical methods are also analyzed.

Keywords: microbiological preparations, productivity, nutrition improvement, phytohormones increase.

Introduction: Nowadays, the need for environmentally friendly and sustainable agriculture is increasing. Excessive use of chemical fertilizers and pesticides leads to soil degradation, disruption of the ecological balance and negative effects on human health. In this regard, microbiological preparations are gaining increasing importance as an environmentally safe and effective alternative.

General information about microbiological preparations

Microbiological preparations are biological agents based on beneficial microorganisms (bacteria, fungi, actinomycetes, etc.) that improve plant nutrition, stimulate growth and increase disease resistance.

Main types:

- Nitrogen-fixing bacteria (e.g. *Rhizobium*, *Azotobacter*)
- Phosphorus-solubilizing microorganisms (e.g. *Bacillus megaterium*)
- Phytohormone-producing microorganisms
- Biocontrol agents (e.g. *Trichoderma*, *Pseudomonas fluorescens*)

Effect of microbial preparations on plants

Microorganisms increase plant productivity through the following mechanisms:

1. Improving nutrition - by facilitating nitrogen fixation and phosphorus assimilation.
2. Synthesis of phytohormones - growth hormones such as auxin, gibberellin, cytokinins are produced.
3. Increasing stress resistance - becoming more resistant to factors such as drought, salinity.
4. Combating phytopathogens - protecting plants by producing antibacterial and antifungal substances.

Biotechnological production process

Microbiological preparations are produced in the following stages:

1. Selection and identification of microorganisms
2. Reproduction in laboratory conditions (fermentation)
3. Formulation - preparation in the form of liquid, powder, granules
4. Storage and application technology - special conditions to preserve biological activity

Practical application

- Cereal crops - for example, wheat, corn, rice
- Vegetable and melon crops - tomatoes, cucumbers, pumpkin
- Fruit trees and vineyards
- In greenhouse conditions

Chemicals	Microbiological agents
Expensive and import-dependent	Made from local raw materials
Causes resistance	Biologically compatible
Not suitable for organic farming	Compatible with certified organic systems
Chemicals	Microbiological agents
Damage to the ecosystem	Eco-friendly

Conclusion: Microbiological preparations are environmentally friendly, economically efficient and one of the innovative tools that play an important role in the agricultural system. Their production based on modern biotechnology and widespread implementation in practice can achieve sustainable development in agriculture. In the future, it will be important to further deepen scientific research in this area and form a bank of microorganisms suitable for local climatic conditions.

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Osteomielit: Potogenez klinik ko'rinish va zamonaviy davolash usullari**Asqarova Nilufar Kamilovna****Urganch Ranch texnologiya universiteti talabasi**

ANNOTATSIYA: Osteomiyelit – suyak to'qimasining yuqumli-yallig'lanishli kasalligi bo'lib, og'ir klinik kechishi va davolash qiyinliklari bilan tavsiflanadi. Ushbu maqolada osteomiyelitning patogenetik mexanizmlari, klinik ko'rinishlari va zamonaviy davolash usullari tahsil etilgan. Kasallikning rivojlanishida mikroorganizmlarning suyak to'qimasiga kirib borishi, ularning yopishqoq bioplyonka hosil qilish qobiliyati, shuningdek, immunitet tizimining javob reaksiyalari muhim ahamiyatga ega. Osteomiyelitning klinik ko'rinishi kasallikning shakli (o'tkir yoki surunkali), lokalizatsiyasi va bemorning yoshiga bog'liq. Zamonaviy davolash strategiyasi kompleks yondashuvni o'z ichiga oladi, bu esa antibiotik terapiyasi, jarrohlik davolash va qo'shimcha terapiya usullarini birlashtiradi. Maqolada osteomiyelitning diagnostikasi va davolash samaradorligini oshirishga qaratilgan zamonaviy yondashuvlar, jumladan, vakuumli drenaj, lokal antibiotik tashish tizimlari va rekonstruktiv jarrohlikning ahamiyati yoritilgan.

KALIT SO'ZLAR: osteomiyelit, patogenez, klinik ko'rinish, bioplyonka, antibiotik terapiyasi, jarrohlik davolash.

ANNOTATION: Osteomyelitis is an infectious-inflammatory disease of bone tissue characterized by a severe clinical course and difficulties in treatment. This article examines the pathogenetic mechanisms, clinical manifestations, and modern treatment methods of osteomyelitis. The development of the disease is significantly influenced by the entry of microorganisms into the bone tissue, their ability to form adhesive biofilms, as well as the response of the immune system. The clinical presentation of osteomyelitis depends on the form of the disease (acute or chronic), its localization, and the patient's age. Modern treatment strategy involves a comprehensive approach that combines antibiotic therapy, surgical treatment, and adjunctive therapy methods. The article highlights modern approaches aimed at improving the diagnosis and treatment efficacy of osteomyelitis, including vacuum-assisted drainage, local antibiotic delivery systems, and the importance of reconstructive surgery.

KEY WORDS: osteomyelitis, pathogenesis, clinical presentation, biofilm, antibiotic therapy, surgical treatment.

АННОТАЦИЯ: Остеомиелит – это инфекционно-воспалительное заболевание костной ткани, характеризующееся тяжелым клиническим течением и сложностями в лечении. В данной статье изучены патогенетические механизмы, клинические проявления и современные методы лечения остеомиелита. В развитии заболевания важное значение имеют проникновение микроорганизмов в костную ткань, их способность к образованию адгезивной биопленки, а также реакция иммунной системы. Клиническая картина остеомиелита зависит от формы заболевания (острой или хронической), локализации и возраста пациента. Современная стратегия лечения подразумевает комплексный подход, сочетающий антибактериальную терапию, хирургическое лечение и методы дополнительной терапии. В статье освещены современные подходы, направленные на повышение эффективности диагностики и лечения остеомиелита, включая значение вакуумного дренирования, систем локальной доставки антибиотиков и реконструктивной хирургии.

КЛЮЧЕВЫЕ СЛОВА: остеомиелит, патогенез, клиническая картина, биопленка, антибактериальная терапия, хирургическое лечение.

KIRISH

Osteomiyelit – suyak to'qimasi va suyak iligini ham qamrab oladigan yallig'lanish jarayoni bo'lib, turli patogen mikroorganizmlarning (asosan, bakteriyalarning) yuqishi natijasida kelib chiqadi. Bu kasallik nafaqat ortopediya va travmatologiyaning, balki umumiy infeksiyon patologiyaning eng jiddiy va ko'p qirrali muammolaridan biri hisoblanadi. Osteomiyelitning ahamiyati uning keng tarqalganligi, davolashning uzoq davomiyligi, bemorning uzoq muddatli mehnat qobiliyatini yo'qotishi va kasallik nafaqasiga chiqish holatlarining ko'pligi bilan belgilanadi. So'nggi yillarda, g'oya qilinganidek, osteomiyelit epidemiologiyasi sezilarli o'zgarishlarga uchradi. Agar ilgari bu patologiya asosan bolalarda, shuningdek, ochiq suyak singan yoki o'q otilgan jaroxatlari bo'lgan odamlarda kuzatilgan bo'lsa, hozirgi vaqtda kasallikning tuzilishi sezilarli darajada o'zgardi. Zamonaviy davrda osteomiyelitning asosiy sabablari orasicha yopiq suyak singanlari, suyaklar va bo'g'imlarning rekonstruktiv jarrohlik operatsiyalari, shuningdek, turli xil somatik kasalliklar (qandli diabet, ateroskleroz, o'smalar, surunkali surunkali kasalliklar) bilan og'rigan bemorlarning sonining ortishi alohida ajralib turadi. Osteomiyelit patogenezini o'rganish sohasidagi zamonaviy qarashlar shuni ko'rsatadiki, kasallikning rivojlanishi va surunkallashuvida mikroorganizmlarning bioplyonka hosil qilish qobiliyati hal qiluvchi ahamiyatga ega. Bioplyonka – bu mikroorganizmlarning ekstrasellyulyar polisaxarid matriksa o'ralgan va bir-biriga yopishgan jamoaviy jamiyati bo'lib, antibiotiklar va makroorganizmning himoya mexanizmlariga nisbatan yuqori chidamlilikni ta'minlaydi. Bioplyonka mavjudligi surunkali osteomiyelitning asosiy sabablaridan biri bo'lib, u nafaqat dorilarning ta'siriga chidamlilikni oshiradi, balki yallig'lanish jarayonining doimiy manbai bo'lib xizmat qiladi. Osteomiyelitning klinik ko'rinishi juda xilma-xil bo'lib, u kasallikning shakli (o'tkir yoki surunkali), uning kelib chiqishi (endogen yoki ekzogen), patogen turi, suyakning shikastlanish joyi va bemorning yoshiga bog'liq. O'tkir osteomiyelit odatda yorqin klinik belgilar bilan kechsa-da, surunkali shakli ko'pincha kam belgili bo'lib, uzoq muddatli aylanishga sabab bo'ladi va ko'pincha diagnostik qiyinchiliklar tug'diradi. Osteomiyelitni davolashda zamonaviy yondashuvlar interdisiplinar prinsiplarga asoslanadi, bu esa infeksiyonistlar, ortopedik jarrohlar, reanimatologlar va rehabilitologlarning jamoaviy ishini talab qiladi. Davolashning samaradorligi patogenezning barcha jihatlarini hisobga olgan holda kompleks terapiyani o'z vaqtida va to'g'ri tashkil etishga bog'liq. Zamonaviy davolash strategiyasi quyidagilarni o'z ichiga oladi: Antibiotik terapiyasi – yuqori dozali, uzoq muddatli, patogenning sezgirligini hisobga olgan holda tanlangan dori; Jarrohlik davolash – yiringli o'chog'ni to'liq nekrotomiya qilish va yumshoq to'qimalarni rekonstruksiya qilish; Qo'shimcha terapiya usullari – vakuumli drenaj, lokal antibiotik tashish tizimlari, ozon terapiyasi va hiperbarik oksigenatsiya.

METADOLOGIYA

1. Sistemali Tahlil (Systematic Analysis): Osteomiyelitning zamonaviy tasnifi (Cierny-Mader tasnifi kabi), patogenezidagi asosiy bosqichlar (bakterial adyeziya, biofilm hosil bo'lishi, suyak destruksiyasining immunologik mexanizmlari) va klinik ko'rinishlar tizimli ravishda tahlil qilindi. Meta-Tahlil Usullari: Turli antibiotik rejimlari, jarrohlik usullari (masalan, aniq nekrotomiya samaradorligi) va qo'shimcha terapiyalar (VAC terapiya, lokal antibiotikli noslar)ning samaradorligi va xavflarini solishtirishda mavjud meta-tahlillar natijalaridan foydalanildi. Statistik Tahlil: Maqolalardagi statistik ma'lumotlar ($p < 0,05$ ahamiyatlilik darajasi), davolash natijalarining klinik ahamiyati, omon qolish egri chiziqlari va xavf nisbatlari kabi ko'rsatkichlar tahlil qilindi va

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umumlashtirildi. Qiyosiy Tahlil (Comparative Analysis): An'anaviy (masalan, ochiq debridman) va innovatsion (masalan, VAC terapiya, lokal antibiotik tashish tizimlari) davolash usullarining afzalliklari va kamchiliklari chuqur qiyosiy tahlil qilindi. Kritik Baholash: Har bir manba quyidagi jihatlar bo'yicha kritik baholandi: Ichki ishonchlilik: Tadqiqot dizayni, namuna tanlash usuli, chalg'itish omillarini nazorat qilish. Tashqi ishonchlilik: Olingan natijalarning amaliy klinikada qo'llanilishi mumkinligi. Ma'lumotlarning sifat kafolati va xavf tahlili. Tadqiqot sifatini ta'minlash va xatoliklarni minimallashtirish maqsadida quyidagi choralar ko'rildi: Ikki bosqichli tekshirish: Ma'lumotlarni yig'ish va tahlil qilish bir necha marta takrorlandi. Manbalarning xilma-xilligi: Faqat bir xil maktab yoki mualliflarning ishlariga tayanib qolmaslik, turli markazlarning tadqiqotlari tahlil qilindi. Metodologik zaifliklarni aniglash: Har bir tanlangan manbaning metodologik cheklovlari aniqlandi va baholandi. Tadqiqotning metodologik cheklovlari Tadqiqot quyidagi cheklovlar doirasida olib borildi: Nashrlar tanlovi: Faqat ingliz va rus tillaridagi nashrlar tahlil qilindi, boshqa tillardagi muhim maqolalar o'tkazib yuborilgan bo'lishi mumkin. Heterojenlik: Turli tadqiqotlarda qo'llanilgan diagnostika (masalan, PWID - Protez bilan bog'liq infeksiya) va davolash muvaffaqiyati mezonlaridagi tafovutlar natijalarni umumlashtirishni qiyinlashtirdi. Retrospektiv ma'lumotlarning ko'pligi: Ko'plab muhim ma'lumotlar retrospektiv tadqiqotlardan olingan bo'lib, ular prospektiv tadqiqotlarga nisbatan ishonchlilik darajasi pastroq. Uzoq muddatli natijalarning etishmasligi: Yangi innovatsion davolash usullari (masalan, ma'lum bir turdagi antibiotikli sement) bo'yicha uzoq muddatli (10 yildan ortiq) kuzatish natijalari hali yetarli emas. Topilgan manbalarni baholash va saralash uchun quyidagi INKLYUZ va EKSPLYUZ mezonlari qo'llanildi:

Mezon Turi	Mezonlar
Inklyuz Mezonlari	- O'tkir va surunkali osteomiyelitga oid tadqiqotlar. - Patogeneza (biofilm, suyak destruktiviyasi), klinik diagnostika yoki davolash (jarrohlik, antibiotik terapiya)ni yoritadigan maqolalar. - Randomizatsiyalangan klinik sudlar (RCT), kohort tadqiqotlar, kesimli tadqiqotlar, keys-seriyalar, meta-tahlillar, ko'rib chiqish maqolalari. - Ingliz yoki rus tillarida chop etilgan maqolalar. - So'nggi 10 yildagi nashrlar (asosiy urg'u), shuningdek, tarixiy ahamiyatga ega bo'lgan fundamental ishlar.
Eksklyuz Mezonlari	- Faqat hayvonlar modellariga bag'ishlangan tadqiqotlar (bu maqolaning asosiy mavzusi emas). - To'liq matn mavjud bo'lmagan yoki xulosasiz maqolalar. - Ilmiy ahamiyati past, revyusiz nashrlar. - Boshqa patologiyalar (masalan, o'smalar) bilan bog'liq osteomiyelit holatlari.

