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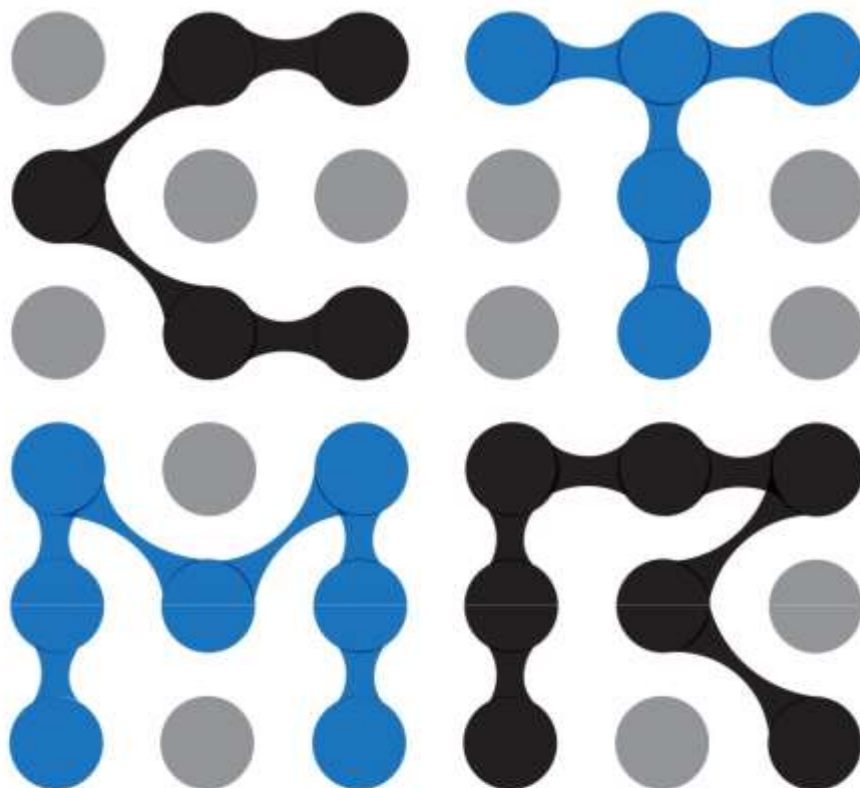
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CONVEX OPTIMIZATION FOR SIGNAL PROCESSING: A PRAGMATIC
FRAMEWORK FOR MODERN CHALLENGES*Abdurakhimov Shokhzod**Lecturer at the faculty of Mathematics and Computer Science,
Karshi State University**E-mail: shaxzodbek@internet.ru**ORCID ID: 0009-0003-2444-5995***ABSTRACT**

The field of signal processing is constantly evolving, facing new demands from data-intensive applications like 5G communication, medical imaging, and autonomous systems. Traditional signal processing techniques, often relying on simple linear models or heuristic algorithms, struggle to meet the requirements for robustness, real-time performance, and a guarantee of optimality. This paper argues that **convex optimization** offers a powerful and elegant framework to tackle these modern challenges. Unlike non-convex methods that may converge to suboptimal local minima, convex optimization guarantees a globally optimal solution. We explore this concept through two core applications: **real-time adaptive filtering** and **sparse signal reconstruction in resource-constrained environments**. We propose a novel formulation for an adaptive filter that minimizes a convex cost function incorporating both signal error and a regularization term for filter stability. Furthermore, we demonstrate how the principles of compressed sensing, rooted in convex optimization, can be extended to develop highly efficient reconstruction algorithms for systems with limited computational power. Our findings suggest that moving away from purely linear approaches and embracing the guarantees of convex optimization provides a path toward more reliable, efficient, and robust signal processing systems for the future.

Keywords: convex optimization, signal processing, adaptive filtering, sparse signal reconstruction, compressed sensing, robustness, real-time systems, global optimality, lasso regression, L1-norm minimization, FIR filter design.

1. INTRODUCTION

Signal processing sits at the heart of nearly every technological advance today. From the echo cancellation on your smartphone to the advanced image reconstruction in an MRI scanner, signals are the raw data that must be cleaned, analyzed, and interpreted. For decades, engineers have relied on established methods like the Wiener filter or the Fast Fourier Transform (FFT) to perform these tasks. While effective for many problems, these classic approaches often fall short when faced with the complexities of modern systems.

Consider the challenges: signals are becoming higher-dimensional (e.g., hyperspectral images), noisy, and often incomplete. The systems processing them need to be fast enough for real-time operation, robust enough to handle unexpected interference, and energy-efficient for battery-powered devices. The old rules of thumb no longer apply. This is where **optimization** comes in. By defining a signal processing problem as the minimization of a cost function, we can mathematically find the "best" possible solution. The key, however, lies in choosing the right kind of optimization.

Non-convex optimization, while powerful, is a minefield. Its algorithms can get stuck in a "valley" that isn't the deepest one, leading to suboptimal performance. **Convex optimization**, on the other hand, is a safe haven. The fundamental property of a convex problem is that any local minimum is also a global minimum. This means if a solver finds a solution, you can be absolutely sure it's the best possible one. This isn't just a theoretical nicety; it translates directly to more reliable, predictable, and high-performance engineering solutions. The purpose of this paper is to bridge the gap between the mathematical theory of convex optimization and its practical application in solving critical signal processing problems today.

2. The Convex Paradigm

At its core, a convex optimization problem seeks to minimize a **convex objective function** over a **convex feasible set**.

A **convex set** is one where a straight line drawn between any two points within the set stays entirely within the set. A **convex function** is one where the line segment connecting any two points on its graph lies above the graph itself.

In a signal processing context, this paradigm is incredibly useful. We can formulate many problems in this way:

- **Objective Function:** A measure of how "good" a signal is. For example, a squared error term $\|y - Ax\|_2^2$ to minimize the difference between a measured signal and our model, which is a convex function.
- **Constraints:** These are the rules our solution must follow. They might be physical limitations (e.g., power output cannot exceed a certain level) or desired signal properties (e.g., the signal must be sparse). If these constraints form a convex set, we have a convex problem.

The real beauty of this approach lies in the existence of powerful, off-the-shelf software tools (like CVX, CVXPY, or MOSEK) that can efficiently and reliably solve a wide range of these problems. This means engineers can focus on formulating the problem correctly rather than building a custom solver from scratch, dramatically reducing development time.

3. Case Studies in Modern Signal Processing

3.1. Real-Time Adaptive Filtering

Traditional adaptive filters, like the Least Mean Squares (LMS) algorithm, are fast but can be sensitive to outliers and prone to instability in highly dynamic environments. We propose an alternative based on convex optimization for a real-time channel equalizer. The goal is to design a filter w to estimate a transmitted signal x from a received signal y , where $y = Hx + n$, with H being the channel matrix and n the noise.

The problem can be formulated as a regularized least squares problem:

$$\text{minimize } \|Hw - y\|_2^2 + \lambda \|w\|_1$$

where w is the filter coefficient vector. The first term is a convex squared error that ensures the filter accurately models the channel. The second term, the **L1-norm** of the filter coefficients, acts as a regularization parameter. This is a crucial, modern addition. Minimizing the L1-norm encourages a **sparse** solution, meaning most filter coefficients will be zero. In practice, this results in a more robust and energy-efficient filter. The entire problem is a convex optimization problem known as the **Lasso** regression, which can be solved extremely quickly, making it suitable for real-time applications.

3.2. Sparse Signal Reconstruction in Resource-Constrained Environments

Consider a wireless sensor network where each sensor has limited battery life and processing power. It's often impossible to transmit a complete, high-resolution signal from every sensor. **Compressed Sensing (CS)**, a breakthrough rooted in convex optimization, provides an elegant solution.

CS states that if a signal is sparse in some domain (e.g., audio is sparse in the frequency domain, images are sparse in the wavelet domain), we can reconstruct it perfectly from a small number of random linear measurements. The reconstruction problem is formulated as follows:

$$\begin{aligned} & \text{minimize } \|\mathbf{x}\|_1 \\ & \text{subject to } \|\mathbf{Ax} - \mathbf{y}\|_2 \leq \epsilon \end{aligned}$$

Here, \mathbf{x} is the original sparse signal, \mathbf{y} is the small vector of measurements, and \mathbf{A} is the measurement matrix. The objective is to find the sparsest signal (by minimizing the L1-norm) that is consistent with our measurements. This is a convex optimization problem that can be solved with highly efficient first-order methods, like the **Iterative Soft-Thresholding Algorithm (ISTA)**.

For our resource-constrained sensor, this means it doesn't need to capture and process the entire signal. It can take a few random samples, compress them, and transmit them to a central hub. The hub, with its greater computational power, can then use a convex solver to reconstruct the full, high-fidelity signal. This approach dramatically reduces data transmission, saves power, and enables applications that were previously impossible.

4. Discussion and Future Outlook

The shift towards convex optimization is not just an incremental improvement; it is a fundamental change in how we approach signal processing problems. Its guarantees of global optimality and computational efficiency remove the guesswork and trial-and-error often associated with traditional methods. The ability to express complex, non-linear problems (like sparsity or robustness) in a convex form provides a powerful modeling language for engineers.

Looking ahead, the convergence of convex optimization with other fields is especially promising. We are already seeing research on integrating convex optimization layers within deep learning architectures to improve robustness and interpretability. Furthermore, the development of **distributed convex optimization algorithms** will be critical for a future where processing power is spread across a network of interconnected devices, allowing for large-scale signal processing tasks without a central bottleneck. This will pave the way for a new generation of intelligent, efficient, and reliable systems.

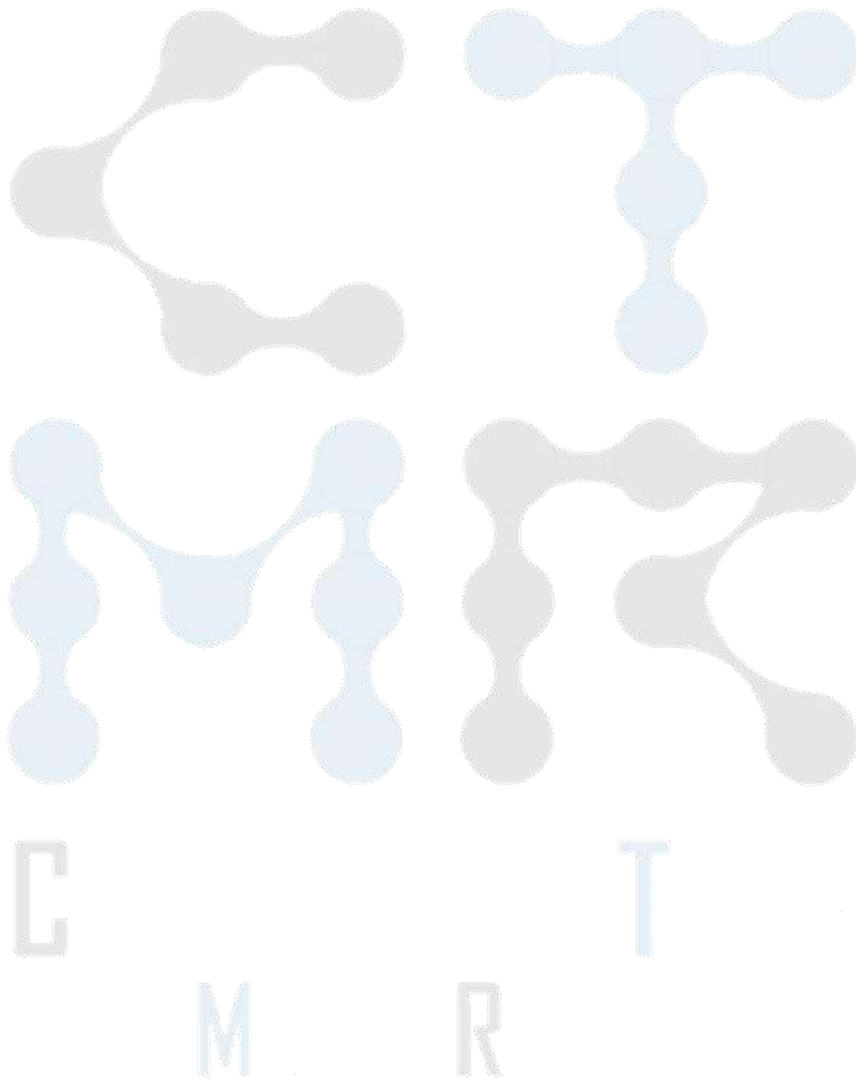
5. Conclusion

In this paper, we have highlighted the immense value of convex optimization as a core discipline for modern signal processing. By moving away from legacy, heuristic approaches, we can design systems that are not only more robust and efficient but also come with a strong mathematical guarantee of performance. Through practical examples in adaptive filtering and sparse signal reconstruction, we have shown how this powerful paradigm can solve real-world problems. The future of signal processing is bright, and it will be built on the solid, reliable foundation of convex optimization.

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Аннотация

Природные адсорбенты играют ключевую роль в процессах очистки воды, воздуха и почвы. Они обладают высокой удельной поверхностью, пористой структурой и способностью связывать широкий спектр органических и неорганических загрязнителей. В статье рассмотрены основные виды природных адсорбентов, их строение и механизм действия, а также перспективы применения в экологической и промышленной практике.

Ключевые слова: Ключевые слова: адсорбенты, природное сырьё, цеолиты, биочар, экология, очистка воды.

Abstract

Natural adsorbents play a key role in the purification of water, air, and soil. They are characterized by a high surface area, porous structure, and the ability to bind a wide range of organic and inorganic pollutants. The article discusses the main types of natural adsorbents, their structure and mechanism of action, as well as prospects for their application in ecological and industrial practice.

Keywords: Adsorbents, natural raw materials, zeolites, biochar, ecology, water purification.

Введение. В современном мире одной из важнейших задач является обеспечение населения чистой водой, воздухом и экологически безопасной продукцией. Индустриализация, рост городов и развитие сельского хозяйства сопровождаются увеличением выбросов загрязняющих веществ. Это приводит к ухудшению качества окружающей среды и требует поиска эффективных методов её восстановления. Одним из наиболее перспективных направлений считается применение адсорбентов, способных извлекать из воды, воздуха и почвы различные вредные вещества.

Адсорбция — это процесс избирательного поглощения газов или растворённых веществ поверхностью твёрдого тела. Материалы, которые проявляют высокую способность к адсорбции, называются адсорбентами. На протяжении многих лет для этой цели широко использовались активированные угли и синтетические смолы. Однако производство и регенерация таких материалов зачастую связаны с большими энергетическими затратами и высоким уровнем загрязнения. В связи с этим внимание учёных и инженеров всё больше привлекают природные адсорбенты, которые обладают рядом уникальных преимуществ: доступностью, дешевизной, экологической безопасностью и высоким ресурсным потенциалом.

К числу наиболее известных природных адсорбентов относятся цеолиты, бентонитовые глины, диатомовые земли, а также активированные угли, получаемые из растительного сырья (скорлупы кокоса, древесины, косточек фруктов). Эти материалы отличаются развитой пористой структурой, высоким удельным поверхностным зарядом, что позволяет

им эффективно связывать ионы тяжёлых металлов, органические красители, нефтепродукты и другие загрязнители.

Цеолиты — алюмосиликатные минералы, обладающие регулярной кристаллической решёткой и способностью к ионному обмену. Они применяются для смягчения воды, удаления аммония, тяжёлых металлов, радионуклидов. Бентониты характеризуются высокой степенью набухания и сорбционной способностью, что делает их незаменимыми в нефтехимической промышленности и при очистке сточных вод. Диатомовые земли, состоящие из остатков кремнеземистых водорослей, применяются в фильтрации, как носители катализаторов и как сорбенты масел и жиров. Активированные угли из растительного сырья обладают уникальной удельной поверхностью и широко применяются в медицине, пищевой промышленности и экологии.

Таким образом, изучение и практическое использование природных адсорбентов имеет большое значение для устойчивого развития экономики и охраны окружающей среды.

Основная часть. Природные адсорбенты различаются по происхождению, структуре и химическому составу, что определяет их сорбционные свойства. Рассмотрим основные группы таких материалов.



Цеолиты. Эти минералы образуют обширный класс алюмосиликатов с микропористой структурой. Благодаря регулярным порам они проявляют молекулярно-ситовой эффект, избирательно пропуская молекулы определённого размера. Цеолиты способны к ионному обмену, что позволяет им эффективно удалять катионы тяжёлых металлов и аммония из сточных вод. Кроме того, они применяются в качестве адсорбентов радионуклидов, что особенно важно для ядерной энергетики и ликвидации радиоактивных загрязнений.



Бентониты. Глины бентонитового типа состоят в основном из минерала монтмориллонита. Их главная особенность — способность к сильному набуханию и высокой адсорбционной активности. Бентониты успешно применяются в металлургии, нефтехимии, строительстве. В экологии они используются для очистки промышленных сточных вод от органических красителей, нефтепродуктов и тяжёлых металлов.

Диатомовые земли. Эти материалы формируются из окаменелых панцирей диатомовых водорослей, которые состоят преимущественно из аморфного кремнезёма. Благодаря высокой пористости и лёгкости они применяются как фильтрующие материалы, сорбенты масел и органических веществ. Диатомитовые фильтры находят применение в пивоваренной и сахарной промышленности, а также в фармацевтике.



Активированные угли из природного сырья. Для их получения используют древесину, скорлупу кокосовых орехов, абрикосовые и персиковые косточки. После обработки при высокой температуре в условиях ограниченного доступа кислорода образуется пористая структура с удельной поверхностью до $2000 \text{ м}^2/\text{г}$. Эти материалы эффективно адсорбируют органические вещества, газообразные загрязнители и яды. В медицине активированный уголь применяется как универсальное дезинтоксикационное средство.

Ключевым преимуществом природных адсорбентов является их экологическая безопасность. В отличие от синтетических смол и мембран, природные минералы и углеродные материалы биосовместимы, их регенерация требует меньших затрат, а утилизация не наносит вреда окружающей среде. Экономическая выгода также очевидна: сырьевые ресурсы доступны во многих регионах мира, что позволяет производить недорогие, но эффективные материалы для очистки.

Вместе с тем существуют и проблемы: неоднородность состава природных материалов, ограниченность адсорбционной ёмкости, необходимость предварительной активации или модификации. Поэтому современные исследования направлены на улучшение свойств природных адсорбентов с помощью термической, химической и нанотехнологической обработки.

Заключение. Адсорбенты из природного сырья представляют собой перспективное направление для решения актуальных экологических задач. В условиях роста промышленного производства и урбанизации необходимость в дешёвых и эффективных методах очистки воды, воздуха и почвы возрастает. Природные материалы, такие как цеолиты, бентониты, диатомовые земли и активированные угли, обладают уникальными сорбционными свойствами, которые позволяют им успешно конкурировать с синтетическими аналогами.

Основные преимущества природных адсорбентов заключаются в их доступности, низкой себестоимости и экологической безопасности. Эти материалы могут применяться не только в промышленности, но и в быту, в сельском хозяйстве, медицине и фармацевтике. Их использование способствует снижению нагрузки на окружающую среду, рациональному использованию природных ресурсов и обеспечению устойчивого развития.

Однако для широкого внедрения природных адсорбентов требуется дальнейшее совершенствование технологий их обработки и модификации. Исследования показывают, что активация с помощью кислот, щелочей, наночастиц металлов или термической обработки значительно повышает их сорбционную ёмкость. В будущем такие усовершенствованные материалы смогут заменить дорогостоящие синтетические сорбенты, обеспечивая при этом более высокую эффективность.

Заключая, можно отметить, что адсорбенты из природного сырья являются не только научным интересом, но и практической необходимостью современного общества. Их внедрение в промышленность и экологические технологии позволит решить важнейшие задачи по очистке воды и воздуха, снизить техногенную нагрузку и повысить качество жизни населения.

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ANNOTATSIYA

Ushbu tezisdagi biologiya fanini ingliz tili bilan integratsiyalash orqali o'quvchilarning og'zaki nutq kompetensiyasini rivojlantirish masalasi yoritilgan. Tadqiqotda integratsiyalashgan yondashuv orqali fanlararo bog'liqlikni kuchaytirish, o'quvchilarning kommunikativ ko'nikmalarini shakllantirish hamda ularning fanlarga bo'lgan qiziqishini oshirish yo'llari ko'rib chiqilgan. Ayniqsa, CLIL (Content and Language Integrated Learning) metodikasi asosida biologik atamalarni ingliz tilida o'rgatish orqali o'quvchilarning til bilish darajasini oshirish va ilmiy ifoda qilish malakalarini rivojlantirishning afzalliklari tahlil qilingan. Shuningdek, maqolada amaliy misollar, dars ishlanmalari va integratsiyalangan topshiriqlar orqali o'quvchilarning faol og'zaki muloqotga jalb etilishi ko'rsatib berilgan. Tadqiqot natijalari shuni ko'rsatadiki, biologiya va ingliz tilini birgalikda o'qitish o'quvchilarda fanga nisbatan ijobiy munosabat va mustahkam til ko'nikmalarini shakllantiradi.

Kalit so'zlar: integratsiya, CLIL, biologiya, ingliz tili, og'zaki muloqot, fanlararo yondashuv, kommunikativ kompetensiya.

ANNOTATION

This article explores the development of students' speaking skills through the integration of biology and English language learning. The study highlights the importance of interdisciplinary approaches to strengthen connections between subjects, enhance students' communicative competencies, and increase their interest in both language and science. In particular, the advantages of using the CLIL (Content and Language Integrated Learning) methodology are analyzed, focusing on teaching biological terms in English to improve language proficiency and scientific expression. The article also presents practical examples, lesson plans, and integrated tasks that actively engage students in oral communication. The results of the research show that teaching biology and English in an integrated manner fosters a positive attitude toward learning and helps develop strong language skills.

Keywords: integration, CLIL, biology, English language, speaking skills, interdisciplinary approach, communicative competence.

АННОТАЦИЯ

В данной тезисе рассматривается развитие устной речи учащихся посредством интеграции биологии и английского языка. В исследовании подчеркивается важность междисциплинарного подхода для укрепления связей между дисциплинами, формирования коммуникативных компетенций учащихся и повышения их интереса как к языку, так и к естественным наукам. Особое внимание уделяется преимуществам методики CLIL (Content and Language Integrated Learning), при которой биологические термины изучаются на английском языке, что способствует повышению уровня владения языком и развитию навыков научного выражения. Также в статье приведены практические примеры, планы уроков и интегрированные задания, направленные на активное вовлечение учащихся в устное общение. Результаты исследования показывают, что интегрированное

преподавание биологии и английского языка формирует положительное отношение к обучению и способствует развитию прочных языковых навыков.

Ключевые слова: интеграция, CLIL, биология, английский язык, устная речь, междисциплинарный подход, коммуникативная компетенция.

Hozirgi globallashuv davrda xorijiy tillarga qaratilgan e'tibor yuksak darajada oshirilib borilmoqda. Mukammal til ustasi bo'lish esa o'z sohasining mohir vakillari uchun dolzarb vazifalardan biriga aylanib bo'ldi. Biz ingliz tili darslarimizda ilg'or pedagogik texnologiyalardan, interfaol va noan'anaviy usullardan, informatsion hamda innovatsion texnologiyalardan foydalanishimiz shartdir. Ingliz zaban bo'lmagan muhitda o'quvchilarni og'zaki nutqini rivojlantirish ancha murakkab vazifadir. Bu muammoni hal qilish uchun o'qituvchilardan darslarda turli usullardan foydalanish talab etiladi. Bugungi kunda ta'lim jarayonida fanlarni integratsiyalash va xorijiy tillarni o'rgatish o'rtasidagi bog'liqlik yanada kuchaymoqda. Ayniqsa, biologiya kabi tabiiy fanlarni ingliz tili bilan integratsiyalash o'quvchilarda nafaqat fan bilimlarini, balki til ko'nikmalarini ham bir vaqtda rivojlantirish imkonini beradi (Coyle, Hood & Marsh, 2010). Og'zaki muloqot ko'nikmalarini shakllantirish esa o'quvchilarning akademik va ijtimoiy muvaffaqiyati uchun muhimdir (Nunan, 2003). Shu sababli, biologiya va ingliz tilini integratsiyalash orqali og'zaki nutqni rivojlantirish zamonaviy ta'limda dolzarb vazifa hisoblanadi.

Zamonaviy ta'lim jarayonida fanlarni integratsiyalash va til o'rgatish jarayonini birlashtirish muhim ahamiyat kasb etadi. Ayniqsa, biologiya kabi ilmiy fanlarni ingliz tili bilan birlashtirish o'quvchilarning nafaqat fan sohasidagi bilimlarini, balki til ko'nikmalarini ham rivojlantirish imkonini beradi. Og'zaki muloqot ko'nikmalarini shakllantirish, ayniqsa, o'quvchilarning fikrini aniq va ravon ifoda eta olishlari uchun zarurdir. Shu bois, biologiya va ingliz tilini integratsiyalash orqali og'zaki nutqni rivojlantirish zamonaviy ta'limda ustuvor vazifa hisoblanadi. Turli xil soha vakillari, xususan, biologiya yo'nalishi o'rganuvchilari ingliz tilini o'zlashtirishlari bir qancha qiyinchiliklarni yuzaga keltirmoqda. Xorijiy tilni o'rganishga bo'lgan qiziqish esa ushbu soha vakillari tomonidan yuqori darada ekanligi ham sir emas.

Biologiya va ingliz tilini integratsiyalashning asosiy metodlaridan biri — CLIL (Content and Language Integrated Learning) yondashuvidir. CLIL (Mazmun va til integratsiyalashgan o'qitish) - kontent va tilni birlashtirgan o'qitish metodikasi bo'lib, u o'quvchilarga fanlarni ingliz tilida o'rganish orqali til ko'nikmalarini samarali rivojlantirish imkonini beradi (Coyle et al., 2010). Biologiya fanining murakkab atamalarini ingliz tilida o'rganish nafaqat so'z boyligini oshiradi, balki og'zaki ifoda madaniyatini ham shakllantiradi (Dalton-Puffer, 2011). Bu metodika yordamida o'quvchilar biologiya fanining mavzularini ingliz tilida o'rganib, yangi so'zlarni va atamalarni mustahkamlaydi. Shu bilan birga, og'zaki muloqot vazifalari (masalan, muhokamalar, taqdimotlar, guruh ishlari) o'quvchilarda kommunikativ kompetensiyani rivojlantirishga xizmat qiladi.

Integratsiyalashgan darslarda o'quvchilar biologik jarayonlarni ingliz tilida ifodalash, savol-javob qilish va o'z fikrlarini ishonch bilan bayon etishni o'rganadilar. Bu nafaqat til o'rganish motivatsiyasini oshiradi, balki o'quvchilarni ilmiy fikrlashga va mustaqil izlanishga undaydi. Biologiya va ingliz tilini birlashtirgan darslar o'quvchilarga mavzuni yaxshi tushunishga yordam beradi, shu bilan birga o'z fikrini erkin ifoda etish ko'nikmalarini rivojlantiradi (Marsh, 2002). O'quvchilar guruh ishlari, taqdimotlar va muhokamalar orqali biologik jarayonlarni ingliz tilida

tushuntirishni o'rganadilar, bu esa ularning kommunikativ kompetensiyasini oshiradi (Lyster & Saito, 2010).