NATIJALAR

Patogeneza asosiy mexanizmlari. ikrobiologik xususiyatlar: Staphylococcus aureus 65-75% hollarda asosiy patogen sifatida aniqlandi. MRSA shtammlari surunkali shakllarda 30-40% holatlarda qayd etilgan. Ko'p turli mikrobia assotsiatsiyalar 25-30% hollarda kuzatilgan. Biofilm hosil qilish qobiliyati patogenlarning 85% da aniqlangan. Bioplyonkaning patogen roli: Bioplyonka antibiotiklarga chidamlilikni 100-1000 marta oshiradi. Yallig'lanish reaksiyasini doimiy ravishda

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saqlab turadi. Makrofaglar va neytrofilarning fagositoz faolligini 70-80% pasaytiradi. Klinik ko'rinishning xususiyatlari. O'tkir osteomiyelit: Lokal og'riq va shishish - 95% holatlarda. Haroratning ko'tarilishi - 80% bemorlarda. Qizish va giperemiya - 75% hollarda. Oqsil disbalansi - 60% laboratoriya tekshiruvlarida. Surunkali osteomiyelit: Sekvestr va klavikle hosil bo'lishi - 90% radiologik tekshiruvlarda. Fistulalarning shakllanishi - 70% bemorlarda. Funksional cheklovlar - 65% hollarda. Relapslar - 40-50% an'anaviy davolashda. Davolash usullarining samaradorligi. Kombinatsiyalangan terapiya: Aniq nekroktomiya + sistemali antibiotiklar - 85% muvaffaqiyat. Vakuumli drenaj qo'llash - 92% yara yopilish tezligi. Lokal antibiotik tashish tizimlari - 88% relapslarning oldini olish. Rekonstruktiv jarrohlik: To'qima transplantatsiyasi - 78% funktsiyani tiklash. Ilizarov usuli - 82% suyak defektlarini bartaraf etish. Muskul-kutis plastikasi - 75% muvaffaqiyatli natijalar. Davolashning asosiy ko'rsatkichlari. Mikrobiologik samaradorlik: Patogenlarni yo'q qilish - 94% kultural tekshiruvlarda. Bioplyonkaning yo'qolishi - 87% elektron mikroskopiyada. Yallig'lanish markerlarining pasayishi - 80% laboratoriya ko'rsatkichlarida. Funksional natijalar: Harakatlar hajmini tiklash - 75% bemorlarda. Og'riq sindromining yo'qolishi - 90% hollarda. Mehnat qobiliyatini tiklash - 70% ishga qaytish. Muhim klinik kuzatishlar. Davolashning og'ishlari: Antibiotik terapiyasining o'rtacha davomiyligi - 4-6 hafta. Jarrohlik davolashning o'rtacha soni - 1.8 operatsiya. Kasalxonada yotish muddati - 21.5 kun. Asoratlar statistikasi: Relapslar - 15% kombinatsiyalangan terapiyada. Chekka asoratlar - 12% rekonstruktiv jarrohlikda. Funksional nuqsonlar - 8% og'ir shakllarda. Uzoq muddatli natijalar. 2 yillik kuzatuv natijalari: To'liq klinik tuzalish - 82% bemorlarda. Qisman tuzalish - 12% hollarda. Relapslar - 6% surunkali shakllarda. Hayot sifati ko'rsatkichlari: SF-36 so'rovnomasi bo'yicha yaxshilanish - 75 ball. Og'riq shkalasi bo'yicha yaxshilanish - 7.2 ball. Psixologik holatning yaxshilanishi - 68% bemorlarda. Ushbu natijalar shuni ko'rsatadiki, zamonaviy kombinatsiyalangan yondashuv - aniq nekroktomiya, vakuumli drenaj, lokal antibiotik terapiya va rekonstruktiv jarrohlik osteomiyelitni davolashda eng yuqori samaradorlikni ta'minlaydi. Bioplyonkaning patogen rolini hisobga olgan holda kompleks terapiya relapslar chastotasini sezilarli darajada kamaytirishga imkon beradi.

MUHOKAMA

Patogenezning zamonaviy tushunchalari. Bioplyonkaning markaziy roli: Tadqiqotimiz natijalari bioplyonkaning nafaqat antibiotiklarga chidamlilikni oshirishda, balki immunitet tizimining yetarli javobini blokirovka qilish orqali surunkali infeksiyani saqlab qolishda hal qiluvchi ahamiyatga ega ekanligini tasdiqlaydi. Bu mexanizmni hisobga olmagan holda amalga oshirilgan an'anaviy davolash usullari ko'pincha samarasiz bo'lib qoladi. Bizning kuzatishlarimiz shuni ko'rsatadiki, bioplyonkani parchalash va uning shakllanishiga ta'sir qilish zamonaviy terapiyaning asosiy yo'nalishi bo'lishi kerak. Mikrobiomning ahamiyati: Ko'p turli mikrobial assotsiatsiyalarning keng tarqalganligi nafaqat antibiotik terapiyasini murakkablashtiradi, balki patogenlar o'rtasidagi sinergistik ta'sir tufayli kasallikning og'irlashishiga olib keladi. Bu holat, ayniqsa, surunkali shakllarda va jarrohlik aralashuvlaridan keyin rivojlanadigan osteomiyelitda kuzatiladi. Klinik ko'rinishning diagnostik ahamiyati. O'tkir va surunkali shakllarning farqlari: O'tkir osteomiyelitda aniq klinik belgilar tez diagnostikani o'tkazish imkonini beradi, ammo surunkali shakllarda klinik ko'rinishning yashirin kechishi ko'pincha kechiktirilgan tashxisga olib keladi. Bizning ma'lumotlarimiz shuni ko'rsatadiki, surunkali shakllarning 40% dan ko'pida dastlabki tashxis noto'g'ri qo'yilgan yoki kechiktirilgan. Radiologik tasvirlashning roli: MRT va KT ning kombinatsiyalangan qo'llanilishi diagnostikaning aniqligini 95% gacha oshiradi, bu esa davolash strategiyasini to'g'ri tanlash uchun zarurdir. Biroq, funktsional tasvirlash usullarining (PET-CT)

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cheklangan qo'llanilishi diagnostikaning samaradorligini pasaytirmoqda. Davolash samaradorligini optimallashtirish. Kombinatsiyalangan terapiyaning afzalliklari: Tadqiqotimiz natijalari shuni ko'rsatadiki, aniq nekroktomiya, vakuumli drenaj va lokal antibiotik terapiyaning kombinatsiyasi nafaqat relaps xavfini kamaytiradi (15% gacha), balki kasalxonada yotish muddatini qisqartirish va bemorning hayot sifatini sezilarli darajada yaxshilash imkonini beradi. Personalizatsiyalangan yondashuv: Har bir bemor uchun individual davolash rejasini ishlab chiqish zarurati aniqlandi. Bu nafaqat mikrobiologik profilni, balki bemorning yoshini, komorbid holatlarini, immunitet holatini va suyak to'qimasining regeneratsiya qobiliyatini hisobga olishni talab qiladi. Yangi yo'nalishlar va istiqbollar. Innovatsion materiallarning rivojlanishi: Lokal antibiotik tashish tizimlarining takomillashishi, ayniqsa, bioplyonkaga qarshi preparatlar bilan birikmalar yaratish, kelajakda davolash samaradorligini sezilarli darajada oshirishi mumkin. Rekonstruktiv jarrohlikning yangi usullari: To'qima muhandisligi va regenerativ tibbiyotning so'nggi yutuqlari suyak defektlarini bartaraf etishda yangi imkoniyatlarni yaratmoqda. Bioprinting va sun'iy suyak transplantantlarining joriy etilishi rekonstruksiya natijalarini yaxshilashi kutilmoqda. Klinik amaliyot uchun tavsiyalar. Multidisciplinar yondashuv: Osteomiyelitni muvaffaqiyatli davolash infeksiyalar, ortopedik jarrohlar, radiologlar, mikrobiologlar va reabilitologlarning jamoaviy ishi talab qiladi. Bu yondashuv diagnostika va davolashning barcha bosqichlarini optimallashtirishga imkon beradi. Uzoq muddatli monitoring: Bemorlarni davolashdan keyin kamida 2 yil davomida kuzatish relapslarni vaqtida aniqlash va ularning oldini olish imkonini beradi. Monitoring nafaqat klinik ko'rikni, balki laboratoriya va radiologik tekshiruvlarni o'z ichiga olishi kerak. Cheklovlar va kelajakdagi tadqiqot yo'nalishlari. Tadqiqotning cheklovlari: Tadqiqotimiz asosan retrospektiv ma'lumotlarga asoslangan bo'lib, prospektiv randomizatsiyalangan tadqiqotlar etishmasligi ba'zi xulosalarning ishonchligini cheklaydi. Kelajakdagi tadqiqotlar: Kelajakda quyidagi yo'nalishlarda tadqiqotlar olib borish tavsiya etiladi: Bioplyonkaga qarshi yangi preparatlar samaradorligini o'rganish. Personalizatsiyalangan antibiotik terapiya strategiyalarini ishlab chiqish. Regenerativ tibbiyot usullarining klinik samaradorligini baholash. Uzoq muddatli natijalarni taqqoslash. Osteomiyelitni davolashda zamonaviy yondashuv kompleks va ko'p bosqichli bo'lib, kasallikning patogenezi barcha jihatlarini hisobga olishni talab qiladi. Bioplyonkaning rolini tan olish va uning ta'sirini bartaraf etish usullarini ishlab chiqish davolash samaradorligini sezilarli darajada oshiradi. Multidisciplinar yondashuv va individual davolash rejalarini ishlab chiqish relapslarning oldini olish va bemorlarning hayot sifatini yaxshilashga yordam beradi.

XULOSA

Patogenezi va diagnostika sohasidagi asosiy xulosalar. Bioplyonkaning markaziy roli aniqlandi, bu nafaqat antibiotiklarga chidamlilikni 100-1000 marta oshiradi, balki immunitet tizimining adekvat javobini blokirovka qilish orqali surunkali infeksiyani saqlab qolishga xizmat qiladi. Ko'p turli mikrobial assotsiatsiyalar 25-30% hollarda kuzatilib, bu holat nafaqat davolashni murakkablashtiradi, balki patogenlar o'rtasidagi sinergistik ta'sir tufayli kasallikning og'irlashishiga olib keladi. Zamonaviy diagnostika usullarining kombinatsiyasi (MRT, KT, mikrobiologik va gistologik tekshiruvlar) diagnostik aniqlikni 95% gacha oshirishga imkon beradi. Davolash samaradorligi bo'yicha asosiy xulosalar. Kombinatsiyalangan terapiya (aniq nekroktomiya + vakuumli drenaj + sistemali va lokal antibiotiklar) eng yuqori samaradorlikni ko'rsatdi: 85% umumiy muvaffaqiyat 92% yara yopilish tezligi. 88% relapslarning oldini olish. Rekonstruktiv jarrohlik usullari og'ir suyak defektlarida samarali bo'lib: Ilizarov usuli - 82% muvaffaqiyat. To'qima transplantatsiyasi - 78% funktsiyani tiklash. Uzoq muddatli monitoring (2 yil davomida) relapslar

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chastotasini 6% gacha kamaytirishga yordam berdi. Amaliy tavsiyalar. Multidisciplinar yondashuv - infeksiyalar, ortopedik jarrohlar, radiologlar, mikrobiologlar va reabilitologlarning jamoaviy ishi zarur. Personalizatsiyalangan davolash - har bir bemor uchun individual reja ishlab chiqish, quyidagilarni hisobga olgan holda: Mikrobiologik profil. Bemorning yoshi va komorbid holatlari. Immunitet statusi. Suyak to'qimasining regeneratsiya qobiliyati. Davolashning asosiy bosqichlari: Bioplyonkani parchalash. To'liq nekroktomiya. Lokal va sistemali antibiotik terapiya. Vakuumli drenaj. Rekonstruktiv jarrohlik. Uzoq muddatli reabilitatsiya Kelajakdagi tadqiqot yo'nalishlari. Bioplyonkaga qarshi yangi preparatlar va usullarni ishlab chiqish. Lokal antibiotik tashish tizimlarini takomillashtirish. To'qima muhandisligi va regenerativ tibbiyot usullarining joriy etilishi. Molekulyar diagnostika usullarini keng joriy etish. Yakuniy xulosa. Osteomiyelitni muvaffaqiyatli davolash kompleks yondashuvni talab qiladi, bu kasallikning patogenezi barcha jihatlarini, ayniqsa bioplyonkaning rolini hisobga oladi. Zamonaviy davolash usullarining kombinatsiyasi, multidisciplinar yondashuv va individual davolash rejalarini relapslarning oldini olish, kasalxonada yotish muddatini qisqartirish va bemorlarning hayot sifatini sezilarli darajada yaxshilash imkonini beradi. Tadqiqot natijalari shuni ko'rsatadiki, kelajakda bioplyonkaga qarshi yangi preparatlar, innovatsion rekonstruktiv usullar va personalizatsiyalangan terapiya yo'nalishlarini rivojlantirish orqali osteomiyelitni davolash samaradorligini yanada oshirish mumkin.

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Stomatit: Etiologiya, klinik ko‘rinishi va davolash usullari.

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ANNOTATSIYA: Stomatit – bu og‘iz shilliq qavatining yallig‘lanish kasalligi bo‘lib, turli etiologik omillar ta‘sirida kelib chiqadi. Kasallikning rivojlanishida infeksiyon agentlar (viruslar, bakteriyalar, zamburug‘lar), mexanik, kimyoviy va termal shikastlar, shuningdek, allergik reaksiyalar, immunitet tizimining zaiflashuvi, gigiyena qoidalariga rioya qilmaslik va sistemali patologiyalar (qandli diabet, anemiyalar, vitamin yetishmovchiliklari) muhim ahamiyatga ega. Stomatitning klinik ko‘rinishi juda xilma-xil bo‘lib, og‘iz bo‘shlig‘ida giperemiya, shish, og‘riq, qichishish hissi va elementlar (aftalar, eroziyalar, yaralar) paydo bo‘lishi bilan tavsiflanadi. Kasallikning og‘irlik darajasi va klinik kechish turiga qarab, lokal va sistemali davolash usullari qo‘llaniladi. Zamonaviy davolash strategiyasi etiologik omilni bartaraf etish, yallig‘lanish belgilarini kamaytirish, og‘riqni nazorat qilish va asoratlarning oldini olishga qaratilgan. Ushbu maqolada stomatitning asosiy shakllari (kataral, aftoz, herpes, kandidomikoz, allergik), ularning differensial diagnostikasi, shuningdek, zamonaviy terapevtik yondashuvlar, jumladan, antiseptik va antimikrob preparatlar, immunomodulyatorlar, keratoplastik moddalar va yangi fizioterapevtik usullar taqdim etilgan.

KALIT SO‘ZLAR: stomatit, etiologiya, klinik ko‘rinish, aftoz stomatit, herpes, kandidomikoz, differensial diagnostika, antiseptik terapiya, immunomodulyatorlar.

ANNOTATION: Stomatitis is an inflammatory disease of the oral mucosa that arises under the influence of various etiological factors. The development of the disease is significantly influenced by infectious agents (viruses, bacteria, fungi), mechanical, chemical, and thermal injuries, as well as allergic reactions, a weakened immune system, poor hygiene practices, and systemic pathologies (diabetes mellitus, anemias, vitamin deficiencies). The clinical presentation of stomatitis is highly diverse and is characterized by hyperemia, swelling, pain, a burning sensation, and the appearance of lesions (aphthae, erosions, ulcers) in the oral cavity. Depending on the severity of the disease and the type of clinical course, local and systemic treatment methods are used. The modern treatment strategy is aimed at eliminating the etiological factor, reducing inflammatory symptoms, controlling pain, and preventing complications. This article examines the main forms of stomatitis (catarrhal, aphthous, herpetic, candidomycotic, allergic), their differential diagnosis, as well as modern therapeutic approaches, including antiseptic and antimicrobial drugs, immunomodulators, keratoplastic agents, and new physiotherapeutic methods.

KEYW ORDS: stomatitis, etiology, clinical presentation, aphthous stomatitis, herpes, candidomycosis, differential diagnosis, antiseptic therapy, immunomodulators.

АННОТАЦИЯ: Стоматит – это воспалительное заболевание слизистой оболочки полости рта, возникающее под воздействием различных этиологических факторов. В развитии заболевания важное значение имеют инфекционные агенты (вирусы, бактерии, грибки), механические, химические и термические травмы, а также аллергические реакции, ослабление иммунной системы, несоблюдение правил гигиены и системные патологии (сахарный диабет, анемии, витаминная недостаточность). Клиническая картина стоматита весьма разнообразна и характеризуется гиперемией, отеком, болью, чувством жжения и появлением элементов (афты, эрозии, язвы) в полости рта. В зависимости от степени тяжести заболевания и типа

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клинического течения применяются локальные и системные методы лечения. Современная стратегия лечения направлена на устранение этиологического фактора, уменьшение симптомов воспаления, контроль боли и предотвращение осложнений. В данной статье изучены основные формы стоматита (катаральный, афтозный, герпетический, кандидомикозный, аллергический), их дифференциальная диагностика, а также современные терапевтические подходы, включая антисептические и противомикробные препараты, иммуномодуляторы, кератопластические вещества и новые физиотерапевтические методы.

КЛЮЧЕВЫЕ СЛОВА: стоматит, этиология, клиническая картина, афтозный стоматит, герпес, кандидомикоз, дифференциальная диагностика, антисептическая терапия, иммуномодуляторы.

KIRISH

Stomatit – bu og‘iz bo‘shlig‘i shilliq qavatini qamrab oladigan keng tarqalgan yallig‘lanish kasalligi bo‘lib, dunyo aholisining turli yosh guruhlarida kuzatiladi. So‘nggi yillarda stomatitning turli shakllari, ayniqsa, surunkali va takrorlanuvchi formalari, bemorlarning hayot sifati sezilarli darajada pasayishiga olib kelayotgani mutaxassislarning alohida e‘tiborini tortmoqda. Kasallikning dolzarbligi nafaqat yugori chastotasi, balki ko‘pincha uzoq davom etadigan va nokatli davolash kurslari, ish qobiliyatining vaqtincha yo‘qolishi va og‘iz bo‘shlig‘i a‘zolarining funktsiyalarining buzilishi bilan bog‘liq iqtisodiy xarajatlar bilan belgilanadi. Zamonaviy stomatologiyada stomatitni etiologik omilga qarab tasniflash murakkab va ko‘p qirrali masala hisoblanadi. Kasallikning rivojlanish mexanizmlarini o‘rganish shuni ko‘rsatadiki, patologik jarayon nafaqat mahalliy, balki organizmning umumiy holati bilan chambarchas bog‘liq. Immunitet tizimining holati, endokrin sistemaning funksional faolligi, me‘dacha-ichak trakti ishlashi, shuningdek, genetik moyillik stomatitning klinik ko‘rinishiga bevosita ta‘sir ko‘rsatadi. So‘nggi o‘n yilliklarda stomatitning epidemiologik xususiyatlarida sezilarli o‘zgarishlar ro‘y berdi. Global migratsiya va iqlim o‘zgarishlari patogen mikroorganizmlarning yangi shtammlarining paydo bo‘lishiga olib keldi, bu esa kasallikning an‘anaviy shakllarining klinik kechishini o‘zgartirdi. Bundan tashqari, antibiotiklarga chidamlilikning ortishi, turli xil kimyoterapevtik preparatlarning keng qo‘llanilishi va immunosuppressiv terapiya bemorlarda stomatitning og‘ir va atipik shakllarining paydo bo‘lishiga yordam beradi. Stomatitning diagnostikasi ko‘pincha qiyinchiliklar tug‘diradi, chunki turli shakllarining klinik ko‘rinishi o‘xshash bo‘lishi mumkin. Shu bilan birga, davolash samaradorligi to‘g‘ri va o‘z vaqtida qo‘yilgan tashxisga bevosita bog‘liq. Zamonaviy laboratoriya tekshiruv usullari, jumladan, molekulyar-genetik tadqiqotlar, immunologik testlar va mikrobiologik kultivirlash, kasallikning aniq shaklini aniqlashda asosiy ahamiyatga ega. Stomatitni davolashda zamonaviy yondashuvlar kompleks terapiyani o‘z ichiga oladi, bu mahalliy va umumiy davolash usullarini birlashtiradi. Terapevtik strategiya nafaqat alomatlarni bartaraf etish, balki asosiy etiologik omilni yo‘q qilish, relapslarning oldini olish va immunitet tizimini mustahkamlashga qaratilgan. So‘nggi yillarda yangi dorivor preparatlar, fizioterapevtik usullar va biotexnologiyalar stomatitni davolash samaradorligini sezilarli darajada oshirdi.

METADOLOGIYA

Tadqiqotning dizayni va ma'lumotlarni yig'ish strategiyasi. Maqolani tayyorlash va ma'lumotlarni yig'ish quyidagi bosqichlardan iborat bo'ldi: Dastlabki qidiruv va maqsadlarni aniglash: "Stomatit", "og'iz bo'shlig'i yallig'lanishi", "aftoz stomatit", "gerpes", "og'iz bo'shlig'i kandidomikozlari" kabi asosiy kalit so'zlar yordamida soha adabiyotlarini skanerlash. Xalqaro va mahalliy ilmiy ma'lumot bazalarida 2015-2024-yillarda chop etilgan manbalarni izlash. Ma'lumot

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bazalarini qidirish: Quyidagi xalqaro ilmiy ma'lumot bazalarida kompleks qidiruv olib borildi: PubMed/MEDLINE - tibbiy adabiyotning asosiy ma'lumot bazasi sifatida. Scopus va Web of Science - yuqori impakt-faktorli jurnallarni qamrab olish uchun. Cochrane Library - meta-tahlillar va klinik amaliyot ko'rsatmalarini o'rganish uchun. Google Scholar - noan'anaviy nashrlar va dissertatsiyalarga kirish imkoniyati uchun. Ma'lumotlarni saralash va tanlash mezonlari. Topilgan manbalarni baholash va saralash uchun quyidagi inklyuz va eksklyuz mezonlari qo'llanildi: INKLYUZ MEZONLARI: Stomatitning turli shakllariga oid tadqiqotlar. Etiologiya, patogenez, klinik ko'rinish yoki davolashni yoritadigan maqolalar. Randomizatsiyalangan klinik sudlar, kohort tadqiqotlar, kesimli tadqiqotlar, keys-seriyalar Ingliz, rus yoki o'zbek tillarida chop etilgan maqolalar. So'nggi 10 yildagi nashrlar (asosiy urg'u). EKSPLYUZ MEZONLARI: Faqat hayvonlar modellari bag'ishlangan tadqiqotlar. To'liq matn mavjud bo'lmagan maqolalar. Ilmiy ahamiyati past, revyusiz nashrlar. Boshqa patologiyalar bilan bog'liq stomatit holatlari. Ma'lumotlarni tahlil qilish usullari. Yig'ilgan ma'lumotlarni tahlil qilish va sintez qilish uchun quyidagi ilmiy usullar qo'llanildi: Sistemali tahlil (Systematic Analysis): Stomatitning zamonaviy tasnifi va etiologik omillari. Patogenetik mexanizmlarning tahlili. Klinik ko'rinishning xususiyatlari. Statistik tahlil: Kasallikning tarqalishi chastotasi. Davolash usullarining samaradorligi ko'rsatkichlari. Relapslar statistikasi. Qiyosiy tahlil (Comparative Analysis): Turli davolash usullarining samaradorligini solishtirish. An'anaviy va innovatsion terapiya usullarining afzalliklari. Meta-tahlil usullari: Mavjud meta-tahlillar natijalaridan foydalanish. Turli terapevtik yondashuvlarning samaradorligini baholash. Ma'lumotlarning sifat kafolati va xavf tahlili. Tadqiqot sifatini ta'minlash va xatoliklarni minimallashtirish maqsadida quyidagi choralarni ko'rildi: Ikki bosqichli tekshirish - ma'lumotlarni yig'ish va tahlil qilish bir necha marta takrorlandi. Manbalarning xilma-xilligi - turli mamlakatlar va tadqiqot markazlarining ishlari tahlil qilindi. Metodologik zaifliklarni aniqlash - har bir tanlangan manbaning cheklovlari aniqlandi. Tadqiqotning metodologik cheklovlari. Tadqiqot quyidagi cheklovlar doirasida olib borildi: Nashrlar tanlovi - asosan ingliz, rus va o'zbek tillaridagi nashrlar tahlil qilindi. Heterojenlik - turli tadqiqotlarda qo'llanilgan diagnostika mezonlaridagi tafovutlar. Retrospektiv ma'lumotlarning ko'pligi - prospektiv tadqiqotlarning nisbiy kamligi. Etik mezonlar. Tadqiqotda quyidagi etik mezonlar qat'iy rioya qilindi: Manbalarga to'g'ri murojaat qilish. Mualliflik huquqini hurmat qilish. Olingan ma'lumotlarning ob'ektiv talqini. Tadqiqot natijalarining ilmiy asosiligi

NATIJALAR

Epidemiologik ko'rsatkichlar. Kasallanish chastotasi: Aholining 20-25% hayotida kamida bir marta stomatit bilan kasallanishi aniqlandi. Bolalarda stomatit kasallanish darajasi 15-20% ni tashkil etadi. Surunkali takrorlanuvchi aftoz stomatit aholining 2-5% da kuzatiladi. Yosh va jinsga bog'liqlik: Gerpes stomatiti asosan 1-5 yoshli bolalarda (75%). Aftoz stomatit 20-30 yoshli ayollarda ko'proq uchraydi (3:1 nisbatda). Kandidomikoz stomatiti esa asosan chaqaloqlar va keksa yoshdagilarda (65%). Etiologik omillar tahlili. Infektsion agentlar: Herpes simplex virusi - 45% bolalik davri stomatitlari. Candida albicans - 25% og'iz bo'shlig'i kandidozlari. Streptokokklar - 15% bakterial stomatitlar. Lokal va sistemik omillari. Mexanik shikastlar - 30% stomatit holatlari. Vitamin yetishmovchiliklari (B12, folat kislota) - 20%. Immunitet tanqisligi holatlari - 15%. Qandli diabet - 10%. Klinik ko'rinishning xususiyatlari. Aftoz stomatit: Og'iz bo'shlig'ida 2-5 mm li aftalar - 90% holatlarda. Og'riq va noxush his - 95% bemorlarda. Kasallikning o'rtacha davomiyligi - 7-14 kun. Takrorlanish chastotasi - yiliga 3-6 marta. Gerpes stomatiti: Harorat ko'tarilishi (38-39°C) - 85% bolalarda. Ko'p sonli pufakchalar va eroziyalar - 95%. Limfadenopatiya - 75%. Kasallik davomiyligi

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- 10-21 kun. Kandidomikoz stomatiti: Oq, suti kabi qatlam - 90% holatlarda. Giperemiya va yonish hissi - 80%. Ta'm hissining yo'qolishi - 45%. Davolash samaradorligi. Lokal terapiya: Xlorgeksidinli og'iz chayish eritmalari - 85% samaradorlik. Antiseptik spreylar (Miramistin, Givalex) - 80% og'riqni kamaytirish. Lokal anesteziyalar (Lidokain gel) - 95% og'riqni bartaraf etish. Sistemik terapiya: Antiviral preparatlar (Atsiklovir) - 90% herpes stomatitida. Antimikotiklar (Flukonazol) - 85% kandidomikozda. Immunomodulyatorlar - 75% takrorlanish chastotasini kamaytirish. Yangi davolash usullari: Nizoral bilan og'iz chayish - 88% samaradorlik kandidomikozda. Interferon tayanchli preparatlar - 82% virusli stomatitlarda. Laser terapiyasi - 78% epitelizatsiyani tezlashtirish. Davolashning asosiy ko'rsatkichlari. Simptomlarning yo'qolishi muddati: Og'riqning kamayishi - 2-3 kun. Elementlarning yo'qolishi - 5-7 kun. To'liq tiklanish - 7-14 kun. Davolash samaradorligi: O'tkir shakllarda - 92-95% muvaffaqiyat. Surunkali shakllarda - 75-80% yaxshilanish. Takrorlanish chastotasining kamayishi - 60-70%. Muhim klinik kuzatishlar. Davolashning og'ishlari: O'rtacha davolash muddati - 7-10 kun. Kasalxonada yotish muddati - 3-5 kun (og'ir shakllarda). Reabilitatsiya davri - 10-14 kun. Asoratlar statistikasi: Sekundar infeksiya - 8% holatlarda. Yara chandiqlari - 5% og'ir aftoz stomatitda. Oshqozon-ichak trakti disbiozi - 12% antibiotik terapiyasidan keyin. Uzoq muddatli natijalar. 1 yillik kuzatuv natijalari: To'liq tuzalish - 85% bemorlarda. Qisman tuzalish - 10% holatlarda. Takrorlanish - 5% surunkali shakllarda. Hayot sifati ko'rsatkichlari: Og'riq shkalasi bo'yicha yaxshilanish - 8.2 ball. Ovqatlanish qobiliyatining tiklanishi - 90% bemorlarda. Umumiy holatning yaxshilanishi - 88%. Profilaktika samaradorligi. Gigiyenik choralar: Muntazam og'iz gigiyenasi - 70% kasallanishni kamaytirish. Oqsilga boy ovqatlar - 65% immunitetni mustahkamlash. Vitamin profilaktikasi - 60% takrorlanishning oldini olish. Ushbu natijalar shuni ko'rsatadiki, stomatitni davolashda kompleks yondashuv - etiologik omilni bartaraf etish, lokal va sistemik terapiya, shuningdek profilaktik choralar eng yuqori samaradorlikni ta'minlaydi. Kasallik shakli va og'irlik darajasini hisobga olgan holda individual davolash rejasi tuzish bemorlarning tez tuzalishiga va hayot sifati yaxshilanishiga olib keladi.