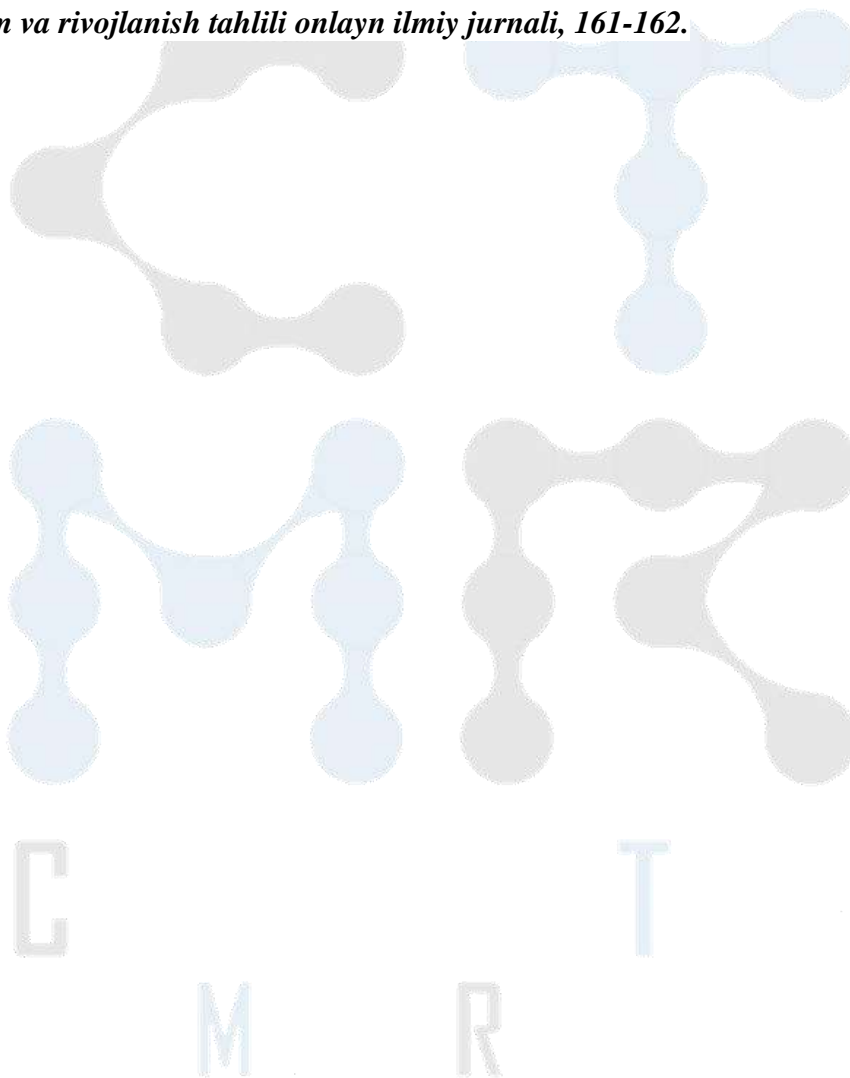
Bundan tashqari, biologiya fanining tabiati va atamalarining murakkabligi o'quvchilarda ingliz tilida o'z fikrini aniqlik bilan ifodalashni talab qiladi, bu esa talaffuz, intonatsiya va so'z boyligini rivojlantirishga yordam beradi. O'qituvchilar interfaol usullar — rolli o'yinlar, loyihalar, laboratoriya ishlarini ingliz tilida olib borish orqali o'quvchilarni faol nutqqa jalb qilishlari mumkin. Rol o'yinlari, loyihalar va laboratoriya ishlarini ingliz tilida o'tkazish o'quvchilarni faol nutqqa jalb qiladi va talaffuz hamda intonatsiya rivojlanishiga xizmat qiladi (Turnbull & Dailey-O'Cain, 2009). Bu usullar o'quvchilarning tilga bo'lgan qiziqishini oshiradi va mustaqil fikrlashni rag'batlantiradi (Cammarata & Tedick, 2012).

Xulosa qilib aytganda, biologiya va ingliz tilini integratsiyalash orqali og'zaki muloqotni rivojlantirish nafaqat til ko'nikmalarini oshirish, balki o'quvchilarning fanlarga bo'lgan qiziqishini kuchaytirishga yordam beradi. CLIL (Mazmun va til integratsiyalashgan o'qitish) metodikasi va interfaol dars usullari o'quvchilarning kommunikativ kompetensiyasini mustahkamlaydi, ularni mustaqil va ijodiy fikrlashga yo'naltiradi hamda global ta'lim muhitida muvaffaqiyatga erishish imkonini beradi. Shu sababli, ta'lim jarayonida biologiya va ingliz tilini birlashtirgan yondashuvni keng joriy etish zarur.

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Annotatsiya

Alisher Navoiy Sharq adabiyoti tarixida o'zining ulkan badiiy merosi, keng ilmiy qarashlari va falsafiy tafakkuri bilan yuksak o'rin egallagan ulug' siymolardan biridir. Uning ijodi nafaqat turkiy tilda, balki forsiy tilda ham keng qamrovli bo'lib, bu ikki til va ikki madaniyatning uyg'unlashuvi jarayonida yuksak namunaga aylandi. Navoiy forsiy she'riyatida "Foniy" taxallusi bilan tanilgan va bu nom ostida yozgan asarlari Sharq adabiyotining ajralmas qismi sifatida tarixga kirdi. Annotatsiyada Navoiy-Foniy ijodining forsiy adabiyotdagi tutgan o'rni, uning she'rlarida ifodalangan falsafiy g'oyalar, tasavvufiy qarashlar, insonparvarlik tamoyillari hamda ikki til – turkiy va forsiy til o'rtasidagi badiiy-ijodiy bog'liqlik tahlil qilinadi. Navoiy forsiy she'rlarida an'anaviy poetik shakllardan foydalangan bo'lsa-da, ularga o'ziga xos mazmuniy yangilik kiritgan, ma'naviy-ruhiy tazyiqlarni chuqur aks ettirgan. Bu jihatdan, uning forsiyda yaratilgan asarlari nafaqat turkiy adabiyot bilan uyg'unlashuv mahsuli, balki mustaqil ijodiy qirralarni ham ko'rsatadi. Mazkur tezisda Navoiyning "Foniy" sifatidagi adabiy faoliyati Sharq she'riyatidagi ikki tillilik an'anasi bilan bog'liq holda keng ilmiy izohlanadi. Shuningdek, uning forsiy adabiyotdagi o'rni turli manbalarda qayd etilgan ilmiy tadqiqotlar asosida mustahkamlanadi va bu masalaning o'zbek adabiy merosi uchun ahamiyati yoritiladi.

Kalit so'zlar: Navoiy, Foniy, forsiy she'riyat, tasavvuf, ikki tillilik, Sharq adabiyoti, falsafa, badiiy meros.

Abstract

Alisher Navoi is one of the great figures who occupies a high place in the history of Eastern literature with his vast artistic heritage, broad scientific views and philosophical thinking. His work is extensive not only in the Turkic language, but also in the Persian language, becoming a high example in the process of harmonizing these two languages and two cultures. Navoi was known in Persian poetry under the pseudonym "Foniy", and the works he wrote under this name went down in history as an integral part of Eastern literature. The annotation analyzes the place of Navoi-Foniy's work in Persian literature, the philosophical ideas, mystical views, humanistic principles expressed in his poems, and the artistic and creative connection between the two languages - Turkish and Persian. Although Navoi used traditional poetic forms in his Persian poems, he introduced his own substantive innovation into them, deeply reflecting spiritual and spiritual pressures. In this regard, his works created in Persian are not only the product of harmonization with Turkic literature, but also show independent creative aspects. In this thesis, Navoi's literary activity as "Foniy" is widely scientifically interpreted in connection with the bilingual tradition in Eastern poetry. Also, his place in Persian literature is strengthened on the basis of scientific research noted in various sources, and the importance of this issue for the Uzbek literary heritage is highlighted.

Keywords: Navoi, Faniy, Persian poetry, Sufism, bilingualism, Eastern literature, philosophy, artistic heritage.

Kirish. Alisher Navoiy (1441–1501) – buyuk mutafakkir, davlat arbobi, shoir va adabiyot nazariyotchisi sifatida jahon madaniy merosida alohida o'rin tutadi. U o'zining butun ijodiy faoliyati davomida turkiy tilda asarlar yozib, bu tilni adabiy maqomga ko'targan, shu bilan birga,

forsiy tilda ham salmoqli adabiy meros yaratgan. XV asr Markaziy Osiyosida forsiy til madaniyat va ilm-fan tiliga aylangan davrda turkiy va forsiy tilning birga qo'llanilishi keng tarqalgan edi. Ana shu davrda Navoiy o'zining ikki tilli ijodi bilan adabiy maktab yaratdi.

Forsiy til Navoiy uchun nafaqat ilm va diplomatiya tili, balki poetik tajriba maydoni bo'ldi. U bu tilni mukammal egallagan va "Foniy" taxallusi ostida asarlar yaratgan. "Foniy" so'zi arabcha "foniy – o'tkinchi, yo'q bo'luvchi" ma'nosini anglatib, tasavvufiy ma'naviyatga uyg'un holda inson hayotining o'tkinchiligi, ruhiy kamolotning zarurligini bildiradi. Bu taxallusning tanlanishi shoirning tasavvufiy qarashlarini chuqur ifodalaydi.

Navoiy ijodida forsiy she'riyatning o'rni juda muhim. U forsiyda yozgan asarlarida Sharq she'riyatining yirik namoyandalari – Sa'diy, Hofiz, Abdurahmon Jomiy an'alarini o'zlashtiribgina qolmay, balki ularni yangi mazmun bilan boyitdi. Shu tariqa, Navoiy forsiy she'riyatida o'z ovozi yaratdi va uni tarixiy merosning muhim qismiga aylantirdi.

Kirish qismida ta'kidlash lozimki, Navoiyning forsiyda ijod qilishi uning turkiy tilda yozgan asarlariga qarshi qo'yilmaydi, aksincha, ular bir-birini to'ldiradi. Forsiy tilda bitilgan asarlar Navoiyning ikki madaniyatni birlashtirishdagi ulkan xizmatlarini ko'rsatadi. Shuning uchun ham Navoiyning forsiy ijodini alohida o'rganish, undagi falsafiy, ma'naviy va estetik qirralarni yoritish bugungi adabiy tadqiqotlarning dolzarb masalalaridan biridir.

Asosiy qism. Navoiyning forsiy she'riyati, asosan, g'azallar, qasida va ruboiylardan tashkil topadi. Bu asarlarda tasavvufiy falsafa, insonning ma'naviy kamoloti, ilohiy ishq va haqiqat izlash g'oyalari asosiy o'rinda turadi.

Navoiyning "Foniy" taxallusi ostidagi g'azallari Hofiz Sheroziy va Abdurahmon Jomiy an'alariga yaqin turadi. Biroq u o'zining o'ziga xos uslubini ham yaratgan. U g'azallarda inson qalbidagi iztirob, dunyo hayotining o'tkinchiligi, ruhiy ozodlik masalalarini o'rta qo'yadi. Unga ko'ra, insonning haqiqiy baxti moddiy boylik yoki mansabda emas, balki ma'naviy kamolot va ilohiy muhabbatga yetishda namoyon bo'ladi.

Navoiy forsiy she'rlarida tasavvufiy ramzlardan keng foydalangan. Masalan, "mey" – ilohiy ma'rifat, "mayxona" – tasavvufiy maktab, "yor" – Haq, "sabo" – ruhiy xushxabar kabi ramzlar uning she'riyatida ko'p uchraydi. Bu ramzlar orqali shoir inson qalbini poklash, nafsni yengish va Haqqa yaqinlashish g'oyalarini targ'ib qiladi.

Navoiyning forsiy qasidalarida ham siyosiy va falsafiy mazmun kuchli. U qasidalarida hukmdorlarga murojaat qilib, adolat, ilm-fan rivoji, insonparvarlik tamoyillarini ulug'laydi. Shu orqali u o'z davrining ijtimoiy-siyosiy muhitini badiiy tarzda aks ettiradi.

Ilmiy tadqiqotlarda ta'kidlanishicha, Navoiyning forsiy ijodi turkiy va forsiy adabiyotlar o'rtasida mustahkam aloqadorlikni ta'minlagan. U ikki tilda ham yuksak badiiy namunalar yaratish orqali Sharq adabiyotida bilingvizm an'anasini mustahkamladi. Bu, o'z navbatida, Navoiy ijodining jahon adabiyoti miqyosida ham qadrlanishiga sabab bo'ldi.

Asosiy xulosa shuki, Navoiyning forsiy she'riyati mustaqil adabiy fenomen bo'lib, uning turkiy asarlarini to'ldiruvchi, ularning ma'naviy mazmunini yanada boyituvchi omil sifatida ko'rildi.

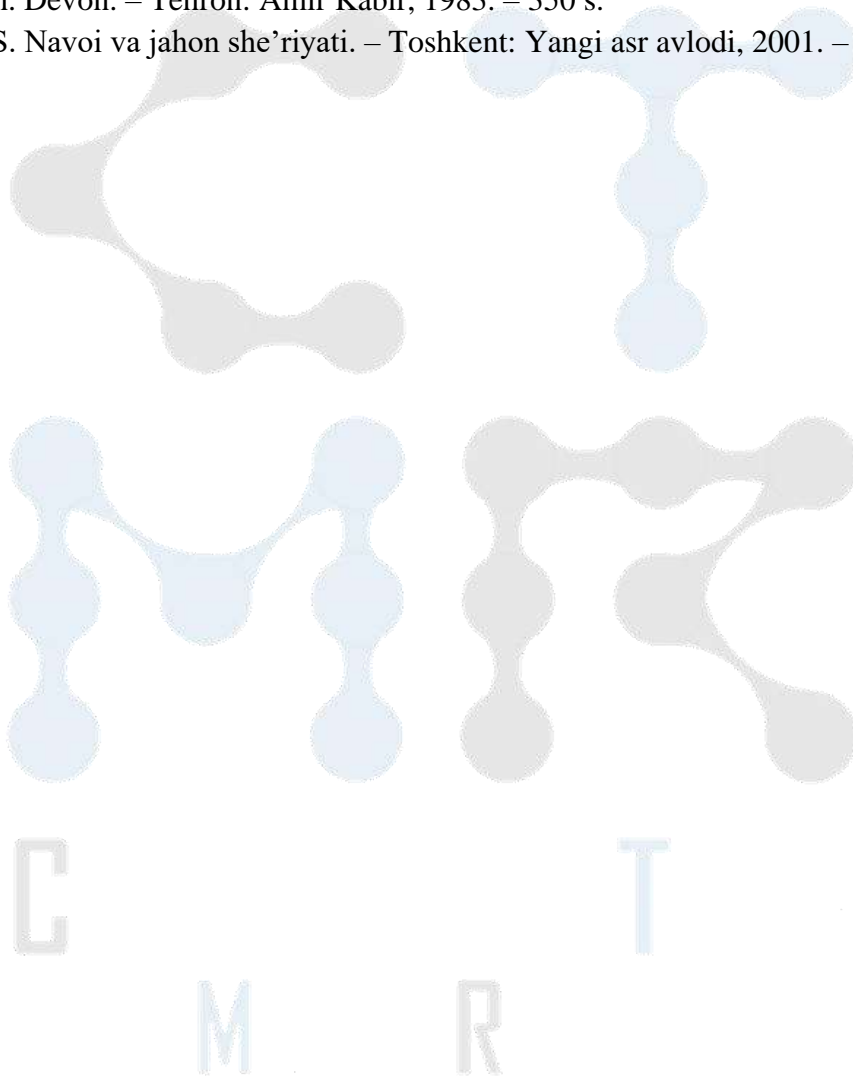
Xulosa. Alisher Navoiy forsiy she'riyatda "Foniy" sifatida katta meros qoldirdi. U forsiy she'riyat an'alarini chuqur o'zlashtirib, ularga o'z falsafiy qarashlarini singdirdi. Uning forsiy g'azallari inson qalbining ruhiy tazyiqlarini aks ettiruvchi, tasavvufiy ramzlar bilan boyitilgan asarlardir. U bu she'rlar orqali insoniyatni nafsdan voz kechishga, ruhiy poklikka, ilohiy ishqqa chorlaydi.