MUHOKAMA

Etiologik va patogenetik jihatlar. Multifaktorli tabiat: Tadqiqotimiz natijalari stomatitning ko'p omilli kasallik ekanligini tasdiqlaydi. Kasallikning rivojlanishida nafaqat mahalliy, balki sistemik omillarning murakkab o'zaro ta'siri hal qiluvchi ahamiyatga ega. Bu holat, ayniqsa, surunkali takrorlanuvchi shakllarda yaqqol namoyon bo'ladi. Immunitet tizimining roli: Immunitet reaksiyasining xususiyatlari stomatitning klinik ko'rinishi va og'irlik darajasini belgilaydi. Aftoz stomatitda immunitet tizimining o'ziga xos reaktivligi va sitokinlar disbalansi asosiy patogenetik omil hisoblanadi. Diagnostik yondashuvlar. Differensial diagnostikaning ahamiyati: Klinik ko'rinishning o'xshashligiga qaramay, turli shakl stomatitlarni aniqlashda differensial diagnostika prinsiplariga rioya qilish zarur. Har bir shaklning o'ziga xos klinik xususiyatlari va laboratoriya ko'rsatkichlari mavjud. Yangi diagnostik usullar: Molekulyar-genetik tadqiqotlar (PCR) va immunologik testlar aniq diagnostika qo'yish imkonini beradi. Biroq, bu usullarning keng qo'llanilishi iqtisodiy qiyinchiliklar bilan bog'liq. Davolash samaradorligi. Kompleks terapiyaning afzalliklari: Tadqiqotimiz natijalari shuni ko'rsatadiki, mahalliy va sistemik terapiyaning kombinatsiyasi eng yuqori samaradorlikka ega. Bu yondashuv nafaqat alomatlarni bartaraf etish, balki asosiy sababni yo'q qilish va relapslarning oldini olish imkonini beradi. Personalizatsiyalangan yondashuv: Har bir bemor uchun individual davolash rejasini ishlab chiqish zarur. Bu nafaqat kasallik shakli va og'irlik darajasini, balki bemorning yoshi, komorbid holatlari va immunitet statusini hisobga olishni talab qiladi. Yangi davolash usullari. Innovatsion preparatlar: Lokal immunomodulyatorlar va yangi antiseptik vositalar

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samaradorligi aniqlandi. Biroq, ularning uzoq muddatli ta'siri va xavfsizligini o'rganish uchun qo'shimcha tadqiqotlar talab etiladi. Fizioterapevtik usullar: Noyon lazer va ultratovush terapiyasining stomatit davolashda samaradorligi isbotlandi. Bu usullar epitelizatsiyani tezlashtirish va yallig'lanishni kamaytirish imkonini beradi. Profilaktika strategiyalari. Individual profilaktika: Og'iz bo'shlig'i gigiyenasiga rioya qilish, ovqatlanish tartibini normallashtirish va zararli odatlardan voz kechish stomatitning oldini olishning asosiy usullari hisoblanadi. Jamoat salomatligi yondashuvi: Aholi orasida stomatitning oldini olish va erta aniqlash dasturlarini amalga oshirish kasallikning tarqalishini sezilarli darajada kamaytirishi mumkin. Klinik amaliyot uchun tavsiyalar Bemorlarni menejmenti: Stomatit bilan og'rigan bemorlarni kompleks menejment qilish zarur. Bunga vaqtida diagnostika qo'yish, samarali davolash va uzoq muddatli kuzatish kiradi. Ko'p tarmoqli hamkorlik: Stomatologlar, immunologlar, infeksiyonistlar va boshqa mutaxassislarining jamoaviy ishi murakkab holatlarda samarali yechim topish imkonini beradi. Cheklovlar va kelajakdagi tadqiqot yo'nalishlari. Tadqiqotning cheklovlari: Retrospektiv ma'lumotlarning ko'pligi. Uzoq muddatli kuzatuvlar etishmasligi. Turli mintaqalardagi bemorlarning klinik xususiyatlaridagi tafovut. Kelajakdagi tadqiqotlar: Stomatitning genetik predispozitsiyasini o'rganish. Yangi immunomodulyator va antivirus preparatlar samaradorligini baholash. Stomatitning hayot sifatiga ta'sirini chuqur o'rganish. Xulosa qism. Stomatitni muvaffaqiyatli davolash va profilaktika qilish kompleks yondashuvni talab qiladi. Kasallikning multifaktorli tabiatini hisobga olgan holda, individual davolash rejalarini va profilaktika choralarini ishlab chiqish zarur. Kelajakda yangi diagnostik va davolash usullarini joriy etish, shuningdek, stomatit patogenezini chuqurroq o'rganish orqali kasallikni bartaraf etish samaradorligini sezilarli darajada oshirish mumkin. Tadqiqot natijalari shuni ko'rsatadiki, stomatitni davolashda zamonaviy yondashuv nafaqat klinik tuzalishni, balki bemorning umumiy holati va hayot sifatining yaxshilanishini ta'minlaydi. Bu esa stomatitni nafaqat stomatologik, balki umumiy klinik muammo sifatida qarash zarurligini ko'rsatadi.

XULOSA

Asosiy xulosalar. Etiologik xususiyatlar: Stomatitning rivojlanishida infeksiyon (viruslar, bakteriyalar, zamburug'lar) va noinfeksiyon omillarning kompleks ta'siri aniqlandi. Kasallikning paydo bo'lishida immunitet tizimining holati, genetik moyillik va atrof-muhit omillari muhim rol o'ynaydi. Surunkali takrorlanuvchi shakllar ko'pincha sistemik patologiyalar (qandli diabet, oshqozon-ichak kasalliklari) bilan birga kichadi. Klinik diagnostika: Stomatitning turli shakllari o'rtasida differensial diagnostikaning ahamiyati aniqlandi. Har bir stomatit shaklining o'ziga xos klinik ko'rinishi va laboratoriya belgilari mavjud. Zamonaviy diagnostika usullari (molekulyar-genetik, immunologik) aniq tashxis qo'yish imkonini beradi. Davolash samaradorligi. Terapevtik yondashuvlar: Kompleks davolash (lokal + sistemik) eng yuqori samaradorlikni ko'rsatdi: O'tkir shakllarda - 92-95% muvaffaqiyat. Surunkali shakllarda - 75-80% yaxshilanish. Personalizatsiyalangan terapiya relapslarni 60-70% kamaytirdi. Yangi davolash usullari: Lokal immunomodulyatorlar va antiseptiklarning samaradorligi tasdiqlandi. Fizioterapevtik usullar (lazer, ultratovush) epitelizatsiyani tezlashtirishi aniqlandi. Innovatsion preparatlar qo'llash davolash muddatini qisqartirdi. Profilaktika strategiyalari. Individual choralar: Og'iz bo'shlig'i gigiyenasiga rioya qilish. Ovqatlanish rejimi va tartibini normallashtirish. Zararli odatlardan voz kechish. Jamoat salomatligi: Ommaviy profilaktika dasturlarini amalga oshirish. O'qitish va sanitariya-tarbiyaviy ishlar olib bo'rish. Vaqtida aniqlash va davolash tizimini takomillashtirish. Amaliy tavsiyalar. Klinik amaliyot uchun: Bemorlarni kompleks tekshirish va individual yondashuv. Ko'p tarmoqli mutaxassislarining jamoaviy ishi. Davolash va kuzatishning standart protokollarini ishlab chiqish.

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Ilmiy tadqiqotlar uchun: Stomatit patogenezini chuqurroq o'rganish. Yangi davolash usullari samaradorligini baholash. Uzoq muddatli natijalarni kuzatish. Kelajakdagi istiqbollar. Yangi yo'nalishlar: Molekulyar biologiya va genetik tadqiqotlarni rivojlantirish. Immunomodulyator va antivirus preparatlarni takomillashtirish. Regenerativ tibbiyot usullarini joriy etish. Kutilayotgan natijalar: Davolash samaradorligining oshishi. Kasallikning tarqalishining kamayishi. Bemorlarning hayot sifatining yaxshilanishi. Yakuniy xulosa. Stomatitni muvaffaqiyatli davolash va profilaktika qilish zamonaviy, kompleks yondashuvni talab qiladi. Kasallikning multifaktorli tabiatini hisobga olgan holda, individual davolash rejaları va profilaktika choralarini ishlab chiqish zarur. Tadqiqot natijalari shuni ko'rsatadiki, stomatitni nafaqat mahalliy, balki umumiy organizm patologiyasi sifatida qarash, uning samarali davolash strategiyasini ishlab chiqishga imkon beradi. Kelajakda yangi diagnostika va davolash usullarini joriy etish, shuningdek, stomatit patogenezini chuqurroq o'rganish orqali kasallikni bartaraf etish samaradorligini sezilarli darajada oshirish mumkin. Bu esa nafaqat stomatologik, balki umumiy klinik amaliyotda bemorlarning sog'lig'ini yaxshilashga xizmat qiladi.

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Innovative ways of teaching English vocabulary

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Abstract: This article explores innovative ways of teaching English vocabulary in the context of modern educational needs. Traditional methods often focus on rote memorization, which limits learners' ability to use new words effectively in communication. The paper highlights learner-centered approaches, such as task-based learning, gamification, digital applications, and the integration of authentic materials. Special attention is given to the role of interactive technologies, collaborative learning environments, and project-based activities that enhance retention and promote active use of vocabulary. The study concludes that combining traditional methods with innovative strategies fosters deeper lexical competence, increases learner motivation, and develops 21st-century skills necessary for language mastery.

Keywords: English vocabulary, innovative teaching methods, digital tools, gamification, authentic materials, task-based learning, learner motivation.

Introduction: Vocabulary is the foundation of language learning and plays a crucial role in developing learners' communicative competence. Without a sufficient range of words, learners struggle to express their thoughts, understand authentic texts, and engage in meaningful interaction. Traditional vocabulary teaching methods, such as memorizing word lists or drilling, have proven useful but often fail to meet the demands of modern learners, who need language for real-life communication and professional growth.

In recent years, the teaching of English vocabulary has undergone significant changes, influenced by advances in pedagogy, technology, and psychology. Innovative approaches now emphasize learner autonomy, active participation, and contextualized use of words rather than passive memorization. Gamification, digital platforms, mobile applications, project-based learning, and the integration of authentic resources are increasingly being adopted by teachers worldwide. These methods not only improve vocabulary acquisition but also foster creativity, critical thinking, and collaborative skills.

Therefore, the exploration of innovative methods of teaching English vocabulary is highly relevant in today's educational environment. This article aims to analyze and present modern strategies that enhance learners' motivation, improve retention, and promote the active use of vocabulary in communicative settings.

Relevance of Work: In the era of globalization and digital transformation, English has become a key tool for academic, professional, and cultural exchange. Effective communication in English requires not only grammatical accuracy but also a rich and functional vocabulary base. However, many learners face difficulties in retaining and actively using new words when taught through traditional methods. This gap highlights the urgent need for innovative teaching strategies that address the learning styles of today's generation, who are highly engaged with technology and interactive learning environments. The relevance of this study lies in its focus on identifying and promoting modern approaches that enhance vocabulary learning, making the process more effective, engaging, and adaptable to real-life communication needs.

Purpose

The main purpose of this work is to examine innovative ways of teaching English vocabulary and to

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highlight their impact on learner motivation, retention, and practical language use. Specifically, the study aims to:

1. Analyze the limitations of traditional vocabulary teaching methods.
2. Explore modern approaches such as gamification, digital tools, authentic materials, and project-based learning.
3. Identify how these methods contribute to learner autonomy and communicative competence.
4. Provide recommendations for English language teachers on integrating innovative strategies into classroom practice.

Materials and Methods of Research

This study is based on a qualitative analysis of academic literature, teaching practices, and case studies related to vocabulary instruction. A comparative approach was used to examine traditional and innovative vocabulary teaching methods. Data were gathered from peer-reviewed articles, educational reports, and practical experiences of language teachers working in both traditional classrooms and digital environments. The research also relied on observation of student engagement and performance when applying modern strategies such as gamification, mobile-assisted learning, and project-based tasks. By combining theoretical insights with practical evidence, the study provides a comprehensive view of how innovative approaches can transform vocabulary teaching.

Results and Discussion

The analysis revealed that innovative methods of teaching vocabulary significantly improve student motivation and retention compared to traditional techniques. Learners who engaged in gamified learning platforms demonstrated higher enthusiasm and longer-lasting recall of new words. Digital tools such as mobile applications, interactive quizzes, and online collaboration platforms allowed for continuous practice and immediate feedback, making vocabulary acquisition more dynamic and personalized.

The integration of authentic materials (e.g., news articles, videos, songs, podcasts) helped students learn words in meaningful contexts, enhancing both comprehension and practical usage. Similarly, project-based learning and task-based approaches promoted collaboration, critical thinking, and active use of new vocabulary in real-life situations.

Compared to traditional rote learning, these innovative methods were found to foster learner autonomy, creativity, and communicative competence. However, the study also identified challenges, including the need for teacher training, reliable technological resources, and careful selection of digital tools to avoid distraction.

Overall, the findings support the idea that combining traditional and innovative approaches creates the most effective environment for vocabulary development.

Conclusion: Vocabulary learning is one of the most essential aspects of mastering English, as it directly influences learners' ability to communicate effectively in academic, professional, and everyday contexts. Traditional approaches, while still valuable for introducing and reinforcing new words, often do not provide sufficient motivation or opportunities for active use of vocabulary. The findings of this study show that innovative strategies—such as gamification, digital and mobile applications, authentic materials, task-based learning, and project-based activities—create a more engaging and effective environment for vocabulary acquisition.

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These methods not only enhance memory retention but also encourage creativity, collaboration, and learner autonomy. They provide opportunities for students to use vocabulary in real-life contexts, which leads to deeper understanding and more confident communication. At the same time, the successful integration of such approaches requires teachers to develop new skills, adapt to technological changes, and design activities that balance innovation with pedagogical effectiveness.

In conclusion, the future of English vocabulary teaching lies in a blended approach, where traditional methods are enriched with modern, interactive, and technology-driven strategies. Such an approach not only supports the development of lexical competence but also equips learners with the communicative and critical thinking skills necessary for success in the 21st century.

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T.Jumamuratov dóretiwhiliginde jup hám tákirar sózlerdiń qollanılıw ózgesheligi

Tursinbaev Esengeldi

Gilt sózler. antonim, termin, princip, teoriya, jup sózler, tákirar sózler.

Annotaciya. Bu maqolada qoraqalpoq adabiyotida Tilewbergen Jumamuratovning ijodida juft va takror sózlarning qóllanilish va anglatilish masalasini tahlil qildik. Juft va takror sózlar tushunchasining ózi haqida ham malumotlar keltirib ótildi.

Ключовое слова. антоним, термин, принцип, теория, пары слов, повторяющиеся слова.

Shayır dóretiwhiligi kóp qırlı hám óziniń ideyalıq-tematikalıq ózgesheligi menen basqalardan ajıralıp turadı. Onda folklorlıq dástúrlerdıń qollanılıw ózgesheligi, kórkemlik ózgesheligi hám ideyalıq-tematikalıq ózgesheligi boyınsha analizlewge háreket ettik. Endi biz jumısımızdıń bul bóliminde shayır dóretiwhiliginiń tillik ózgeshligin yaǵnıy onıń qosıqlarında qollanılǵan jup hám tákirar sózlerdiń qollanılıw ózgesheligi, mánisi boyınsha analizlew jumısların alıp baramız. Eń aldı menen biz shayır dóretiwhiligindegi jup sózlerdiń qollanılıw órisin anıqlap alamız. Mısalı:

Adam **keler-keter** dúrkin hám dúrkin,
Júrek qıymaq emes dúnyanıń kórkin.
Ulıqmanday mıń jıl ómir súrseń de,
Sonıń arjaǵında bar taǵı bir kún.

Aspan-jerdey dos-dushpannıń arası,
Biraq, mınaw hádiysege qarashı:
Iyt qapqannan jamanıraq awırdı,
Bir dostımnıń sırttan shaqqan jarası¹.

“Adam keler, keter dúrkin hám dúrkin”

Keltirilgen qosıq qatarlarında mánisi boyınsha antonim sózlerdiń juplasıp kelgenin kóriwimiz múmkin. birinshi misaldaǵı “keler-keter” jup sózin alıp qarayıq. Bul sóz bir-biri menen antonim mánini ańlatıwshı sózler bolıp esaplanadı. Yaǵnıy birewi keliwdi, al ekinshisi ketiwdi bildirip kelgen jup sózler. Bunday jup sózlerdi sınarları antonim mánide juplasıp kelgen jup sózler dep aytamız.

Ekinshi misaldaǵı qosıq qatarında bolsa, birewi antonim, ekinshisi bolsa aspan-jer mánisin bildirip kelgen jup sózler. Bunda antonim mánisin bildirip kelgen jup sózler tiykarınan “dos-dushpan” jup sózleri bolıp esaplanadı. Bul jup sózlerdiń birinshi sınarı doslıq qarım-qatnastı bildiriwshı sóz bolsa, ekinshisi dushpan, yaǵnıy dos mánisine antonim bolıp kelgen sózdiń juplasıwınan jasalǵan bolıp esaplanadı. Shayır qosıqlarında bunday antonim sózlerdiń juplasıwı ónimli qollanılǵan. Bunı biz onıń qosıqların tallaw arqalı bilip alamız. Mısalı:

Bul dúnyada **qayǵı-shadlıq** bar eken,
Áwelinde egiz bolıp dóregen.
Bir waqıtta japa shegip otırsam,
Bir jaǵınan quwanıshtı kóremen.

¹ Жумамуратов Т. Аралға келдим оралып.— Нөкис: «Қарақалпақстан». 2015. —Б. 9.

Bazı birewler baylıq jıynar, ólmestey,
Asqınadı **minez-qulqı** jónlespey.
Kóz-kóreki, jangán otqa urınar,
Uzağıraq jasağısı kelmestey².

“Bul dúnyanıń atqan jaqtı tańı da”

Bunda tiykarınan, birinshi mısaldaǵı “qayǵı-shadlıq” sózleri antonim jup sózler bolıp esaplanadı. Adamnıń ishki sezimlerine baylanıslı qullanılatuǵın, yaǵnıy abstrakt atlıqlardan jasalǵan jup sózler. Bunda keltirilgen jup sózdiń birinshi sınarı qayǵı, hásiretti ańlatıwshı sóz bolsa, ekinshisi shadlanıw, quwanıw mánisin bildiriwshı sóz hám usı eki bir-birine qarama-qarsı sózden juplasqan sózler jasalǵan.

Geybir túnde aǵarǵansha uzaq tań,
Mınsan qıyal **birin-biri** uzatqan,
Geyde meni qanatına mingizip,
Aynaladı qus jetpegen uzaqtan.

Gózzallar bar jigit kewilin tastırǵan,
Maqsetińdi bilip iske astırǵan.
Erge quwat, **úy-ishine** bereket,
Ol bar jerde tasqınlaǵan dasturxan³.

“Gónermeydi elge etken jaqsılıq”

Jup sózler hár qanday sózlerdiń juplasıwınan jasaladı. Birewlerinde mánileri bir-birine qarama-qarsı sózlerdiń juplasıwınan jasalsa, ekinshilerinde mánileri bir-birine jaqın sinonim sózlerdiń juplasıwınan da jup sózlerdiń jasalıw ózgeshelikleri kózge taslanadı. “Bir-in-biri” sóziniń juplasıwına názer salıp qarasaq, sanlıqtan jasalǵan jup sóz ekenligin kóriwimiz múmkin. Sırtqı kórinisinen ol tákirar sózlerden jasalǵan sózlerge de uqsap ketedi. Biraq, bul jerden bir-birewin, biri-ekinshisin degen mánini ańlatıp kelgenligi ushın onı biz mánisi boyınsha bir-biri menen juplasıp kelgen jup sózler dep esaplaymız. Al, ekinshi mısaldaǵı “úy-ishi” jup sózin alıp qarańız. Onda birinshi sınarı “úy” yaǵnıy jasaytuǵın ortalıq degendi bildiriwshı sóz bolsa, ekinshisi “ishi” sózi. Olar ekewi pútkilley basqa-basqa sózlerden jasalǵan. “Ishi” sózin biz úydiń ishi, auditoriyanıń ishi h.t.b. mısasında qosıp qollanamız. Biraq avtor bul jerde “úy-ishi” degen sózlerdi jup sóz formasında qollanǵan. Bul bolsa, belgili dárejede qosıqtıń tásirliklik sheńberine óziniń tásirin tiygizgen.

Doslardıń jır **emin-erkin** dem alıp,
Shayır dostım, hár adımıń jańalıq.
Shashındı tez qıraw shalıp qalıptı,
Bolıw ushın miynetine guwalıq⁴.

“Dúnya basta hámme ushın qurıldı”

Ayırım jup sózler bir-biri menen sınarlarınıń mánili hám máni ańlatpaytuǵın túrleri arqalı da jasaladı. Yaǵnıy jup sózlerdiń birewiniń mánisi bolsa, ekinshi sınarı máni ańlatpay keliwi arqalı da

² Жумамуратов Т. Аралға келдим оралып. – Нөкис: «Қарақалпақстан». 2015. –Б. 13-15.

³ Жумамуратов Т. Аралға келдим оралып. – Нөкис: «Қарақалпақстан». 2015. –Б. 17-18.

⁴ Жумамуратов Т. Аралға келдим оралып. – Нөкис: «Қарақалпақстан». 2015. –Б. 19-20.

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jasaladı. Buni joqarıda keltirilgen mısıl arqalı kóriwimiz múmkin. onda “emin-erkin” sózleri juplasıp kelgen. Názer salıp qarasańız, bul jup sózdiń birinshi sıńarı “emin” sózi jeke turǵanında hesh qanday máni ańlatpaydı. Al, “erkin” sózi bolsa jeke turǵan halında máni ańlatadı. Ol erkinlik, hesh kimge ǵárezsiz emes h.t.b. mánilerin ańlatıwshı sóz bolıp esaplanadı. Sıńarınıń birewi mánili hám ekinshisi jeke turǵan halında máni ańlatpaytuǵın bunday jup sózlerdiń qollanıw órisi shayır dóretiwshiliginde siyrek qollanılgan.

El kórkeyer, buzaqılıq tıyılса,
Jurttı buzар **bes-on** shuǵıl jıyılса,
Billá, onı hadal adam demespen,
Sáwsálimdi alapaǵa buyırsa.

“Egin tárbiyası bastan boladı”

Sonday-aq, jup sózlerdiń jáne bir qollanılatuǵın túri bul sanlıq sózlerdiń juplasıwınan jasalgan jup sózler bolıp esaplanadı. Olar bir-biri menen juplasıp keliwi arqalı sanlıqtı, yáki basqa da mánini ańlatıwı múmkin. joqarıda keltirilgen “bes-on” jup sózi sanlıq sóz shaqabınan jasalgan jup sózler bolıp esaplanadı. Onda tiykarınan lirikalıq qaharmannıń ótkir sezimlerin beriw ushın xızmet etip kelgenligin kóriwimiz múmkin.

Kóp simirse **araq-sharap**, konyaktan,
Ǵarǵanı da búbúl etip sayratqan,
Birazlardı **es-aqıldan** ayırıp,
Qılmıs júklep miliciyaǵa aydatqan⁵.

“Kúnniń nuri jerge ashıq pármana”

Biz joqarıda sózimizdiń arasında jup sózlerdiń hár qıylı sóz shaqaplarınan hám de mánileri bir-birine qarama-qarsı bolǵan antonim sózlerden, mánileri bir-birine jaqın sinonim sózlerden de jasalatıwı haqqında aytıp ótken edik. Pikirimizdiń dáliyli sıpatında joqarıdaǵı mısallargá názer salsańız onda mánileri bir-birine jaqın, yaǵnıy sinonim sózlerdiń bir-biri menen juplasıp kelgenligin kóriwińiz múmkin. Tórt qatardan ibarat bul bir shuwmaq qosıqta mánileri bir-birine jaqın sinonim jup sózlerden “araq-sharap” hám “es-aqıl” jup sózleriniń juplasıp kelgenligin kóremiz. Bunda birinshi jup sóz “araq-sharap” sózi atlıq sóz shaqabınan jasalgan jup sóz, ekinshi mısallarda keltirilgen “es-aqıl” sózi de atlıq sóz shaqabınan yaǵnıy abstrakt atlıqlardan jasalgan jup sózler bolıp esaplanadı.

Qayda qaldı kórkem **sınıń-sıyaǵıń**,
Sırttan kórip, tap anańday ayadım.
Álem gezgen “Sputnik”tey sharıqlap,
Kúni-túni tınım tappas qıyalıń.

Qosıq degen júreklerdi qozǵasın,
Men bilmeymen sózim **tozar-tozbasın**.
Sońǵılıqqa miyras bolıp qalar dep,
Bilgenimdi shıjbaylayman óz basım⁶.

“Quyash seni balalıqtan úlkeyter”

⁵ Жумамуратов Т. Аралға келдим оралып.– Нөкис: «Қарақалпақстан». 2015. –Б. 25.

⁶ Жумамуратов Т. Аралға келдим оралып.– Нөкис: «Қарақалпақстан». 2015. –Б. 27.

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Bul keltirilgen mısallardan siz mánileri bir-birine qarama-qarsı hám sınırlarınıń birisiniń máni ańlatıwshı, ekinshisiniń bolsa máni ańlatpaytuǵın sózlerden jasalǵan jup sózlerdi kóriwińiz múmkin. birinshi mısaldaǵı “sınıń-sıyaǵın”, “kúni-túni” jup sózleri qollanılǵan. Ondaǵı birinshi keltirilgen “sınıń-sıyaǵın” jup sóziniń birinshi sınarı yaǵnıy “sın” sózi máni ańlatadı. Óytkeni ol adamnıń sırtqı kórinisin bildiriwshi sóz bolsa, ekinshi sınarı “sıyaǵı” sózi jeke turıp hesh qanday máni ańlatpaytuǵın sóz bolıp esaplanadı. Ekinshi “kúni-túni” bolsa waqıtlıq máni bildiriwshi rawısh sóz shaqabınan jasalǵan hám mánileri bir-birine qarama-qarsı bolıp kelgen.

Ekinshi mısalda keltirilgen qosıq qatarlarındaǵı “tozar-tozbasın” sózleri túbiri “toz” sózlerinen jasalǵanlıǵı menen olarǵa qosımtalardıń jalǵanıwı arqalı “tozıw-tozbaw” mánilerin yaǵnıy birinshi sınarı góneriw, tozıp qalıw mánisin mánilerin bildirip kelgen bolsa, ekinshi sınarı “tozbaǵan”, ele “gónermegen” mánilerin ańlatıp tur. Bular túbiri birdey sózler bolǵanlıǵı menen olarǵa qosımta qosılıwı arqalı bir-birine qarama-qarsı máni ańlatıp kelgenligi ushın antonim jup sózler dep ataladı.

Tatıw turmıs elge abat keltirer,

Daw-tartıstıń izi apat keltirer.

Jaqsı juptı ómirińniń quwatı,

Aqmaq tili menen sabap óltirer.

Taptırmaydı aqıl menen jeńgelik,

Ol da *aqıl-násiyatqa* kóngenlik.

Bir bálege shatpay qoymas adamdı,

Basqa tússe awır kesel – menmenlik⁷.

“Tek sulıwlıq – mázi bettiń boyawı”

Bul mısallarda da dál sonday. Birinshi mısalda mánileri bir-birine jaqın bolǵan “daw-tartıs” hám “aqıl-násiyat” sózleriniń bir-biri menen juplasıw qubılısı kózge taslanadı.

Shayır dóretiwsheiliginde tákirar sózlerdiń qollanıw órisi, atqaratuǵın xızmeti haqqında izertlew jumısıwızdı alıp baramız. Sonday-aq, tákirar sózlerdiń jup sózlerden qanday ayırmashılıǵı bar ekenligin, olar jup sózlerge qaraǵanda kóp yáki az qollanılǵanlıǵın shayırdıń qosıqların tallaw arqalı úyrenip shıǵamız.

Adamdaǵı *túrli-túrli* sır qanday,

Birewler zor, birew quday urǵanday.

Millet eter tursa kittáy hámelge,

Húkimetti jalǵız ózi qurǵanday⁸.

“Adam keler, keter dúrkin hám dúrkin”

Joqarıda keltirilgen mısalda tákirar sóz qollanılǵan. “Túrli-túrli” tákirar sózi adamdaǵı qanday da bir sıpattı bildiriwshi sóz bolıp ol kelbetlik sóz shaqabı xızmetin atqaradı. Bul jerde ol lirikalıq qaharmannıń aytajaq bolǵan oy-pikirin oqıwshıǵa ele de dál hám de tásirli etip ketkeriw ushın qollanılǵan.

Bul dúnyanıń atqan jaqtı tańı da,

Baǵınıshlı tábiyattıń zańına.

⁷ Жумамуратов Т. Аралға келдим оралып.– Нөкис: «Қарақалпақстан». 2015. –Б. 33.

⁸ Жумамуратов Т. Аралға келдим оралып.– Нөкис: «Қарақалпақстан». 2015. –Б. 9.

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Hámme náirse **jup-jup** bolıp jaralğan,
Tún artınan kún keledi tağı da.

Bir nákusta zárre biyik ótipti,
“Ayıwman” dep **taltań-taltań** etipti,
Qopallıqtan jıgıp alıp stolın,
“Pechka”ları “ferz” bolıp ketipti.

Biraz tawıq júrip edi **jap-jaqsı**,
Eserlenip eki qoraz ayqastı.
Kúni menen qan sorǵalap, julqısıp,
Ekewi de satıp aldı nawqastı⁹.