Xulosa qilib aytganda, Navoiyning forsiy she'riyati uning ikki til – turkiy va forsiy tilda ijod qilishdagi noyob mahoratini yaqqol namoyish etadi. Bu ikki tilda yaratilgan asarlar turli xalqlar adabiyoti va madaniyatini yaqinlashtirdi, ularning o'zaro boyishini ta'minladi.

Bugungi kunda Navoiyning forsiy ijodini o'rganish Sharq adabiyotidagi bilingvizm hodisasini chuqur anglash, turkiy va forsiy madaniyatlar aloqalarini ilmiy asoslash uchun muhimdir. Shuningdek, bu meros o'zbek adabiyoti va umuman jahon adabiy merosi uchun bebaho xazinadir.

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STRATEGIES FOR ENHANCING REFLECTIVE PRACTICE AMONG PRESCHOOL EDUCATORS

МАКТАБГАЧА ТАРБИЯЧИЛАР О‘RTASIDA REFLEKTIV AMALIYOTNI
KUCHAYTIRISH STRATEGIYALARI
СТРАТЕГИИ РАЗВИТИЯ РЕФЛЕКСИВНОЙ ПРАКТИКИ СРЕДИ ВОСПИТАТЕЛЕЙ
ДОШКОЛЬНЫХ УЧРЕЖДЕНИЙ

Xolmatova Fotima Berdiqul qizi.

31-umumiy o‘rta ta’lim maktabi ingliz tili o‘qituvchisi

ABSTRACT. Professional reflection is a key element of teacher development, particularly in early childhood education, where educators must continually adapt to the needs of young learners. This article examines effective means of fostering professional reflection among preschool teachers, drawing on a thematic review of recent literature. The findings highlight four major strategies: reflective journals and portfolios, peer collaboration and mentoring, video-based self-analysis, and professional development workshops. These approaches support teachers in critically evaluating their practices, improving instructional decisions, and enhancing the overall quality of early childhood education. The study also emphasizes the importance of institutional support and a reflective culture in sustaining meaningful teacher development. Recommendations are provided for integrating reflective practices into preschool education systems to ensure continuous improvement and professional growth.

KEYWORDS: professional reflection, preschool education, teacher development, reflective practice, early childhood educators

ANNOTATSIYA. Kasbiy fikrlash o‘qituvchilarni rivojlantirishning asosiy elementi bo‘lib, ayniqsa erta bolalar ta‘limida o‘qituvchilar doimiy ravishda yosh o‘quvchilarning ehtiyojlariga moslashishi kerak. Ushbu maqolada maktabgacha ta‘lim muassasalari o‘qituvchilari o‘rtasida professional fikrlashni rivojlantirishning samarali vositalari ko‘rib chiqiladi, keltirilgan fikrlar so‘nggi adabiyotlarning tematik sharhiga asoslanadi. Topilmalar to‘rtta asosiy strategiyani ta‘kidlaydi: aks ettiruvchi jurnallar va portfellar, tengdoshlar bilan hamkorlik va murabbiylik, videoga asoslangan o‘z-o‘zini tahlil qilish va kasbiy rivojlanish seminarlari. Ushbu yondashuvlar o‘qituvchilarga o‘z amaliyotlarini tanqidiy baholashda, o‘quv qarorlarini takomillashtirishda va erta bolalik ta‘limining umumiy sifatini oshirishda yordam beradi. Tadqiqot shuningdek, o‘qituvchilarning mazmunli rivojlanishini ta‘minlashda institutsional qo‘llab-quvvatlash va aks ettiruvchi madaniyat muhimligini ko‘rsatib beradi. Doimiy takomillashtirish va kasbiy o‘shishni ta‘minlash uchun maktabgacha ta‘lim tizimlariga aks ettirish amaliyotini integratsiya qilish bo‘yicha tavsiyalar berilgan.

KALIT SO‘ZLAR: kasbiy aks ettirish, maktabgacha ta‘lim, o‘qituvchining rivojlanishi, refleksiv amaliyot, erta bolalik tarbiyachilari

АННОТАЦИЯ. Профессиональная рефлексия является ключевым элементом развития педагогов, особенно в сфере дошкольного образования, где педагоги должны постоянно адаптироваться к потребностям юных учеников. В данной статье рассматриваются эффективные способы развития профессиональной рефлексии среди педагогов дошкольных учреждений, основанные на тематическом обзоре современной литературы. Результаты исследования выделяют четыре основные стратегии: дневники и портфолио рефлексии, сотрудничество и наставничество со сверстниками, самоанализ на основе

видеоматериалов и семинары по профессиональному развитию. Эти подходы помогают педагогам критически оценивать свою практику, совершенствовать учебные решения и повышать общее качество дошкольного образования. В исследовании также подчеркивается важность институциональной поддержки и культуры рефлексии для поддержания осмысленного развития педагогов. Даны рекомендации по интеграции рефлексивных практик в системы дошкольного образования для обеспечения непрерывного совершенствования и профессионального роста.

КЛЮЧЕВЫЕ СЛОВА: профессиональная рефлексия, дошкольное образование, развитие педагогов, рефлексивная практика, воспитатели раннего детства

INTRODUCTION. Professional reflection is increasingly recognized as a critical component of teacher development, especially in the field of early childhood education. For preschool teachers, reflection plays a key role in understanding their pedagogical choices, managing complex classroom dynamics, and adapting to the evolving needs of young children [1]. In this context, developing the capacity for professional reflection is not merely an individual skill but a core element of continuous professional growth and quality improvement in early education settings [2].

Preschool education lays the foundation for lifelong learning and development. Therefore, the professional competence of preschool teachers—including their ability to critically evaluate their own practices—is essential for delivering high-quality educational experiences [3]. However, reflection does not develop spontaneously; it requires structured support, tools, and conducive environments that encourage deep thinking, self-assessment, and dialogue with peers [4].

This article aims to explore effective means of developing professional reflection among preschool teachers. It identifies practical tools, institutional mechanisms, and pedagogical strategies that have been proven to foster reflective practice and improve teaching effectiveness in early childhood education.

METHODS. This study employed a qualitative review of recent literature focusing on professional reflection in preschool education. Sources were selected from databases such as ERIC, Scopus, and ScienceDirect, using keywords including “reflective teaching,” “preschool teacher development,” “early childhood reflection,” and “reflective practice in education.”

Inclusion criteria for literature selection were as follows:

- The publication was peer-reviewed and published within the last 15 years;
- The study involved early childhood educators (teachers of children aged 3–6);
- The work provided evidence or discussion of tools or methods used to develop professional reflection.

Approximately 30 scholarly articles and case studies were reviewed. The findings were thematically categorized based on the means or strategies they presented for fostering reflection in preschool settings.

RESULTS. The analysis revealed four primary means of developing professional reflection among preschool teachers:

1. Reflective Journals and Portfolios

One of the most widely used tools to foster reflection is the teacher’s journal or professional portfolio. These allow educators to record observations, analyze their own classroom behaviors,

and set goals for future improvement [5]. The act of writing supports deeper cognitive processing and helps teachers make connections between theory and practice [6].

2. Peer Collaboration and Mentorship

Structured dialogue with colleagues, such as in peer coaching or mentoring programs, enables teachers to reflect through discussion, feedback, and shared experiences [7]. Studies have shown that collaborative reflection encourages greater self-awareness and professional confidence [8].

3. Video Observation and Self-Analysis

Teachers who engage in video-assisted reflection by recording and analyzing their own teaching practices report improved ability to identify strengths and areas for growth [9]. This method allows for objective, concrete evidence to support reflective thinking, and often results in enhanced classroom performance [10].

4. Professional Development Workshops and Seminars

Participating in ongoing professional learning opportunities encourages reflective thinking by exposing teachers to new ideas, theoretical frameworks, and practical techniques [11]. Workshops that include interactive activities, such as case discussions and scenario analysis, are especially effective in promoting professional introspection [12].

These means, while diverse, share a common emphasis on self-evaluation, dialogic learning, and practical application. Importantly, institutional support and leadership play a significant role in embedding reflection into the daily culture of preschool education [13].

DISCUSSION. The reviewed literature highlights that the development of professional reflection among preschool teachers is most effective when multiple strategies are integrated into a supportive institutional framework. Reflection is not a one-time event but an ongoing process that requires time, guidance, and cultural acceptance within educational settings [14].

The findings underscore the importance of combining individual tools (e.g., journals and video analysis) with social processes (e.g., peer mentoring and collaborative workshops). Reflective capacity is strengthened when teachers are encouraged to think critically about their own teaching and are supported by a reflective teaching culture [15].

Barriers to effective reflection may include time constraints, lack of training, or an unsupportive organizational climate. To overcome these challenges, school leaders must provide protected time for reflection, incorporate reflective practices into teacher evaluation systems, and foster a culture of open dialogue and trust [16].

Moreover, teacher training institutions should incorporate reflective practice as a core component of initial education programs. Beginning teachers who are introduced early to the value of reflection are more likely to continue these practices throughout their careers [17].

CONCLUSION. Developing professional reflection in preschool teachers is essential for improving teaching quality and supporting young learners' development. Reflective journals, peer collaboration, video analysis, and professional development opportunities all serve as effective means of fostering reflective practice. However, these tools must be supported by institutional commitment and a culture that values continuous learning.

To ensure the long-term sustainability of reflective practices, it is recommended that educational policy include reflection as a key standard in teacher performance frameworks, and that ongoing teacher development programs systematically incorporate reflective components.

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XAYRIDDIN SULTON QISSALARIDA BADIY TASVIRNING ESTETIK
IMKONIYATLARI

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ANNOTATSIYA

Ushbu tezisdagi Xayriddin Sulton qissalarida badiiy tasvir vositalarining estetik imkoniyatlari tahlil qilinadi. Adib ijodida metafora, timsol, epitet, ichki monolog, dialog hamda tabiat tasvirlari obrazning ruhiy qatlamlarini ochishda muhim ahamiyat kasb etishi ko‘rsatiladi. Ayniqsa peyzaj tasviri voqelikni badiiy-estetik qabul qilish, qahramon kechinmalarini bilvosita yoritish, psixologik paralellizm va kontrast asosida inson ruhiyati bilan uyg‘unlikda ifodalanishi bilan ajralib turadi. “Yozning yolg‘iz yodgori” va “Ko‘ngil ozodadur” qissalarida peyzaj obrazlarining semantik yuklamasi, dramatik dinamikasi hamda ruhiy tahlil bilan uzviy bog‘liqligi ko‘rsatib beriladi. Shuningdek, dialog, kinoya va ramziy obrazlar vositasida insoniy kechinmalar falsafiy-estetik talqinda namoyon bo‘lishi tahlil etiladi. Gulxaniy obrazining poetik talqini, intertekstual unsurlar, ironik-lirik ohang va metaforik paralellizmlar muallifning individual uslubini belgilovchi asosiy omillardan biri sifatida o‘rganiladi. Xayriddin Sulton qissalarida badiiy tasvir vositalari faqat estetik bezak emas, balki konseptual mazmuni yorituvchi, ruhiy-falsafiy qatlamlarni ochuvchi vosita sifatida namoyon bo‘lishi ta’kidlanadi.

KALIT SO‘ZLAR:

Qissa, badiiy tasvir, peyzaj, psixologik paralellizm, metafora, estetik imkoniyat
Adabiy matnda poetik tuzilmaning shakllanishi, asosan, unda qo‘llanilgan badiiy tasvir vositalarining funksional vazifasi va estetik imkoniyatlariga bog‘liq. Obrazning badiiy kuchi, uning ta’sirchanligi va estetik mazmuni ko‘p jihatdan aynan tasvir vositalarining ifoda imkoniyatlari bilan chambarchas bog‘liq. Metafora, timsol, epitet, ichki monolog, dialog, rang va tabiat tasvirlari – bular badiiy tafakkurning konkretlashgan shakli, muallif dunyoqarashining poetik aksidir. Adabiyotshunoslikda ushbu vositalar orqali faqat tasvir emas, balki ong jarayonlari, hissiy holatlar, ruhiy kechinmalar badiiy ifoda topishi ta’kidlanadi. Shuning uchun ham badiiy obraz – bu ko‘rinadigan yoki faqat gapiriladigan emas, balki seziladigan va anglanuvchi qatlamlarga ega murakkab tuzilmadir. Xayriddin Sulton ijodida ayni vositalar orqali insoniy ruhiyat, ijtimoiy muhit va falsafiy qarashlar o‘zaro uyg‘unlashgan holda gavdalanadi. Uning qissalari psixologik chuqurligi, ma’naviy qatlamlarga boyligi bilan ajralib turadi va buni, eng avvalo, badiiy ifoda uslubining mukammalligi ta’minlaydi.