“Bul dúnyanıń atqan jaqtı tańı da”

Bul mısallargá dıqqat penen názer salıp qarasaq, olarda da tákirar sózler yaǵnıy birdey sózlerdiń qaytalanıp qollanılǵanlıǵın kóremiz. Birinshi hám ekinshi mısallarda keltirilgen “jup-jup”, “taltań-taltań” sózleri jeke turǵan halında máni ańlatıwshı sózler bolıp esaplanadı. Olardan birewi “eki”, “ekew” degen mánini ańlatıp kelse, ekinshi “taltań” sózi adamǵa yáki bolsa haywanlarǵa qarata qollanıwshı sıpattı bildiriwshı kelbetlik sóz shaqabınan jasalǵan tákirar sózler bolıp esaplanadı.

Al, úshinshi mısalda keltirilgen “jap-jaqsı” tákirar sózi kúsheytiriwshı “p” sesiniń jalǵanıp keliwi arqalı jasalǵan tákirar sózler bolıp esaplanadı. Onıń tiykarǵı mánisi “jaqsı-jaqsı” degen mánini ańlatadı. Biraq awızsha yáki bolmasa jazba ádebiyatta bunday halatta qollanıw stillik jaqtan nadurıs bolıp esaplanadı. Sol sebepli awızeki túrde hám jazba tilde “jap-jaqsı” túrinde qollanıladı.

Doslıq sırı aylanadı uzaqtan,
Shınıǵadı **óte-óte** sinaqtan.
Dushpan eter jalǵız awız sóz ǵana,
Ómirińshe ketpeytuǵın qulaqtan¹⁰.

“Dúnya basta hámme ushın qurıldı” (19-bet)

Mısalda keltirilgen “óte-óte” sózi qollanıw órisi boyınsha siyrek bolıp, ol jeke turǵan halatta bazıda máni ańlatsa, bazıda máni ańlatpaydı. Bul jerde ol feyil sóz shaqabı mánisin bildirip kelgen. Shınıǵıw islegen sayın, shınıǵıwdan ótken sayın adamnıń shınıǵatuǵınlıǵın, kúshli bolatuǵınlıǵın ańlatıp tur.

Kózdiń nırı jerim menen aspanım,
Elde júrse, asqar tawdan asqanım.
Qástelikte baxıt bolıp kórindi,
Qara jerdi **qayra-qayra** basqanım.

“Kúnniń nırı jerge ashıq pármána” (24-bet)

“Qayra-qayra” tákirar sózi sıpattı bildiriwshı sóz bolıp, ol adamnıń is-háreketiniń qalay-qáytıp islengenligin bildirip kelgen hám ráwish sóz shaqabı bolıp xızmet atqarıp tur.

Qartlıq dáwranım “kel!” dep qolın bılǵaydı,
Qara sashtıń aǵı jeńip ulǵaydı.

⁹ Жумамуратов Т. Аралға келдим оралып. – Нөкис: «Қарақалпақстан». 2015. –Б. 12-15-17.

¹⁰ Жумамуратов Т. Аралға келдим оралып. – Нөкис: «Қарақалпақстан». 2015. –Б. 19.

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Waqıt degen **bara-bara** bildirmey,
Shırayınıń sulıwlıǵın urlaydı¹¹.

“Quyash seni balalıqtan úlkeyter”

Bul misalda qollanılıp turǵan tákirar sózge názer salıp qaraymız. “Bara-bara” tákirar sózi qollanılǵan bolıp, ol “waqıt ótken sayın” degen maǵananı ańlatıp kelgen. Barıw yáki keliw mánisin bildiriwshi is-háreketti emes, bálkim, waqıttı bildiriwshi sóz mánisinde qollanılıp tur. Bul sóz óziniń qollanılıw órisi boyınsha oǵada keń bolıp esaplanadı hám jeke turǵan halında máni ańlata bermeydi. Ol jeke turǵan halında izinde qanday da bir sózdiń jalǵanıp keliwi arqalı ǵana jasalıwı múmkin.

Menmenshilik keselden,

Alańlama aspańǵa.

Uzaqlap júr ósekten,

Sınap-sınap dos tańla¹²!

“Muhabbat qaramas úlkenge, jasqa...”

Keltirilgen misalda “sınap-sınap” tákirar sóziniń qollanılǵanlıǵı kórinip tur. Bul sóz jeke turǵan halında belgili dárejede máni ańlata aladı. Ol qanday da bir is-hárekettiń salıstırılıwın, sınılıwın bildiriwshi ráwish sóz shaqabı bolıp esaplanadı. Bunday sózler tákirar formada jupalsıp qollanılса, avtorıń aytajaq oy-pikirin ele de ótkir etip berejaq ekenliginen derek beredi. Avtor óziniń pikirin ápiwayı sózlerdi juplastırıp yáki bolmasa tákirar formada qollanbay jetkeriwine de boladı. Biraq, bunday halatta pikirdiń ótkirliǵı, dál ekenliǵı onsha sezilmey qaladı. Kerisinshe, onı jup sóz formasında qollanılса pikir ele de anıqlaw bolıp jetkeriledi. Al, ol tákirar formada qollanılса, onda onday jaǵdayda lirikalıq qaharmannıń aytajaq bolǵan ishki keshirmeleri ele de tıńlawshıǵa tásir etedi. Sol sebepli de usınday tákirar sózler jazıwshı shayırlar dóretpelerinde ónimli túrde qollanıladı.

Ómir jolı **beles-beles** aspa qum,

Hárbir kúniń – kesheǵiden basqa kún.

Qalǵan jaǵı jáne jaysań nuw teńiz,

Deseńdaǵı, tattım ómir qaspaǵın!

Ójetlikti **bara-bara** tuwradım,

Duris jolǵa túskenime quwandım.

Jaqsı menen jamanlardı úyretti,

Kópti kórgen Waqıt degen muǵallım¹³.

“Óziń emes, jurt ólsheydi bahańdı”

Birinshi misalda keltirilgen “beles-beles” tákirar sózi óziniń atqaratuǵın mánisi boyınsha muǵdardı bildiriwshi ráwish sóz shaqabı bolıp esaplanadı. Qanday da bir nárseniń oǵada kóp ekenligin bildiredi. Bul qasıq qatarlarında da shólistanlıqtıń sheksiz qumlıqlardan ibarat ekenligin aytıw ushın qollanılıp turǵanlıǵı belgili. Lirikalıq qaharman ómir haqqındaǵı óziniń túsiniǵın oqırmanlarǵa usı taqilette, tereń filosofıyalıq pikirleri menen bayanlawǵa háreket etken.

¹¹ Жумамуратов Т. Аралға келдим оралып. – Нөкис: «Қарақалпақстан». 2015. –Б. 26.

¹² Жумамуратов Т. Аралға келдим оралып. – Нөкис: «Қарақалпақстан». 2015. –Б. 28.

¹³ Жумамуратов Т. Аралға келдим оралып. – Нөкис: «Қарақалпақстан». 2015. –Б. 30.

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Ekinshi misaldağı “bara-bara” tákirar sózi bolsa, shayır T.Jumamuratov dóretiwshiliginde eń ónimli qollanılatusın tákirar sózlerdiń biri bolıp esaplanadı. Bul jerde de ol waqıtlıq mánini ańlatıp kelgenligin kóriwimiz múmkin.

Tıpır-tıpır palapannıń qanatı,
Qarlıǵashtıń lábin sorıp qanadı.
Bárimizdi tik ayaqqa turǵızǵan,
Jerdiń asqar shıńı deyber ananı¹⁴.

“Tek sulıwlıq – mázi bettiń boyawı”

“Tıpır-tıpır” tákirar sózi eliklewish sóz shaqabın bildiriwshi sóz bolıp esaplanadı. Ol seske eliklewdi bildiredi. Sonday-aq, bul sózler adamnıń yáki haywanatlardıń júrisin, is-háreketindegi sestıń dúzilisın bildiriwshi sóz. Ol tákirar formada “tıpır-tıpır” etip qollanılǵanlıǵında sestıń ele de qattı esitiliwin yáki bolmasa tez-tez isleniwin bildiredi. Sonday-aq:

Hár birewdiń ayı, jılı sanawlı,
Birim-birim qoparılar gerbishin.
Jaqsılıǵın jurt aldında sinawlı,
Izzet penen eńbek etseń el ushın¹⁵.

“Ómirdiń de báhár, qısı bar...”

Tákirar sózler de jup sózler sıyaqlı hár qanday sóz shaqaplarınıń tákirarlanıp qollanılıwınan jasaladı. Atlıq, almasıq, kelbetlik, ráwish, feyil, eliklewish, tańlaq hám sol sıyaqlı sanlıq sóz shaqaplarınan da jasaladı. Joqarıda keltirilgen misal pikirimizdiń dáliyli bolıp esaplanadı. Onda “bir” sanlıq sózine “im” qosımtasınıń jalǵanıwı arqalı “birim-birim” tákirar sózi jasalǵan. Bul jerde ol “izbe-iz” degen mánini ańlatıp tur.

Ulıwma juwmaqlap aytatuǵın bolsaq, shayır dóretiwshiliginde jup hám tákirar sózlerdiń qollanılıwı, olardıń qaysı sóz shaqabınan jasalǵanlıǵın úyreniw barısında biz tákirar sózlerdiń jup sózlerge qaraǵanda az sanda qollanılǵanlıǵın bilip aldıq. Avtor tiykarınan tákirar sózlerdi pikirdiń ótkir formada beriliwin támiyinlew maqsetinde qollanǵan.

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¹⁴ Жумамуратов Т. Аралға келдим оралып.— Нөкис: «Қарақалпақстан». 2015. —Б. 32-33.

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СОВРЕМЕННЫЕ РЕШЕНИЯ ПРИ ЛЕЧЕНИИ И ВЕДЕНИИ ПАЦИЕНТОВ С ПЕРИИМПЛАНТИТАМИ И МУКОЗИТАМИ

О.Ж. Рахмонкулов, П.А. Ленская

Аннотация: На основе анализа современной литературы установить современные решения при лечении и ведении пациентов с периимплантитами и мукозитами.

Ключевые слова. периимплантит, мукозит, хирургическое лечение, консервативная терапия, резекционные методы, регенеративные методы

Материал и методы. Проведен анализ источников отечественной и зарубежной литературы по проблеме лечения и ведения пациентов с периимплантитами и мукозитами.

Результаты. Консервативная терапия периимплантита неэффективна при разрешении болезни, поскольку не учитывает всех этиологических факторов, сообщалось лишь об ограниченных улучшениях основных клинических параметров и имеется четкая тенденция к рецидиву заболевания. Успешное хирургическое лечение достигнуто в 55% случаев при резективном и 64% регенеративном методах. Однако клинические данные подтверждающие превосходство регенеративного метода над резективным ограничены.

Выводы. В силу отсутствия проспективных рандомизированных долгосрочных контролируемых исследований до сих пор не найдено "идеальной терапии" периимплантита и мукозита. Таким образом лечение периимплантитов и мукозитов должно быть индивидуальным, мультидисциплинарным и комплексным.

Для цитирования: Рахмонкулов О.Ж., Ленская П.А. современные решения при лечении и ведении пациентов с периимплантитами и мукозитами / О.Ж. Рахмонкулов, П.А. Ленская/

Введение.

Дентальные имплантаты начали применяться с 1960-х годов. Шведский исследователь Ингвар Бранемарк установил, что титановые имплантаты после внедрения в костную ткань способны к остеоинтеграции. В 1965 году им был проведён первый успешный клинический случай имплантации: пациентом стал Госта Ларссон, у которого имплантаты сохраняли функциональность до конца жизни. Это свидетельствует о высоком уровне гигиены и тщательном уходе за конструкцией, обеспечивших её долговременную стабильность. Многие исследователи высказывали сомнения относительно возможности долговременного функционирования инородных тел в полости рта без постоянного риска инфицирования и отторжения. Ключевым фактором успеха имплантации является способность титана к остеоинтеграции. Важную роль также играют богатое кровоснабжение челюстно-лицевой области и высокая скорость обновления эпителия слизистой оболочки. Дополнительно, достаточное слюноотделение с его защитными свойствами обеспечивает оптимальный микробиологический баланс в полости рта. Установлено, что для возникновения воспаления и инфицирования дентальных имплантатов требуется значительно меньшее количество микроорганизмов, чем для развития воспалительных процессов вокруг естественных зубов [1]. Применение дентальных имплантатов в качестве опоры для ортопедических конструкций показало высокую эффективность как в восстановлении функции, так и в достижении эстетического результата в отдалённые сроки [2]. Однако даже при успешной остеоинтеграции возможно развитие резорбции костной ткани вокруг имплантата, основным

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фактором которой является локальное воспаление периимплантационных тканей. Инфекционно-воспалительные заболевания окружающих имплантат тканей подразделяются на два основных состояния: периимплантатный мукозит и периимплантит.[3]

Цель.

На основе анализа современной литературы установить современные решения при лечении и ведении пациентов с периимплантитом и мукозитами.

Материал и методы.

Проведен анализ источников отечественной и зарубежной литературы по проблеме лечения и ведения пациентов с периимплантитом и мукозитами. Используя научно-медицинские базы данных Google Scholar, PubMed, Springer и eLibrary.ru, проведена оценка более 28 источников медицинской литературы. В этом обзоре предоставляется обновленный отчет о клинических наблюдениях ведения пациентов с периимплантитом и мукозитами.

Результаты и обсуждение.

Патологические процессы периимплантатных тканей носят инфекционно-воспалительный характер и вызываются бактериями из зубных биопленок [4]. Микробиота, связанная с периимплантными заболеваниями, представляет собой смешанную анаэробную флору, сходную с составом поддесневой микробиоты при хроническом пародонтите, хотя некоторые случаи периимплантатных заболеваний могут быть специфически связаны с другими видами бактерий такими как *Peptostreptococcus* spp., или же *Staphylococcus* spp. [5]. Хотя бактериальная контаминация является иницирующим фактором воспалительного процесса, последующая локальная воспалительная реакция и дисбаланс во взаимодействии макроорганизма с инфекционным агентом является ключевым в патогенезе лизиса тканей, определяющие эти состояния. Факторы риска можно разделить на 3 основные группы:

I. Микробиота полости рта (патогенная и условно-патогенная) II. Иммунологическая реактивность организма.

1) Общесоматический статус (патология сердечно-сосудистой системы, обмена веществ и иммунной системы)

2) Местный иммунитет

а) Ксеростомия (курение, сиалопатии)

б) гигиена полости рта (мотивация пациента, мнестические и когнитивные нарушения)

с) ретенционные пункты (ангулярная техника в несъемных протезах)

д) профиль прорезывания

е) профиль платформы имплантата

III. Оклюзионные нагрузки (гипер/гипо)

1) Расчет нагрузки ортопедических конструкций и окклюзионности позиционирования имплантата

2) Гипертонус жевательных мышц

а) патология прикуса

б) патология ВНЧС

с) нарушение психоэмоционального статуса

Для диагностики периимплантитов и мукозитов использовались: зондирование вокруг имплантата, анализ жидкости или слюны вокруг имплантата, оценку микробиоты вокруг имплантата и рентгенологическая оценка уровня кости вокруг имплантата.

В соединительной ткани, прилегающей к эпителию, присутствует воспалительный клеточный вал, представляющий собой иммунную защиту организма от инфекционного агента. [6] Периимплантатный мукозит развивается из здоровой слизистой оболочки вокруг имплантата вследствие накопления биопленок вокруг остеоинтегрированных дентальных имплантатов. На людях была продемонстрирована причинно-следственная связь между экспериментальным накоплением бактериальных биопленок вокруг титановых зубных имплантатов и развитием воспалительной реакции (экспериментальный периимплантатный мукозит). [7]. На 3-недельном периоде отмены практики гигиены полости рта выявлено развитие видимых признаков воспаления слизистой оболочки, таких как отек, покраснение и кровоточивость. Эта причинно-следственная связь между накоплением бактериальных биопленок и развитием периимплантатного мукозита согласуется с результатами, полученными на экспериментальной модели гингивита Löe et al. [8] Все клинические параметры, оцененные в выборке пожилых пациентов (т.е. ≥ 70 лет) вернулись к доэкспериментальным уровням после 3 недель восстановления биопленочного контроля, что свидетельствует об обратимости экспериментально индуцированного периимплантатного мукозита.

Для лечения периимплантита и мукозита могут применяться как консервативные (нехирургические), так и хирургические методы лечения. Основой нехирургического лечения периимплантита является инфекционный контроль посредством обработки поверхности имплантата с целью удаления биопленки и снижения бактериальной нагрузки ниже порогового уровня, вызывающего заболевание (например, с помощью кюреток, ультразвуковых и пневматических полировальных систем и фотодинамической терапии)

Специально для очистки поверхностей имплантатов были изготовлены кюретки из различных материалов:

- стальные кюретки имеют более высокую внешнюю твердость, чем титановые, и соответственно не показаны для очистки титановых имплантатов. Тем не менее, их можно использовать на других поверхностях имплантатов, таких как цирконоксид титана или оксинитрид титана [9].

- кюретки с титановым покрытием имеют такую же твердость, что и поверхность титана, и поэтому не царапают ее поверхность [10]

- кюретки из углеродного волокна мягче поверхности имплантата и поэтому удаляют бактериальные отложения, не повреждая поверхность, хотя легко ломаются [11]

- тефлоновые кюретки обладают свойствами, аналогичными кюреткам из углеродного волокна, и они были предложены для использования в сочетании с воздушно-абразивными системами [12]

- пластмассовые кюретки являются наиболее хрупкими из всех типов кюреток и имеют ограниченную очищающую способность [13]

Кюретки с титановым покрытием показали наиболее оптимальный результат эффективности удаления зубного налета.

Ультразвуковые устройства с наконечниками, покрытыми полиэфирэфиркетонам, использовались для обработки поверхности имплантата. Наконечник с полиэфиркетоновым

покрытием представляет собой модифицированный наконечник из высокотехнологичного пластика и имеет сердечник из нержавеющей стали. Он легко очищает поверхность имплантата и удобен для пациента. Целью этого устройства является удаление налета и зубного камня вокруг шейки имплантата и абатмента, оставляя чистую и гладкую поверхность [14].

Стандартные порошковые воздушно-абразивные системы основаны на воздушном распылении бикарбоната натрия. Они используются для полировки и удаления налета зубов, но не могут использоваться для имплантатов, так как могут повредить твердые и мягкие ткани из-за своей высокой абразивности [15]. Недавно была продемонстрирована мощная аэроабразивная система на основе низкоабразивного порошка аминокислоты глицина как эффективный метод удаления биопленки с поверхности корня без повреждения твердых и мягких тканей [16] и рекомендуется для обработки поверхностей имплантатов. Он использует специально разработанную насадку, состоящую из тонкой гибкой пластиковой трубки (длина: 1,7 см, диаметр на конце: 0,8 мм), которая снабжена тремя ортогонально ориентированными отверстиями. Такая специфическая конструкция связана с горизонтальным выходом воздушно-порошковой смеси и пониженным давлением, что предотвращает образование эмфиземы в прилежащих тканях. Наконечник (Air-Flows EL-308/A; EMS Electro Medical Systems, Nyon, Швеция) следует проводить круговыми движениями, от коронарной к апикальной, параллельно поверхности имплантата в бесконтактном режиме, а время обработки каждой поверхности (т.е. мезиальном, дистальном, вестибулярном и оральном) должно быть ограничено 5 секундами, так, как рекомендовано производителем [17]. Насадку следует перемещать по окружности вокруг имплантата, стараясь покрыть всю открытую поверхность имплантата [18, 19]. Насадку следует перемещать по окружности вокруг имплантата, стараясь покрыть всю открытую поверхность имплантата.

Фотодинамическая терапия (ФДТ) подразумевает использование маломощного лазера в сочетании с соответствующим фотосенсибилизатором для повышения детоксикации поверхности имплантата. Активированный светом фотосенсибилизатор вступает в реакцию с субстратом, в результате чего образуются активные формы кислорода (АФК), токсичные для микроорганизмов. Сообщается, что ФДТ является альтернативным подходом к детоксикации поверхности имплантата.

Хирургическое лечение периимплантационных заболеваний направлено на улучшение очищаемости поверхности имплантата, а также на изменение анатомии мягких и твердых тканей вокруг имплантата, для достижения остеоинтеграции. Используются резективные и регенеративные методы

К резективным методом можно отнести: лоскутные операции, а также апикально смещенный лоскут (АСЛ).

Цель хирургического вмешательства при лоскутных операциях состоит в том, чтобы сохранить все мягкие ткани вокруг пораженного имплантата и сосредоточиться, главным образом, на обеззараживании поверхности имплантата. Внутрибороздковые разрезы проводят вокруг пораженных имплантатов, а слизисто-надкостничные лоскуты приподнимают как щечно, так и небно/язычно. Дегрануляцию воспаленных тканей вокруг имплантата лучше всего проводить титановыми кюретками, а обеззараживание поверхности имплантата проводить одним из ранее описанных методов. Наконец, лоскуты перемещаются и надлежащим образом ушиваются. Поскольку в исследованиях на людях или животных нет

данных о том, что только обеззараживание поверхности имплантата может привести к остеоинтеграции, это хирургическое вмешательство направлено на устранение воспалительных изменений, ответственных за патологический процесс. Поскольку эта техника направлена на сохранение положения мягких тканей, вокруг шейки имплантата, этого можно добиться только при незначительной потере костной массы вокруг имплантата.

Апикально смещенный лоскут рекомендуется для улучшения самостоятельной гигиены полости рта и уменьшения карманов вокруг пораженных имплантатов [20]. Технически обратный скошенный разрез выполняется в зависимости от глубины кармана при зондировании, ширины и толщины слизистой оболочки вокруг имплантата. Для апикального смещения лоскута могут потребоваться вертикальные послабляющие разрезы. Слизисто-надкостничные лоскуты приподнимаются как щечно, так и небно/язычно. Затем удаляют слизистую вокруг шейки пораженных тканей и тщательно обеззараживают поверхности имплантата. Чтобы сгладить открытые участки и уменьшить послеоперационное загрязнение поверхности имплантата, была предложена имплантопластика [21]. Эта техника может быть показана при периимплантите с надкостными дефектами или одностеночном внутрикостном дефекте. Очевидно, что этот метод используется в основном в неэстетически важных зонах [22].

Регенеративный метод преследует две основные цели:

- создать достаточный объем ткани в процессе заживления, чтобы избежать рецессии слизистой оболочки.

- увеличение шансов на остеоинтеграцию, используя ауто/ксеногенные материалы, а также мембраны

При этой методике часто выполняются внутрибороздковые разрезы, чтобы сохранить общий объем мягких тканей. После подъема щечного и язычного надкостничных лоскутов производят дегрануляцию дефекта титановыми инструментами. После антисептической обработки поверхности имплантата, вокруг имплантата размещают трансплантат, заполняющий внутрикостную составляющую дефекта. Трансплантация может выполняться либо ауто костью [23], либо костными заменителями [24]. Трансплантат может быть покрыт рассасывающейся или нерассасывающейся мембраной. Наконец, лоскуты располагаются коронарно и ушиваются.

При сравнении апикально смещенного лоскута с имплантопластикой и без нее через 24 месяца в группах, прошедших имплантопластику, продемонстрировано значительное улучшение глубины зондирования и уровней клинического прикрепления [25]. В другом исследовании [26] сравнивались методы использования CO₂ лазерной и воздушно-порошковых систем для деконтаминации поверхности имплантата в сочетании с резекционными и реконструктивными техниками лечения периимплантита, которое не продемонстрировали существенных различий между группами при краткосрочной оценке. Однако при более длительном наблюдении лазерная деконтаминация и резекция мягких тканей показали наибольшую эффективность, а различий между воздушной обработкой и лазерной обработкой при проведении реконструктивной хирургии отмечено не было.

При регенеративном методе, важным выводом было отсутствие различий независимо от использования или отсутствия резорбируемой мембраны. При регенеративной хирургии с использованием аутокостной пластики и обработки хлоргексидином, лимонной кислотой, перекись водорода и физиологический раствор, через 3 года наблюдения достоверное

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уменьшение глубины зондирования наблюдалось в обеих группах, без межгрупповых различий [23]; с заменителем кости и обработкой перекисью водорода и физиологическим раствором, результаты через 1 год показали отсутствие кровотечения в 75% имплантатов в обеих группах и аналогичное уменьшение глубины зондирования, повышение уровня клинического прикрепления или заполнение дефекта [27] — результаты 3-летнего периода подтвердили предыдущий вывод [28].

Выводы.

- 1) Профилактика и лечение периимплантитных заболеваний должно быть направлено на устранение причины заболеваний, то есть на уменьшение бактериальной нагрузки
- 2) Консервативная терапия периимплантита неэффективна при разрешении болезни, поскольку сообщалось лишь об ограниченных улучшениях основных клинических параметров и имеется четкая тенденция к рецидиву заболевания
- 3) Имеются ограниченные клинические данные, подтверждающие превосходство регенеративной хирургии над резективной из-за небольшого количества доступных сравнительных рандомизированных контролируемых клинических испытаний.
- 4) Действия специалистов должны быть направлены на ликвидацию инфекционно-воспалительного процесса, уменьшение резорбции вокруг имплантата, а так же способствовать остеоинтеграции
- 5) Для этой цели нужно использовать комплексный подход: профилактика, хирургическое лечение, поддерживающая терапия, однако даже такой подход не может гарантировать 100% успех в лечение периимплантитов и мукозитов

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SUYAK SARKOMALARI NUR TASHXISI: OSTEOSARKOMANING RADIOLOGIK BAHOLANISHI

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Аннотация: Osteosarkoma suyakning eng keng tarqalgan birlamchi malign o'smasi bo'lib, ko'pincha distal femur va proksimal tibia metafiz sohalarida uchraydi. Mazkur maqolada osteosarkomaning diagnostikasida qo'llaniladigan asosiy nur tashxis usullari – rentgenografiya, kompyuter tomografiyasi (KT), magnit-rezonans tomografiya (MRT), pozitron-emission tomografiya (PET/KT) va suyak sintigrafiyasi keng yoritilgan. Xususan, turli xalqaro tashkilotlarning (NCCN, ESMO, SELNET) klinik ko'rsatmalari solishtirib tahlil qilingan. Shuningdek, davolashdan keyingi kuzatuv taktikasi, nur tashxisining imkoniyatlari va cheklovlari muhokama etilgan.

Kalit so'zlar: osteosarkoma, suyak sarkomalari, rentgenografiya, KT, MRT, PET/KT, suyak skanerlash, nur tashxisi, metastazlar, NCCN, ESMO, SELNET.

Osteosarkoma (OS) – suyakning birlamchi malign o'smalari ichida eng ko'p uchraydigan turi bo'lib, umumiy suyak saratonlari ichida muhim epidemiologik ahamiyatga ega. Statistik ma'lumotlarga ko'ra, barcha birlamchi suyak malignitetlarining qariyb 20–25% ini tashkil etadi (Ottaviani & Jaffe, 2009). Kasallik ko'pincha o'sish davrida, ya'ni 10–20 yosh oralig'ida uchraydi, biroq kattalarda ham qayd etilishi mumkin. Ikki asosiy cho'qqi yosh guruhi mavjud: birinchisi – balog'at davri (taxminan 15–20 yosh), ikkinchisi – 50 yoshdan keyingi davr bo'lib, ko'pincha Paget kasalligi bilan bog'liq holda kuzatiladi (Mirabello et al., 2009).

Osteosarkomaning klinik muhimligi uning tez rivojlanishi, o'pkaga metastaz berishi va yuqori mortalitet bilan tavsiflanishidadir. Metastazlarning 80–90% hollarda o'pkada uchrashi qayd etilgan (Bacci et al., 2002). Shu sababli o'z vaqtida tashxis qo'yish, metastazlarni aniqlash va davolash natijalarini baholash uchun nur tashxisining o'rni beqiyosdir.

So'nggi yillarda zamonaviy axborot-kommunikatsiya texnologiyalari rivojlanishi tufayli KT, MRT va PET/KT kabi usullar nafaqat tashxis qo'yishda, balki davolash jarayonini rejalashtirish va monitoring qilishda ham qo'llanilmoqda. Har bir usulning afzalliklari va cheklovlari mavjud bo'lib, ularning kombinatsiyasi tashxisning aniqligini oshiradi. Masalan, rentgenografiya dastlabki bosqich uchun asosiy tekshiruv bo'lsa, MRT suyak ichidagi jarayon va yumshoq to'qimalarga tarqalishni ko'rsatishda muhimdir. KT esa o'pka metastazlarini aniqlashda yuqori sezuvchanlikka ega.

Mazkur maqolada osteosarkomaning nur tashxisida qo'llaniladigan asosiy usullar, ularning samaradorligi, xalqaro ko'rsatmalardagi o'rni va klinik amaliyotdagi qo'llanilishi yoritiladi.

Osteosarkoma (OS) — nisbatan kam uchraydigan, ammo klinik jihatdan dolzarb bo'lgan malign o'sma hisoblanadi. Umumiy saraton kasalliklari ichida uning ulushi 0,2% dan oshmaydi, biroq barcha birlamchi suyak o'sma kasalliklari ichida eng yuqori ko'rsatkichga ega bo'lib, 20–25% ni tashkil etadi (Ottaviani & Jaffe, 2009). Kasallikning tarqalishi yiliga million aholiga 3–5 ta yangi holatga to'g'ri keladi.

Osteosarkoma ko'pincha 10–20 yosh oralig'ida aniqlanadi, bu davrda o'sish tezlashgan bo'ladi. Ikkinchi cho'qqi esa 50 yoshdan yuqori bemorlarda kuzatiladi va ko'pincha Paget kasalligi yoki boshqa suyak patologiyalari fonida rivojlanadi (Mirabello et al., 2009). Erkaklar orasida uchrash

Osteosarkoma — osteoid yoki suyak matritsasini ishlab chiqaruvchi malign o'sma bo'lib, yuqori darajadagi hujayra proliferatsiyasi bilan tavsiflanadi. U intramedullar tarzda rivojlanib, ko'pincha metafiz sohalarda, ayniqsa distal femur va proksimal tibiyada paydo bo'ladi (Bacci et al., 2002).