Badiiy asardagi jonli va jonsiz tabiat tasviri qadimdan “peyzaj” atamasi bilan nomlangan. Har qanday asarda tabiat manzaralari uchramasligi mumkin, ammo ular mavjud bo‘lishi bilan muayyan badiiy vazifalarni bajaradi va bu holat adabiyotda deyarli umumqabul qilingan qonuniyatga aylangan. Peyzajning dastlabki va eng sodda vazifasi — harakat makonini belgilab berishdir. Biroq bir qarashda oddiydek tuyuladigan ushbu funksiyaning o‘quvchiga ko‘rsatadigan estetik ta’sirini e’tiborsiz qoldirish imkonsizdir. Aynan peyzaj orqali o‘quvchi hodisa yoki harakatning qayerda va qachon yuz berayotganini tasavvur qilishda qulaylikka ega bo‘ladi. Zero, ba’zi badiiy asarlar uchun harakat makoni muhim g‘oyaviy-estetik yuklamaga ega bo‘lishi mumkin. Masalan, Abdulla Qodiriy “O‘tkan kunlar” romanida Otabekning umr yo‘li, taqdir yo‘li bilan Toshkent va Marg‘ilon o‘rtasida uzoq muddat qatnab yurganini tasvirlar ekan, oshiq

yigitning ruhiy holatini, ichki kechinmalarini ifodalashda tabiat tasviriga bir necha bor murojaat qilganini kuzatish mumkin.

Yozuvchilar o'z badiiy qahramonlarining ruhiy olamiga oid kechinmalarini ifodalash jarayonida ko'pincha tabiat tasviriga murojaat qiladilar. Asarlarda tabiat manzarasi ba'zida qahramonning jo'shqin ruhiy holatiga mutanosib — ya'ni psixologik paralellizm asosida berilsa, ba'zida esa unga zid — kontrast asosida ifodalanadi. Bu xususiyat jahon adabiyotida keng qo'llanilgan estetik usullardan biri bo'lib, o'zbek adabiyoti an'alarida ham mustahkam o'rin egallagan. Ko'plab o'zbek adiblari qahramonlarning his-tuyg'ularga to'la ichki kechinmalarini aks ettirishda aynan tabiat tasviridan samarali vosita sifatida foydalanib kelganlar.

Tabiat tasvirining yana bir muhim badiiy funksiyasi uning psixologik yuklamasi bilan bog'liqdir. Ma'lumki, qadim adabiyotdan beri tabiatdagi turli holatlar (masalan, quyosh – quvonch, yomg'ir – qayg'u, tuman – noaniqlik va h.k.) inson kechinmalari bilan qiyosiy asosda talqin qilingan. Shu boisdan, adabiyotda ruhiy holatni bevosita emas, balki bilvosita ifodalashda peyzaj detallaridan foydalanish an'anaga aylangan. Bunday hollarda qahramonning ichki holati to'g'ridan-to'g'ri emas, uni o'rab turgan tabiat manzarasi orqali ifoda etiladi.

Ushbu uslub, ya'ni psixologik paralellizm va kontrast asosida peyzaj vositasida ruhiy kechinmalarni ifodalash, adabiyot taraqqiyoti bilan yanada sayqal topdi. Endilikda badiiy asarlarda inson qalbining eng nozik harakatlari, to'g'ridan-to'g'ri tasviriga murojaat qilinmasdan, tabiatning muayyan holatlari bilan bog'liq holda, bilvosita tarzda ifoda etilishi orqali badiiy obrazning chuqur psixologik tahliliga erishilmoqda.

“Yozning yolg'iz yodgori” qissasida tabiat tasviri voqelikni badiiy-estetik qabul qilishda muhim poetik funksiyaga ega bo'lib, u muallifning dunyoqarashi, obrazlar tizimidagi psixologik holatlarning anglanish mezoni sifatida namoyon bo'ladi. Tabiat holatlarining tasviri orqali muallif qahramonning ruhiy-ma'naviy kechinmalariga ishora qiladi, bu esa o'quvchiga personaj ruhiyatini bilvosita idrok etish imkonini beradi. Shu jihatdan tabiat tasviri o'ziga xos baholash mezoniga aylangan, qahramonning mavjud dunyoga daxldorligi yoki begonaligi haqidagi xulosalarni shakllantirishga xizmat qilgan. Masalan:

“Atrof g'ira-shira. Ko'm-ko'k bog'lar, olisda xo'mraygan tog'lar jimjit. Soydagi qurbaqalarning ham negadir uni uchgan, kuni kecha bahaybat yong'oq tepasida charx urib yurgan qushlar bugun ne sababdandir chug'urlamaydi, nafis yaproqlar shukuh bilan shovillamaydi. Faqat qaydadir yozning yolg'iz yodgori – chigirtkalar bezovta chirqiraydi...”¹

Ushbu parcha Adash Karvon ruhiyatida rafiqasi Oynisaning vafoti arafasida sodir bo'layotgan keskin ichki o'zgarishlarni tasvirlashda xizmat qiladi. Tabiatdagi noan'anaviy sokinlik va rangsiz manzara qahramon ruhidagi beqarorlik, xavotir va bo'shliq bilan mushtaraklik kasb etadi. Qissa davomida tabiat bilan qahramon orasidagi bog'liqlik barqaror semantik yo'nalishda shakllanadi: dastlab peyzaj voqea rivoji uchun fon vazifasini o'tagan bo'lsa, keyinchalik qahramonning dunyo bilan ziddiyatga borishi kuchaygan sari, tabiat ham uning nigohida dushmanona tus oladi.

Kecha o'z yaqinlari – rafiqasi Oynisa va o'g'li Nasibbek bilan barobar hayot kechirgan muhit bugun qahramon ongida butunlay boshqacha, begona va hatto dushman sifatida talqin qilinadi. Shu sababli osmon, daraxtlar va o't-o'lan endi qahramon uchun avvalgi iliq va totuv fazoni emas, balki uni yolg'izlik va izzat girdobiga tortayotgan dunyoning timsolini ifodalaydi. U ongida mavjud borliq haqidagi tasavvurlar, u e'tiqod qilgan axloqiy-estetik qadriyatlar inqirozga uchraydi.

¹ Ko'rsatilgan manba. -b. 163

Qissada peyzaj tasvirlari dramatik yoʻnalishda dinamik tarzda shakllanadi va ichki kompozitsion qatlamlar bilan boyitilgan. Har bir tabiat lavhasi oʻziga xos semantik yukni oʻzida mujassam etgan boʻlib, ular sxematik yondashuvdan xoli va muallif tomonidan stilistik jihatdan yetuk ishlangan. Tabiat manzaralari oʻz funksional vazifasi bilan cheklanmasdan, ayni paytda qahramonlar uchun tayanch obrazlarga aylanadi. Bu esa ularning psixologik holatini bevosita emas, balki bilvosita shaklda aks ettirish imkoniyatini yaratadi.

Xayriddin Sulton *“Koʻngil ozodadur”* qissasida dialog, peyzaj, kinoya va ruhiy tasvirlar orqali obrazlarning ichki dunyosi hamda xarakteriga xos murakkab jihatlarni ochib beradi. Asar boshlanishi muallif ichki holatini tashqi tabiat manzarasi bilan uygʻunlashtirish orqali yaratiladi: *“Oʻsha yili kuz shunday tiniq, shunday maʼyus kelgan ediki, beixtiyor odamning yigʻlagisi kelardi”*². Bu yerda epitetlar (*“tiniq”*, *“maʼyus”*) muallif ruhiyatini bevosita tabiatga koʻchiradi. Psixologik parallelizm hodisasi yuzaga keladi – kuzning mayusligi muallifning iztirob va yolgʻizlik tuygʻulariga uygʻun holda tasvirlanadi. Beixtiyor yigʻlash istagi esa emotsional-metaforik kuchga ega.

*“Epitet (yun. epitheton – ilova etilgan, izohlovchi) – badiiy sifatlash; narsa-hodisaning belgisini obrazli ifodalovchi badiiy aniqlovchi. Til nuqtayi nazaridan qaralsa, epitet hamisha aniqlovchi vazifasida keladi, lekin oddiy aniqlovchidan farqli ravishda, badiiy funksiyani bajaradi: agar oddiy aniqlovchi narsa-hodisani bir turdagi boshqa predmetlardan ajratsa (yolgʻiz ayol), epitet unga xos muayyan belgini ajratib-taʼkidlab (“Yobondagi yolgʻiz daraxt...”) koʻrsatadi. Koʻp hollarda epitet belgini koʻchma maʼno orqali ifodalaydi va bu holda metaforik epitet (qiyoslang: xira oyna – xira koʻngil) deb yuritiladi”*³.

Muallifning oʻz-oʻziga bergan umid va uni *“ravonda oʻtirish”* bilan bogʻlash holati: *“...xomxayollar bilan shu ravonda oʻzimni aldab necha kuz-u necha bahorni besamar oʻtkazib yuborgan boʻlsam-da...”*, bu ichki monolog unsuri boʻlib, u psixologik realizm uslubida yozilgan. *“Necha kuz-u necha bahor”* takroriy strukturasi vaqtning behuda oʻtishini metonimiya tarzida ifodalaydi.

Mazkur nuqtada asarning badiiy ruhini va mazmuniy yoʻnalishini shakllantirishda muhim oʻrin tutuvchi ilk jumla poetikasi masalasiga eʼtibor qaratish maqsadga muvofiqdir. Adabiyotshunos A. Rasulov quyidagicha fikr bildirdi: *“Yozuvchi birinchi jumlaning qogʻozga tushirishga uzoq tayyorgarlik koʻradi. Birinchi jumla – uslubning yarq etib koʻrinishi, yozuvchi kayfiyati; kitobxonni sinab koʻrishi, ijodkor va kitobxon koʻzining koʻziga tushishidir”*⁴. Xayriddin Sultonning *“Koʻngil ozodadur”* qissasi ham ana shu poetik tamoyilning yorqin namunalariidan biridir. Asar *“Oʻsha yili kuz shunday tiniq, shunday maʼyus kelgan ediki, beixtiyor odamning yigʻlagisi kelardi”* jumlasini bilan boshlanadi. Bu ibora oʻzida ikki muhim badiiy vazifani bajaradi: birinchidan, kuz manzarasi orqali butun qissa ruhini — sokin, ammo ich-ichidan iztirobli kayfiyatni belgilaydi; ikkinchidan, obrazlar dunyosiga kirishda oʻquvchining hissiy tayyorgarligini taʼminlaydi. Muallifning ushbu ilk jumlasini nafaqat tasviriy goʻzallik, balki falsafiy maʼnodagi maʼyuslikni ham oʻzida mujassam etib, qissaning keyingi voqealariga poetik kirish vazifasini ado etadi.

Qissada Muhammad Sharif Gulxaniy obrazining yaratilishi oʻziga xos. U oddiy tarixiy shaxs emas, balki muallifning ruhiy suhbatdoshi sifatida tasvirlanadi:

² Koʻrsatilgan manba. 286-b.

³ Куронов Д. Мамажонов З. Шералиева М. Адабиётшунослик луғати. Тошкент: Akademnashr, 2013. – Б. 369.

⁴ Rasulov A. Badiiylik – bezavol yangilik. Ilmiy-adabiy maqolalar, talqinlar, etyudlar. – T.: Sharq, 2007. 298-b.

“...qay bir zamonlarda yashab o‘tgan Muhammad Sharif Gulxaniy degan rindnafas bir odam ham endi menga otamdek aziz bo‘lib qolgan...”⁵. Bu yerda tashxis (personifikatsiya) kuchli – tarixiy shaxs go‘yoki jonlanadi, ijodiy jarayonda hamrohga aylanadi. “Otamdek aziz” o‘xshatishida esa ruhiy yaqinlik va ustozlik timsoli mujassam.

Muallif bilan Gulxaniy o‘rtasidagi so‘z o‘yinlari matnning ironik-lirik ohangini kuchaytiradi: “...g‘ulomligim chin bo‘lmasa, sizning etagingizdan tutarmidim?”. Bu o‘rinlarda maqol va matallar matnga milliy ruh bag‘ishlaydi, hamda Gulxaniy obrazining hazilkash, donishmandona qirrasini ochadi. Sitata va intertekstual elementlar asarning badiiy qatlamini chuqurlashtiradi. Gulxan atrofi tasviri falsafiy xotira ohangida: “Men mana shunday gulxan yonida o‘ltirishni va shu holda choy ichishni juda yaxshi ko‘raman...”. Bu simvolik obraz – gulxan ijodiy ruhning, ichki ilhomning timsoli. Atrofidagi shoirlar (*Mahzub, Majzub, Muntazir*) esa tasavvufona do‘stlik va ruhiy hamjihatlik ramzidir.

Muhammad Sharif obrazining “ozg‘in, zahil yuzlarida qayg‘u ko‘lankasi” tasviri esa psixologik portret namunasi bo‘lib, unda tashqi belgilar orqali ichki ruhiy holat ochiladi. Alanga va uchqun tasvirlari — “Shu tobda alanga yog‘dusi emas, tolesiz qismat yog‘dusi Muhammad Sharifning siyratini yoritib turgandek” — bu yerda metaforik parallelizm bo‘lib, gulxan yorug‘i bilan inson umrining o‘tkinchi “yorug‘” pallalari qiyos qilinadi.

Parchaning kulminatsion nuqtasi sifatida “...ko‘ngul ozodadur, dunyog‘a arzi ehtiyoj etmaz” bayti keltiriladi. Bu yerda mumtoz lirikaning zuhdona-estetik g‘oyasi qahramonning ichki iztirobiga falsafiy tasalli sifatida paydo bo‘ladi. Lirik qahramon bu satrlarda moddiy ehtiyojdan yuksak turish, ma‘naviy erkinlikni eng oliy qadriyat sifatida talqin etadi.

“Uni ilk daf‘a uchratganimning o‘ziyoq g‘aroyib bir masalga o‘xshardi. So‘nggi bor uchratganim esa chin marsiya bo‘ldi”. Mazkur ikki jumlada muallif badiiy tasvir vositalarining murakkab va mazmun jihatdan zich shaklidan — badiiy qiyos va metaforik poetikadan foydalanadi. “Uni ilk daf‘a uchratganimning o‘ziyoq g‘aroyib bir masalga o‘xshardi” ifodasi tasvirlanayotgan hodisaga bevosita real ta‘rif berishdan ko‘ra, uni o‘quvchi ongida ramziy va falsafiy ma‘noga ega bo‘lgan voqelik sifatida idrok etishga yo‘naltiradi. Bu yerda “masalga o‘xshash” qiyosi obrazni aniq predmetlikdan chiqarib, unga timsoliy kenglik bag‘ishlaydi; natijada uchrashuv oddiy hayotiy hodisa emas, balki ma‘naviy-ruhiy mazmuni bor, tafakkur talab qiluvchi voqea sifatida talqin qilinadi.

Keyingi jumlada — “So‘nggi bor uchratganim esa chin marsiya bo‘ldi” — muallif uchrashuvning yakuniy bosqichini marsiya (motam she‘riyati) tushunchasi bilan qiyoslaydi. Bu yerda marsiya nafaqat ajralish fojeasini, balki qahramon ruhiy olamidagi yo‘qotishning ichki drammatizmini ham ifodalaydi. Bunday uslubiy yechim tasvirga tragedik ohang olib kiradi va voqeani oddiy xotira emas, balki hayotiy-manfaatli bir tajribaning ruhiy cho‘qqisi sifatida talqin etishga xizmat qiladi.

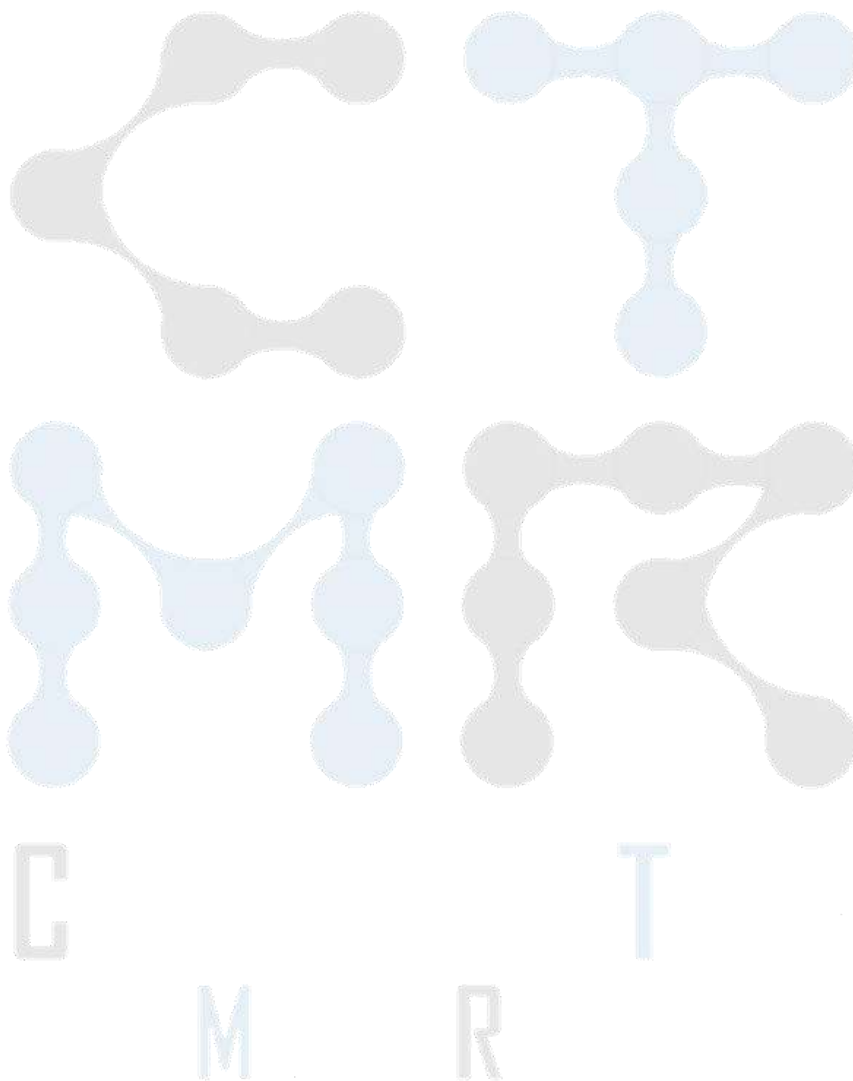
Xayriddin Sulton qissalarida badiiy tasvir vositalari matnning estetik qiymatini oshirish va obrazlarning ruhiy qatlamini yoritishda markaziy ahamiyat kasb etadi. Muallif metafora, taqqoslash va ramz kabi vositalarni individual ijodiy uslub darajasida uyg‘unlashtirib, o‘quvchini voqealar muhitiga chuqur jalb etadi. Tasviriy elementlar nafaqat voqelikni jonlantiradi, balki qahramonlarning ichki kechinmalarini ko‘rsatishda ham semantik yukni boyitadi. Shuningdek, bunday vositalar orqali muallif voqealarga falsafiy ohang beradi, bu esa asar mazmunini ko‘p

⁵ Sulton X. Ko‘ngil ozodadur. Kitobda : “Saodat sohili”. – Toshkent: “Yangi asr avlodi” HMM. 2019, - 86-b.

qatlamli talqin qilish imkonini yaratadi. Shu tariqa, badiiy tasvir vositalari Sulton prozasida nafaqat estetik, balki konseptual birlikni ham ta'minlaydi.

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CAUSES OF CARBON MONOXIDE FORMATION, ITS PROPERTIES AND PREVENTION MEASURES.

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Abstract. This article discusses the causes of carbon monoxide formation, the conditions that lead to it, and recommendations for preventing and eliminating poisoning among citizens from natural and carbon monoxide.

Keywords: Carbon monoxide (CO), natural gas, flash, emergency, burn, coal, wood, carbon monoxide, first aid.

As is known, in our country and around the world, emergencies related to natural gas leaks and flare-ups and the formation of carbon monoxide are still a problem. These situations not only cause significant damage to the economies of countries, but also harm the health of many people and lead to their deaths. For this reason, our state pays great attention to preventing the above emergencies. In particular, one of the important tasks is to widely use modern gas analyzers (detectors) in addition to traditional methods for preventing these emergencies (carrying out explanatory work with the population, not using improvised heating devices, etc.), thereby increasing the effectiveness of ensuring the safety of private and multi-storey buildings, and to reduce the risk of emergencies as much as possible, and in the event of such situations, to preserve people's lives and health, and to reduce the amount of damage and material losses caused to the environment.

In order to prevent emergencies and ensure the safety of the population, all organizations and departments should constantly make their contribution, and realize that conducting scientific research is an urgent issue. An example of this process is the emergency situations associated with natural gas leaks and carbon monoxide, which are still a problem. According to the latest data, the main reasons for these incidents include the following.

The population's lack of sufficient information or inattention about the safety precautions associated with natural gas leaks and carbon monoxide;

The population still uses unsophisticated, undemanding stoves for heating their homes;

Gas stoves and other gas equipment in 65-70% of private and multi-storey apartments of the population of our republic are morally obsolete, and there is no system for detecting natural gas and carbon monoxide in these apartments, detecting and reporting their formation.

Based on the above, the issue of preventing emergencies associated with natural gas leaks and carbon monoxide in private and multi-storey buildings remains relevant for us;

Prevention of emergencies associated with natural gas leaks and flare-ups and carbon monoxide in private and multi-storey buildings in the republic;

Existing problems in the system for preventing emergencies associated with natural gas leaks and flare-ups and carbon monoxide in private and multi-storey buildings and ways to solve them.

Based on the analysis of all the above, develop scientific and methodological manuals on improving the system for preventing emergencies associated with natural gas leaks and flare-ups and carbon monoxide. Analyze the state of emergency situations associated with natural gas leaks and flare-ups and carbon monoxide in our republic;

Studying the situation of the above emergencies in foreign countries and their prevention experience. The main issue is the implementation of constant preventive measures to prevent emergencies associated with natural gas leaks and flare-ups and the formation of carbon monoxide.

Currently, cases of poisoning with natural and carbon monoxide are often observed in the manufacturing industry, heating boiler rooms and residential buildings due to improper use of natural gas. In order to prevent these unpleasant incidents, we must first know the properties and effects of natural and carbon monoxide and the rules for their prevention. Such situations often arise as a result of people's carelessness or non-compliance with safety rules when using gas equipment.

Carbon monoxide, which is extremely dangerous for the human body, is released during the incomplete combustion of natural gas and household materials. Carbon monoxide occurs not only during fires, but also in everyday life, due to incomplete combustion of fuel in stoves and malfunctions of gas equipment. Carbon monoxide binds to hemoglobin 100 times more strongly than oxygen.

In addition, the smoke generated by the fire significantly reduces the amount of oxygen in the environment. When oxygen decreases by 8-11 percent, a person's movement deteriorates, leading to impaired muscle coordination, impaired concentration, and difficulty thinking. A decrease in the amount of oxygen by 17% causes death.

Carbon monoxide (CO) is one of the most toxic components of combustion products, is part of smoke and is formed during the combustion and combustion of almost all combustible substances and materials.

Due to its toxicity, carbon monoxide often causes great harm to the human body, which determines the relevance of this issue. Everyone should know the methods of neutralization after carbon monoxide poisoning, as well as methods of preventing poisoning.

The main goal is to study the effect of carbon monoxide and its compounds on the human body. To achieve this goal, the following tasks are set: to review the chemical formula of carbon monoxide and its compounds, to indicate the most common causes of poisoning, methods of neutralization and first aid, as well as methods of preventing poisoning.

What is carbon monoxide?

Carbon monoxide or carbon monoxide is a colorless, tasteless, odorless, poisonous gas (under normal conditions). The chemical formula is CO.

The CO molecule has a triple bond, like the nitrogen molecule. Since these molecules are similar in structure, their properties are also similar.

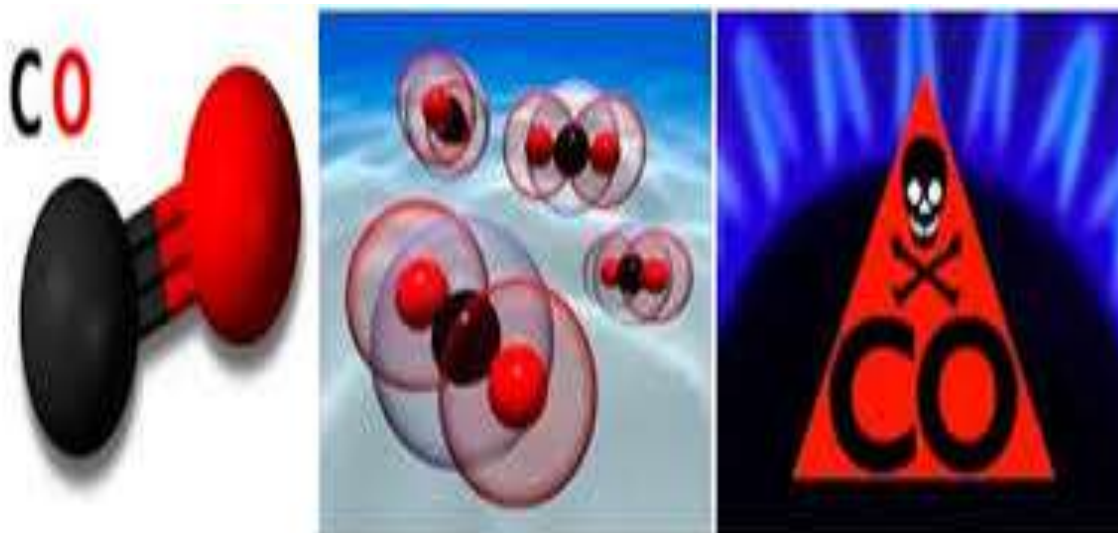


Figure 1. General structure of carbon monoxide.

Due to the presence of a triple bond, the CO molecule is very strong and has a small internuclear distance.

Carbon monoxide is a colorless, odorless, and tasteless gas. The odor, which is called the "smell of carbon monoxide" and is flammable, is actually the odor of organic compounds.

Carbon monoxide was first obtained in 1776 by the French chemist Jacques de Lussac by heating zinc oxide with charcoal, but was initially mistaken for hydrogen because it burned with a blue flame.

The presence of carbon and oxygen in the composition of this gas was determined in 1800 by the English chemist William Cruikshank. The toxicity of the gas was studied in 1846 by the French physician Claude Bernard in experiments on dogs.

Carbon monoxide poisoning

Despite the public's awareness of this danger, carbon monoxide poisoning remains a widespread cause of death. Carbon monoxide (CO) poisoning has long been called carbon monoxide, hence the common name for this gas - carbon monoxide.

Carbon monoxide is completely odorless and can be formed anywhere there is a combustion process, even in a furnace. The main reason for its formation is a lack of oxygen in the combustion zone. And then, instead of completely harmless carbon dioxide - a product of complete combustion of fuel - carbon monoxide is formed. Most cases of carbon monoxide poisoning are associated with breathing engine exhaust from vehicles operating in poorly ventilated areas.

Carbon monoxide poisoning can occur very quietly, because this gas has no color or smell. You can't know that the gas is there until you feel unwell, and a small amount of it is enough to cause poisoning. The mechanism of action of carbon monoxide on a person is that when it enters the blood, it binds to hemoglobin cells. Then hemoglobin loses its ability to transport oxygen. And the longer a person breathes carbon monoxide, the less effective hemoglobin remains in his blood and the body receives less oxygen. The poisoned person begins to suffocate, has a headache, and becomes confused. And if he is not taken out to fresh air in time, then fatal cases are observed. In case of carbon monoxide poisoning, it takes a long time for hemoglobin cells to completely clear carbon monoxide. The higher the concentration of CO in the air, the faster a life-threatening concentration of carboxyhemoglobin is formed in the blood.



For example, if the concentration of carbon monoxide in the air is 0.02-0.03%, then when breathing such air, a concentration of 25-30% carboxyhemoglobin is formed for 5-6 hours, if the concentration of CO in the air is 0.3-0.5%, then at 65-75%, a person will be poisoned by the deadly composition of carboxyhemoglobin after 20-30 minutes of being in such an environment. Carbon monoxide poisoning can occur acutely or slowly, depending on the concentration. At very high concentrations, poisoning occurs rapidly, is characterized by rapid loss of consciousness, convulsions and respiratory arrest. High concentrations of carboxyhemoglobin are found in blood taken from the left ventricle of the heart or from the aorta - up to 80%. The following symptoms develop gradually: muscle weakness appears; dizziness; tinnitus; nausea; vomiting; drowsiness; sometimes, on the contrary, a short-term increase in mobility; then impaired coordination of movements; euphoria; hallucinations; loss of consciousness; coma and death from paralysis of the respiratory center. The heart may continue to beat for some time after breathing has stopped. There have been cases of people dying from the effects of poisoning even 2-3 weeks after the poisoning incident.