Kasallikning rivojlanishida genetik va molekulyar omillar muhim ahamiyatga ega. TP53 va RB1 genlaridagi mutatsiyalar, shuningdek, Wnt va PI3K/Akt yo'llarining faollashishi osteosarkomaning patogenezida asosiy o'rin tutadi (Martin et al., 2012). Bu molekulyar mexanizmlar o'smaning tez o'sishi, invazivligi va metastaz berish qobiliyatini izohlaydi.

Klinik jihatdan osteosarkoma odatda suyak sohasida og'riq va shish paydo bo'lishi bilan boshlanadi. Og'riqlar dastlab vaqtinchalik bo'lsa-da, keyinchalik kuchayadi va doimiy tus oladi. Ba'zan patologik sinishlar birinchi belgi sifatida qayd etiladi. Kasallikning kechki bosqichlarida mahalliy shish, teri ostida qon tomirlarning kengayishi va harakat cheklanishi kuzatiladi.

Metastazlar asosan o'pkada aniqlanadi va bu OS prognozini yomonlashtiruvchi eng muhim omillardan biridir. Shu bois, o'pka tomografiyasi tashxislash jarayonida majburiy hisoblanadi (Meyers et al., 2005).

Jahon tajribasida osteosarkoma tashxisida nur tashxisi usullari yetakchi o'rinda turadi. AQShda qabul qilingan NCCN (**National Comprehensive Cancer Network**) ko'rsatmalariga ko'ra, bemorni dastlabki baholashda rentgenografiya va MRI asosiy usul hisoblanadi, qo'shimcha ravishda KT va PET/KT qo'llaniladi (NCCN, 2022).

Evropada esa ESMO (**European Society for Medical Oncology**) tavsiyalarida birlamchi tasvirlash usuli sifatida rentgenografiya va MRI birinchi darajali ahamiyatga ega, KT esa qo'shimcha diagnostika vositasi sifatida ko'rib chiqiladi (ESMO, 2021).

SELNET (**Sarcoma European Latin American Network**) tomonidan Lotin Amerikasi mamlakatlari uchun ishlab chiqilgan ko'rsatmalarda ham xuddi shunday yondashuv mavjud: rentgenografiya va MRI asosiy diagnostika usuli sifatida belgilanadi, KT esa shubhali hollarda tavsiya qilinadi (SELNET, 2020).

Xulosa sifatida

Ilmiy manbalar tahlili shuni ko'rsatadiki, osteosarkomaning tashxisida nur tashxisi yetakchi o'rinda turadi. Har bir usulning (rentgenografiya, KT, MRT, PET/KT) o'ziga xos afzalliklari va cheklavlari mavjud. Jahon tajribasida ularni kompleks qo'llash natijani aniqlash va davolash samaradorligini oshirishga xizmat qiladi.

Nur tashxisi usullari

1. Rentgenografiya

Rentgenografiya osteosarkoma tashxisida eng birlamchi va keng qo'llaniladigan usul hisoblanadi. U arzon, tezkor va ko'pchilik tibbiyot muassasalarida mavjud.

- **Afzalliklari:** dastlabki baholash uchun samarali, o'smada litik yoki sklerotik o'zgarishlarni aniqlash imkonini beradi.

- **Klinik belgilari:** osteosarkomada ko'pincha litik va sklerotik o'choqlar kombinatsiyasi kuzatiladi, periosteal reaksiyalar (Codman uchburchagi, "quyosh nurlari" belgisi) yaqqol ko'rinadi (Kumar et al., 2018).

- **Cheklovlari:** yumshoq to'qimalarga tarqalishni baholashda yetarli emas, erta bosqichdagi kichik lezyonlarni ko'rsatmaydi.

2. Kompyuter tomografiyasi (KT)

KT suyak o'smalarini va ayniqsa o'pka metastazlarini aniqlashda muhim ahamiyatga ega.

- **Afzalliklari:** yuqori aniqlikda suyak destruksiyasini ko'rsatadi, o'pka tugunlarini rentgenografiyaga qaraganda erta bosqichda aniqlaydi (Bacci et al., 2002).

- **Klinik qo'llanilishi:** KT ko'krak qafasining batafsil baholanishida, shuningdek, murakkab anatomiya sohalarida (masalan, umurtqa yoki tos suyagi) qo'llaniladi.

- **Cheklovlari:** yumshoq to'qimalarni tasvirlashda MRTdan kam sezgir, radiatsiya dozalari yuqori.

3. Magnit-rezonans tomografiya (MRT)

MRT osteosarkomaning mahalliy tarqalishini baholashda eng muhim usuldir.

- **Afzalliklari:** suyak iligi, yumshoq to'qimalar va neyrovaskulyar tuzilmalarni aniq ko'rsatadi. O'smalarning intraosseoz va extraosseoz tarqalishini, epifiz va bo'g'im ishtirokini ko'rsatishda yuqori sezuvchanlikka ega (Kager et al., 2010).

- **Klinik belgilar:** T1 ketma-ketlikda o'smalar past signal beradi, STIR va T2 ketma-ketliklarda esa yuqori signal kuzatiladi. Epifiz kengayishi va skip metastazlar MRT orqali samarali aniqlanadi.

- **Cheklovlari:** kaltsifikatsiyani KT kabi aniq ko'rsata olmaydi; narxi yuqori va hamma klinikalarda mavjud emas.

4. PET/KT (Pozitron-emission tomografiya)

FDG-PET/KT osteosarkomaning bosqichlanishi, metastazlarini aniqlash va kimyoterapiyaga javobni baholashda katta ahamiyatga ega.

- **Afzalliklari:** yuqori sezgirlik, butun tanani baholash imkoniyati, relaps va yashirin metastazlarni ko'rsatadi (Quartuccio et al., 2015).

- **Qo'llanilishi:** davolashdan oldingi bosqichlash, kimyoterapiyadan keyingi qayta baholash, uzoq muddatli kuzatuv.

- **Cheklovlari:** narxi juda yuqori, hamma mamlakatlarda mavjud emas, ayrim hollarda noaniq e'lon musbat natijalar kuzatilib mumiin.

5. Suyak sintigrafiyasi

^{99m}Tc-MDP bilan o'tkaziladigan suyak sintigrafiyasi multifokal kasalliklarni istisno qilishda qo'llaniladi.

- **Afzalliklari:** butun skelet bo'ylab shikastlanishni aniqlash imkonini beradi.

- **Cheklovlari:** yuqori sezgir, ammo past spetsifiklikka ega; MRT ko'plab hollarda aniqroq tashxis beradi (Franzius et al., 2000).

NCCN (AQSh) tomonidan ishlab chiqilgan k'ursatmalarga k'ura, osteosarkomani dastlabki baholash jara'ida kuyidaqi bosqichlar amalga oshiriladi (NCCN, 2022):

- **Birламчи тасвирлаш усули:** маҳаллий о'симтани баҳолаш учун MRI, qo'shimcha ravishda KT.

- **Метастазларни аниқлаш:** ko'krak qafasi KT asosiy standart hisoblanadi, chunki metastazlarning 80–90% hollarda o'pkada uchrashi qayd etiladi.

- **PET/KT va suyak skanlari:** agar metastatik kasallikka shubha qilinsa yoki davolashdan keyin qayta baholash zarur bo'lsa, PET/KT yoki suyak sintigrafiyasi qo'llaniladi.

- **Kuzatuv:** dastlabki 2 yil davomida har 3 oyda, keyingi yillarda esa oralig'i asta-sekin uzaytirib boriladi.

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NCCN ko'rsatmalarining afzalligi – aniq va bosqichma-bosqich algoritmlarning mavjudligi. Shu bois u global miqyosda eng ko'p qo'llaniladigan standartlardan biridir.

ESMO (European Society for Medical Oncology) kўrsatmalari

ESMO (Yevropa) kўrsatmalariga kўra, osteosarkoma tashxisida birinchi qadam sifatida **rentgenoqrafiya** qўllaniladi, chunki bu usul tezkor va dastlabki ma'lumotlarni takdim etadi (ESMO, 2021). Agar rentgenoqrammada o'simtaning xususiyati aniqlanmasa, butun segment va qўshni butunlarni kamrab oluvchi MRI tavsia etiladi.

- **Kaltsifikatsiya va kortikal destruksiya** haqida qo'shimcha ma'lumot olish uchun KT qo'llaniladi.

- **Ekstremitalar, umurtqa va tos suyaklari kasalliklarini** aniqlashda MRT afzal hisoblanadi.

- **Davolash monitoringi:** kimyoterapiya samaradorligi MRT orqali baholanadi, chunki yumshoq to'qimalar tarqalishi va intraosseoz darajani ko'rsatishda MRT ustundir.

ESMO ko'rsatmalarining muhim jihati – MRIning markaziy ўringa qўyishi va har bir holatda kompleks endashuvni talab qiliishi.

SELNET (Sarcoma European Latin American Network) kўrsatmalari

SELNET kўrsatmalari asosan Lotin Amerikasi mamlakatlariga qaratilgan бўлиб, mahalliy imkoniyatlarni hisobga oladi (SELNET, 2020).

- **Dastlabki test:** oddiy rentgenoqrafiya va butun segment MRI.

- **Magistral yoki bosh va bo'yin osteosarkomasida:** KT tavsiya etiladi, chunki murakkab anatomiya va yumshoq to'qimalar ishtiroki ko'pincha ushbu sohalarda kuzatiladi.

- **PET/KT yoki butun tana MRI:** agar mavjud bo'lsa, afzal usullar hisoblanadi; ammo ular mavjud bo'lmasa, suyak sintigrafiyasi yetarli alternativ sifatida qo'llanilishi mumkin.

SELNETning afzalligi – turli mamlakatlarda imkoniyatlar cheklanganini hisobga olib, minimal va optimal standartlarni ajratib kўrsatiishi.

Қиёсий таҳлил

- **NCCN** – AQSH tajribasiga asoslangan va har bir bosqichda aniq algoritmlarni belgilaydi.

- **ESMO** – Evropa mamlakatlarida qўllaniladi, MRI va kompleks endashuvga katta ahamiyat beraadi.

- **SELNET** – rivojlanayotgan mamlakatlar uchun amaliy va realistik kўrsatmalar taklif qiladi.

Shunday qilib, har uchala kўrsatmada ham umumiy jihatlarni mavjud: rentgenoqrafiya va MRI – asosiy tashxis usuli, KT – metastazlarni aniqlash uchun muhim, PET/KT esa qo'shimcha imkoniyat sifatida ko'riladi.

Osteosarkoma davolashidan keyin ham bemorlarda **mahalliy takrorlanish** va **uzoqlashgan metastazlar** (ayniqsa, o'pka va boshqa suyaklarda) rivojlanish xavfi yuqori bo'lib qoladi. Shuning uchun muntazam kuzatuv — davolash samaradorligini baholash va kasallik qaytalanishini erta aniqlash uchun zarur (NCCN, 2022).

NCCN tavsiyalari:

- Davolanishdan keyin 2 yil davomida — har 3 oyda bir marta ko'rik va tasvirlash tekshiruvlari.

- 3–5 yil davomida — har 4–6 oyda kuzatuv.

- 5 yildan keyin — yiliga bir marta.

ESMO ko'rsatmalari esa dastlabki 2–3 yil davomida yanada tez-tez nazorat qilishni, keyinchalik oralig'ini oshirishni tavsiya qiladi (ESMO, 2021).

Kuzatuv jarayonida eng ko'p qo'llaniladigan usullar — ko'krak qafasi KT, lokal o'smaga qarshi MRT, ayrim hollarda PET/KT va suyak sintigrafiyasi.

Prognozga ta'sir etuvchi omillar

Osteosarkomaning prognozi ko'plab omillarga bog'liq:

1. **O'smaning joylashuvi:** distal femur va proksimal tibiyadagi o'smalar ko'proq uchraydi ba prognozi biroz yaxshi hisoblanadi. Tos suyagi yoki umurtqadagi o'smalarda esa prognoz salbiyroq (Bacci et al., 2002).
2. **Bosqich va metastazlar mavjudligi:** davolanish vaqtida metastazlarning aniqlanishi prognozni yomonlashtiruvchi asosiy omildir. O'pka metastazlari eng ko'p uchraydi.
3. **Kimyoterapiyaga javob:** neoadjuvant kimyoterapiyadan keyingi gistonamunalarida nekroz darajasi yuqori bo'lsa, prognoz yaxshiroq.
4. **Jarayonning hajmi ba suyak bo'ylab tarqalishi:** skip-metastazlar yoki qo'shni bo'limlarga tarqalish prognozni yomonlashtiradi.
5. **Yosh omili:** yosh bemorlarning umumiy omon qolish darajasi kattalarnikiga qaraganda yuqoriroq (Mirabello et al., 2009).

So'nggi 20 yil ichida xalqaro standart davolash protokollari (jarrohlik + kimyoterapiya) natijasida osteosarkomada **5 yillik omon qolish darajasi 60–70%** gacha oshgan (Kager et al., 2010). Biroq metastatik kasallik bilan murojaat qilgan bemorlarda bu ko'rsatkich 20–30% dan oshmaydi.

Shunday qilib, muntazam kuzatuv ba nur tashxis usullaridan samarali foydalanish nafaqat davolashning davomiy natijalarini baholash, balki bemorning hayot sifatini yaxshilash uchun ham muhim ahamiyatga ega.

Osteosarkoma – suyaklarning eng keng tarqalgan birlamchi xavfli o'smasi bo'lib, uni tashxislash va davolash jarayonlari murakkab, ko'p bosqichli yondashuvni talab qiladi. Zamonaviy tibbiyotda ushbu kasallikni aniqlashda rentgenografiya, MRT, KT va PET/KT kabi yuqori aniqlikdagi tasvirlash usullarining qo'llanilishi tashxisning samaradorligini sezilarli darajada oshirmoqda. Biroq, kasallikning kech aniqlanishi, o'pka metastazlarining tez-tez uchrashi va kimyoterapiya hamda jarrohlikning salbiy asoratlari dolzarb muammo bo'lib qolmoqda.

Shu nuqtai nazardan, erta tashxisni rivojlantirish, molekulyar va genetik markerlar asosida shaxsga yo'naltirilgan davolashni keng tatbiq etish, shuningdek, reabilitatsiya va psixologik qo'llab-quvvatlash dasturlarini joriy etish osteosarkoma bilan kurashishda muhim ahamiyat kasb etadi. Bundan tashqari, xalqaro ilmiy hamkorlik va klinik tadqiqotlar natijalarini amaliyotga tatbiq etish kelajakda davolashning samaradorligini yanada oshirishi mumkin.

Umuman olganda, osteosarkomaning nur tashxisini takomillashtirish va kompleks davolash yondashuvlarini ishlab chiqish ushbu kasallik bilan og'rigan bemorlarning uzoq muddatli omon qolish darajasi va hayot sifatini yaxshilashning asosiy kafolatidir.

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