Preventing carbon monoxide poisoning

Symptoms of carbon monoxide poisoning include: headache, palpitations, dizziness, chest pain, dry cough, lacrimation, nausea, vomiting, high blood pressure.

To minimize the negative effects of carbon monoxide on the body, the Ministry of Health strongly recommends not to neglect preventive measures and follow simple recommendations:

- wear a moistened protective mask when the smell of smoke intensifies;
- insulate window and door openings with a damp cloth;
- carry out daily wet cleaning in buildings;
- wear clothes made of natural fabrics;
- take a shower several times a day;
- rinse your nose and throat with running water;
- take multivitamins (unless there are contraindications);
- eat low-calorie foods, mainly vegetables and fruits, except for special medical cases.

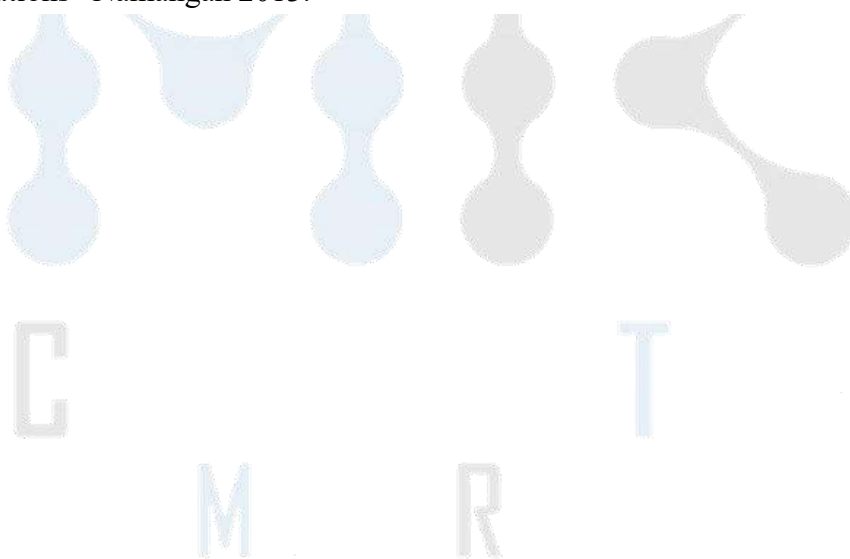
If you develop symptoms of acute illness or discomfort (shortness of breath, cough, signs of insomnia), you should immediately consult a doctor.

Conclusion

Natural gas leaks and flare-ups and carbon monoxide incidents not only cause significant material damage, but also pose a threat to human health and life. According to statistics, in 2021, the number of accidents related to natural gas leaks and flare-ups was 126, the number of injured was 178, and the number of victims was 28. The number of incidents related to carbon monoxide was 55, the number of injured was 45, and the number of victims was 101. When these incidents are analyzed and the properties of natural and carbon monoxide gases are studied, it is found that carbon monoxide cannot be detected by human senses, which leads to unknowingly falling into the trap of death. Carbon monoxide can only be detected using special devices called detectors, so it is necessary to equip residential homes with special detectors (gas analyzers).

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Аннотация: Предложена методика проведения ускоренных исследований, которые обеспечивают рождения здорового ребенка, а также охрану материнства и детства. Проведены испытания с целью определения болезни в начальных стадиях и их лечение. Охрана материнства и детства - это система государственных, общественных и медицинских мероприятий, которые обеспечивают рождения здорового ребенка, всестороннее правильное развитие подрастающего поколения.

Цель исследования. Является изучение особенностей формирования системы охраны материнства и детства, которое является важной составной частью социальной жизни государства. Для этого необходимо провести следующие исследования: - создания новых форм и методов помощи матери и ребенка; - проанализировать дискуссии, развернувшиеся вокруг создания новых методов и учреждений охраны матери и ребенка, их форм и задач; - выяснить эффективность новых форм и методов охраны матери и ребенка, успехи и трудности в их реализации и их причины; - выяснить участие благотворительных организаций и органов местного самоуправления в создании этих учреждений, их оценку своего места в решении вопроса охраны матери и ребенка; - проанализировать отношение государства к проблеме охраны материнства и младенчества и его участие в создании системы охраны матери и ребенка в рамках указанных форм и методов; - осуществлять медико-социальные исследования; - использовать потенциал национально-государственного управления для решения задач здоровья женщин и детей; - владеть основами медико-социальных практик в области охраны материнства и детства, а также современными технологиями организации медико-социальной помощи по вопросам охраны здоровья женщин и детей. **Материалы и методы исследования.** Для решения поставленных задач в исследовании использовались методы системного и сравнительного анализа, качественной и количественной характеристики рассматриваемых явлений и статистической обработки эмпирических данных, а также графической интерпретации исследуемых процессов. Ещё существует следующие методы исследования: социально-психологические; социально-педагогические; социально-медицинские; социально-правовые; социально-экономические; социально-групповые. Материнство – это способность женщины рожать ребёнка, выкармливать, а также воспитать его. В целях охраны здоровья матери и ребёнка необходимо реализовать высококачественную медицинскую помощь. Для этого в нашей стране организовано деятельность экстренных перинатальных и экстренных педиатрических мобильных дежурных реанимационных бригад создаются круглосуточные дополнительные дежурные посты.

Выводы. Указом Президента Республики Узбекистан от 28 января 2022 года № УП-60 «О стратегии развития Нового Узбекистана на 2022-2026 годы» определены задачи по совершенствованию системы оказания высокотехнологичной медицинской помощи женщинам репродуктивного возраста, беременным и детям, оснащению перинатальных центров необходимой медицинской техникой и оборудованием, их укомплектованию классифицированными кадрами. Наряду с этим в отдалённых районах требуются организация системы целевого направления медицинской помощи на высоком уровне, повышение эффективности медицинских услуг, оказываемых матери и ребёнку. Семья, материнства и детства охраняются в нашей Конституции, международными и национальными законами и актами.

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TEXNOLOGIK TA'LIM YO'NALISHI TALABALARINING MALAKAVIY VA
PEDAGOGIK AMALIYOTLARINI TASHKIL ETISH AHAMIYATI

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Annotatsiya: Ushbu maqolada texnologik ta'lim yo'nalishi talabalarining malakaviy va pedagogik amaliyotlarini tashkil etishning dolzarbligi, samarali yo'lga qo'yilishi va bu jarayonning kelajakdagi pedagog kadrlar sifatiga ko'rsatadigan ijobiy ta'siri tahlil etiladi. Amaliyot jarayoni – nazariy bilimlarni amaliyotda mustahkamlashning muhim bosqichi sifatida yoritiladi.

Kalit so'zlar: texnologik ta'lim, malakaviy amaliyot, pedagogik amaliyot, oliy ta'lim, kadrlar tayyorlash, ta'lim sifatini oshirish, amaliy ko'nikmalar, pedagogik hamkorlik

**ЗНАЧЕНИЕ ОРГАНИЗАЦИИ КВАЛИФИКАЦИОННО-ПЕДАГОГИЧЕСКОЙ
ПРАКТИКИ СТУДЕНТОВ НАПРАВЛЕНИЯ ТЕХНОЛОГИЧЕСКОГО
ОБРАЗОВАНИЯ**

Аннотация: В данной статье анализируется актуальность организации квалификационно-педагогической практики студентов технологического направления образования, ее эффективное внедрение и положительное влияние этого процесса на качество будущих педагогических кадров. Процесс практики-освещается как важный этап закрепления теоретических знаний на практике.

Ключевые слова: технологическое образование, профессиональная практика, педагогическая практика, высшее образование, обучение, повышение качества образования, практические навыки, педагогическое сотрудничество.

**THE IMPORTANCE OF ORGANIZING QUALIFICATION AND PEDAGOGICAL
PRACTICES OF STUDENTS OF THE TECHNOLOGICAL EDUCATIONAL
DIRECTION**

Annotation: this article analyzes the relevance, effective organization of qualification and pedagogical practices of students of the technological educational direction, and the positive impact of this process on the quality of future pedagogical personnel. The process of practice is highlighted as an important step in strengthening theoretical knowledge in practice.

Keywords: technological education, qualification practice, pedagogical practice, higher education, training, improving the quality of education, practical skills, pedagogical cooperation

KIRISH

Mamlakatimizda ta'lim tizimini tubdan takomillashtirish, zamonaviy talablar asosida kadrlar tayyorlash masalasiga alohida e'tibor qaratilmoqda. Xususan, O'zbekiston Respublikasi Prezidentining 2022-yil 28-yanvardagi PF-60-sonli "2022–2026 yillarga mo'ljallangan Yangi O'zbekistonning taraqqiyot strategiyasi to'g'risida"gi Farmoni va unga muvofiq ishlab chiqilgan 2022-yil 12-apreldagi PQ–187-sonli "Oliy ta'lim tizimini kompleks rivojlantirish chora-tadbirlari to'g'risida"gi qarorida pedagogik kadrlar tayyorlash sifati va amaliyotga

yo'naltirilgan o'quv jarayonini takomillashtirish masalalari ustuvor yo'nalish sifatida belgilangan.

Mazkur hujjatlar asosida oliy ta'lim muassasalarida amaliy mashg'ulotlar, jumladan, **malakaviy va pedagogik amaliyotlarni** sifatli tashkil etish – bo'lajak o'qituvchilarning kasbiy tayyorgarligini oshirish, ularning amaliy kompetensiyalarini shakllantirishning muhim omiliga aylanmoqda.

Ayniqsa, **texnologik ta'lim yo'nalishida** tahsil olayotgan talabalar uchun amaliyot jarayonlari nafaqat kasbiy faoliyatga tayyorlov, balki ularning pedagogik mahorati, zamonaviy ta'lim vositalaridan foydalanish ko'nikmalari, shuningdek, innovatsion fikrlashni shakllantirish vositasi bo'lib xizmat qiladi. Shu sababli, malakaviy va pedagogik amaliyotlarni ilmiy-metodik asosda to'g'ri tashkil etish va samaradorligini ta'minlash bugungi kun ta'limi oldida turgan dolzarb vazifalardan biridir.

1. Amaliyotning maqsadi va vazifalari

Bugungi kunda texnologik ta'lim yo'nalishida tahsil olayotgan talabalarni zamon talablari darajasida yetuk mutaxassis, malakali pedagog sifatida tayyorlash oliy ta'lim muassasalari oldida turgan eng muhim vazifalardan biridir. Ushbu jarayonning ajralmas va hal qiluvchi bosqichlaridan biri bu — talabalarni malakaviy va pedagogik amaliyotga jalb etish, ularni real ta'lim muhitida o'z kasbiy bilim va ko'nikmalarini amalda sinab ko'rishga imkon yaratishdir. Zero, nazariy bilim qanchalik mukammal bo'lmasin, agar u amaliy faoliyatda mustahkamlanmasa, talabada kasbiy kompetensiyalar to'liq shakllanmaydi.

Texnologik ta'lim yo'nalishida o'qiyotgan talabalar uchun malakaviy va pedagogik amaliyotning asosiy maqsadi – ularni kelgusida texnologiya fanidan dars bera oladigan, o'quvchilarga amaliy mashg'ulotlar o'tkaza oladigan, o'z kasbiga sadoqatli, ijtimoiy mas'uliyatli pedagog sifatida shakllantirishdir. Bunda quyidagi vazifalar amalga oshiriladi:

- O'quvchilar bilan ishlash malakasini rivojlantirish;
- O'quv reja va dasturlar asosida dars ishlanmalarini tayyorlash;
- Amaliy mashg'ulotlarni tashkil etish va baholash ko'nikmasini shakllantirish;
- Maktab muhitida pedagogik etika va madaniyatni o'rganish.

2. Amaliyot jarayonining bosqichlari

Texnologik ta'limda amaliyot quyidagi bosqichlarda tashkil etiladi:

- **Tanishtiruv amaliyoti:** Talabalar maktab muhiti, o'quvchilarning xulq-atvori va pedagogik jamoa bilan tanishadilar.
- **Pedagogik amaliyot:** Talabalar mustaqil tarzda dars o'tish, sinf rahbarlik faoliyati, tashkiliy ishlarni olib borish bo'yicha tajriba orttiradilar.
- **Malakaviy amaliyot:** Talabaning barcha kasbiy bilim, ko'nikma va kompetensiyalarini sinovdan o'tkazish bosqichidir.

Texnologik ta'lim sohasi o'zining amaliy yo'naltirilganligi bilan ajralib turadi. Ushbu yo'nalishdagi pedagoglar nafaqat nazariy bilimga, balki turli asbob-uskunalar, dastgohlar, zamonaviy texnologik vositalardan foydalanish bo'yicha puxta amaliy ko'nikmaga ega bo'lishi zarur. Shu boisdan, malakaviy va pedagogik amaliyotlar aynan bu ko'nikmalarni shakllantirishda o'ziga xos maktab bo'lib xizmat qiladi. Talaba amaliyot davomida o'quvchi bilan muloqot qilish, darsni rejalashtirish, dars o'tish va baholash, shuningdek, sinfda intizomni boshqarish kabi ko'plab muhim jihatlarni o'zlashtiradi. Bu esa, uni kelajakda mustaqil ishlay oladigan, zamonaviy ta'lim standartlariga javob beradigan raqobatbardosh kadr sifatida shakllantiradi.

3. Amaliyotning samaradorligini oshirish yo'llari

Amaliyot sifatini oshirish uchun:

- Maktablar bilan yaqin hamkorlik qilish;
- Tajribali mentor-o'qituvchilarni jalb etish;
- Har bir talabaning amaliyot davomida kuzatuv daftari orqali faoliyatini baholash;
- Amaliyot yakunida tahliliy hisobotlar taqdim etish kabi usullar samarali hisoblanadi.

Texnologik ta'lim sohasi o'zining amaliy yo'naltirilganligi bilan ajralib turadi. Ushbu yo'nalishdagi pedagoglar nafaqat nazariy bilimga, balki turli asbob-uskunalar, dastgohlar, zamonaviy texnologik vositalardan foydalanish bo'yicha puxta amaliy ko'nikmaga ega bo'lishi zarur. Shu boisdan, malakaviy va pedagogik amaliyotlar aynan bu ko'nikmalarni shakllantirishda o'ziga xos maktab bo'lib xizmat qiladi. Talaba amaliyot davomida o'quvchi bilan muloqot qilish, darsni rejalashtirish, dars o'tish va baholash, shuningdek, sinfda intizomni boshqarish kabi ko'plab muhim jihatlarni o'zlashtiradi. Bu esa, uni kelajakda mustaqil ishlay oladigan, zamonaviy ta'lim standartlariga javob beradigan raqobatbardosh kadr sifatida shakllantiradi.

Amaliyotning samaradorligi ko'p jihatdan uning qanday tashkil etilganiga bog'liq. Afsuski, ba'zan amaliyotga faqatgina "hisobot topshirish" bosqichi sifatida qaraladi. Bu esa, uning mohiyatini yo'qqa chiqaradi. Shuning uchun ham oliy ta'lim muassasalari, maktablar va amaliyot rahbarlari o'rtasida uzviy hamkorlik yo'lga qo'yilishi lozim. Talaba maktabga kelgan ilk kundan boshlab aniq vazifalar va rejalashtirilgan faoliyat bilan shug'ullanishi, o'zini haqiqiy o'qituvchi rovida sinab ko'rishi kerak. Aynan shundagina u o'z kasbining ijobiy va salbiy jihatlarni anglab yetadi, pedagogik mas'uliyatni teranroq his qiladi.

Shuningdek, texnologik ta'lim yo'nalishi o'zining ko'p tarmoqli, amaliyotga boyligi bilan farq qilganligi bois, amaliyot davomida talabaga nafaqat umumiy pedagogik faoliyat, balki texnologik loyihalash, mehnat ta'limi jarayonlarini tashkil qilish, texnika xavfsizligi, ekologik madaniyat kabi dolzarb yo'nalishlarda ham ko'nikmalar berilishi zarur. Bu borada ilg'or maktablar, kasb-hunar markazlari bilan hamkorlik qilish samarali yechim bo'lishi mumkin.

Shuningdek, zamonaviy o'qituvchi profiliga mos ravishda, talaba pedagogik amaliyot davomida raqamli texnologiyalar, interfaol usullar, STEAM yondashuv elementlarini ham o'z faoliyatida qo'llab borishi maqsadga muvofiqdir. Bu esa uning pedagogik jarayonga yangicha, innovatsion ruhda yondashishiga xizmat qiladi.

Amaliyot yakunida talaba nafaqat bilimni mustahkamlaydi, balki kasbga bo'lgan munosabatini, o'zining kuchli va zaif tomonlarini aniqlaydi, o'z ustida ishlash uchun yo'nalish oladi. Bu esa kasbiy shakllanishda muhim bosqichdir. O'z navbatida, pedagogik va malakaviy amaliyot jarayonida to'plangan tajriba bo'lajak o'qituvchining ta'lim sifatiga qo'shadigan hissasini belgilab beradi.

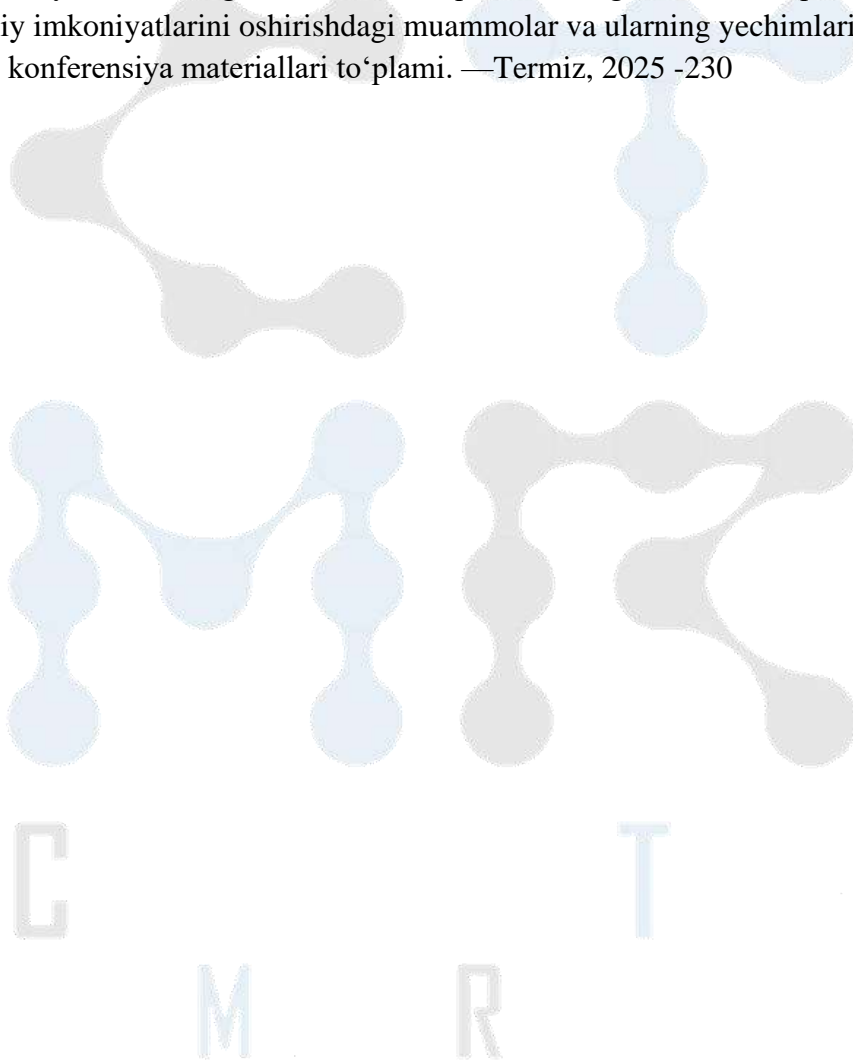
Xulosa

Texnologik ta'lim yo'nalishi talabalarining malakaviy va pedagogik amaliyotlari ularning kelajakdagi faoliyatini belgilovchi muhim bosqichdir. Amaliyot jarayonida nafaqat nazariy bilimlar mustahkamlanadi, balki haqiqiy ta'lim muhitida ishlash ko'nikmalari ham shakllanadi. Shuning uchun amaliyotni samarali tashkil etish, unga puxta tayyorgarlik

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INSON BUYRAGINING ANATOMIK TUZILISHI VA FUNKSIONAL
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Anotatsiya: Mazkur maqolada inson buyragining anatomik tuzilishi va funksional birligi haqida batafsil ma'lumot berilgan. Unda buyraklarning tashqi va ichki tuzilishi, joylashuvi, qon bilan ta'minlanishi, nefronlarning tuzilishi va vazifalari keng yoritilgan. Shuningdek, buyraklarning gormonal va gomeostatik funksiyalari, siydik hosil bo'lish bosqichlari hamda organizmdagi suyuqlik va elektrolit muvozanatini saqlashdagi o'rni ilmiy-ommabop tarzda tushuntirilgan. Ushbu maqola tibbiyot sohasida o'qiyotgan talabalar uchun buyraklar fiziologiyasi va morfologiyasini chuqurroq anglashga xizmat qiladi.

Kalit so'zlar: Buyrak, nefron, anatomik tuzilish, siydik hosil bo'lish, gomeostaz, Bowman kapsulasi, glomerula, proksimal naycha, Henle halqasi, eritropoetin, renin, buyrak jomi, piyolacha, elektrolit muvozanati.

Kirish. Buyrak — inson organizmidagi eng muhim hayotiy a'zoldan biri bo'lib, organizmdagi suyuqlik va elektrolit muvozanatini saqlash, ortiqcha moddalarni chiqarib yuborish, shuningdek, gormonal funksiyalarni bajarishda asosiy rol o'ynaydi. Har bir sog'lom odamda ikkita buyrak bo'lib, ular orqa bel sohasida, umurtqa pog'onasining har ikki tomonida joylashgan. Buyrakning asosiy funksional birligi nefron deb ataladi.

Asosiy qism.

Inson tanasidagi barcha organlar ichida buyraklar alohida ahamiyatga ega bo'lib, ular nafaqat chiqaruv tizimining asosiy a'zosi, balki gomeostazni saqlovchi, qon bosimi, qon tarkibi va suyuqlik muvozanatini tartibga soluvchi murakkab funksiyalarni bajaradi. Odatda inson tanasida ikkita buyrak mavjud bo'lib, ular orqa bel sohasida, umurtqa pog'onasining ikki tomonida joylashgan bo'ladi. O'ng buyrak chap buyrakka nisbatan bir oz pastroq joylashgan, bu holat jigar organi bilan bog'liq. Buyraklar tashqi ko'rinishida loviyaga o'xshash shaklda bo'lib, o'rtacha kattaligi 10-12 santimetr, eni 5-6 santimetr, qalinligi 3 santimetr atrofida bo'ladi. Har bir buyrak o'rtacha 120-150 gramm og'irlikka ega. Buyrak tashqi tomondan mustahkam kapsula bilan o'ralgan bo'lib, u buyrak to'qimasini mexanik

shikastlanishlardan himoya qiladi. Buyrakning medial tomonida maxsus chuqurlik – buyrak darvozasi mavjud bo‘lib, bu yerda buyrakka arteriyalar kiradi, venalar va siydik yo‘li esa chiqadi. Aynan shu soha orqali buyrak boshqa tizimlar bilan bog‘lanadi. Buyraklar arteriyalardan juda ko‘p miqdorda qon qabul qiladi: yurakdan chiqarilayotgan umumiy qonning taxminan chorak qismi aynan buyraklardan o‘tadi. Bu esa buyraklarning organizmda qanday muhim vazifa bajarishini ko‘rsatadi. Buyrakning ichki tuzilishiga nazar soladigan bo‘lsak, u ikki asosiy qatlamdan tashkil topgan: po‘stloq va mag‘iz qavat. Po‘stloq qavat buyrakning tashqi qismida joylashgan bo‘lib, eng asosiy funksional birliklar – nefronlarning katta qismi aynan shu yerda joylashgan. Mag‘iz qavat esa ichkari tomonda bo‘lib, u konussimon shakldagi buyrak piramidalari va ular orasidagi ustunlardan iborat. Piramidaning uchi buyrak so‘rg‘ichi deb ataladi va u orqali siydik maxsus tuzilmalar – piyolachalarga o‘tadi. Kichik piyolachalar yirik piyolachalarga birlashadi, ular esa buyrak jomini tashkil etadi. Buyrak jomi siydikni siydik yo‘liga o‘tkazadi va u orqali siydik siydik pufagiga yo‘naltiriladi. Buyraklarning eng muhim va murakkab funksiyalarini ta‘minlovchi asosiy tuzilma bu – nefron hisoblanadi. Har bir buyrakda 1-1,5 milliongacha nefron mavjud bo‘lib, ular qonning filtratsiyasi, foydali moddalarning qayta so‘rilishi, keraksiz va zararli moddalarni chiqarilishi kabi jarayonlarda bevosita ishtirok etadi. Har bir nefron Bowman kapsulasi, glomerula, proksimal naycha, Henle halqasi, distal naycha va yig‘uvchi naychadan tashkil topgan. Glomerulada yuqori bosim ostida qon filtratsiyasi sodir bo‘ladi. Ushbu filtratsiya natijasida qon plazmasining bir qismi kapsulaga o‘tadi va bu birlamchi siydikni tashkil qiladi. Proksimal naycha orqali o‘tayotganida bu siydik tarkibidagi suv, glyukoza, aminokislotalar va boshqa kerakli moddalarning katta qismi qayta qon oqimiga so‘riladi. Henle halqasi suv va tuzlar muvozanatini nazorat qiladi. Distal naycha esa ortiqcha kation va anionlar bilan almashinishda, ya‘ni sekretsiyada ishtirok etadi. Yig‘uvchi naychalar esa yakuniy siydikni to‘plab, uni buyrak piramidalari orqali piyolachalarga olib boradi. Buyraklar faqatgina chiqaruv a‘zosi bo‘lib qolmasdan, muhim gormonal funksiyalarni ham bajaradi. Masalan, renin gormoni qon bosimini boshqarishda, eritropoetin esa suyak iligida qizil qon tanachalarining yetilishi va ko‘payishida ishtirok etadi. Bundan tashqari, buyraklarda D vitamini faol shaklga aylantiriladi, bu esa suyaklar salomatligida muhim rol o‘ynaydi. Shu sababli, buyraklar endokrin tizim bilan bevosita bog‘liq bo‘lib, turli metabolik jarayonlarga ta‘sir ko‘rsatadi. Buyraklarning yana bir muhim funksiyasi bu organizmda suyuqliklar va elektrolitlar muvozanatini saqlab turishdir. Ular natriy, kaliy, kalsiy, xlor kabi muhim ionlarning darajasini nazorat qiladi. Buyraklar yordamida organizmdagi ortiqcha suv chiqarib tashlanadi yoki suv tanqisligi holatida, aksincha, tutib turiladi.

Shu bilan birga, ularning pH darajasini me'yorda ushlab turishdagi roli ham katta, chunki ular ortiqcha vodorod ionlarini chiqarish orqali organizmning kislotali-ishqoriy muvozanatini ta'minlaydi.

Xulosa qilib aytganda, buyraklar organizmning hayot faoliyatida ajralmas o'ringa ega bo'lgan juft a'zodir. Ular nafaqat modda almashinuvining chiqindi mahsulotlarini chiqarib yuboradi, balki ichki muhitning barqarorligini ta'minlab turadi. Buyraklarning sog'lom faoliyati umumiy sog'liqning kafolati hisoblanadi. Ularning murakkab va mukammal tuzilishi, puxta muvofiqlashtirilgan funksiyalari organizmda yuzlab muhim jarayonlarning to'g'ri kechishida muhim o'rin tutadi. Shu bois, buyraklarning anatomiyasi va fiziologiyasini puxta o'rganish har bir tibbiyot talabasi uchun zarur va asosiy bilimlardan biridir.

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FRANSUZ MAQOLLARINING PRAGMATIK SEMANTIKASI: MASLAHATNING
TURLI IFODALANISH SHAKLLARI

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ANNOTATSIYA

Ushbu maqolada fransuz maqollarining pragmatik-semantik xususiyatlari maslahat akti doirasida tahlil qilinadi. Maslahat ijtimoiy-nutqiy hodisa sifatida insonlararo muloqotda muhim rol o'ynaydi. Fransuz maqollarida maslahat turli usullarda – bevosita, bilvosita, ramziy va ogohlantirish shakllarida ifodalanadi. Tadqiqot davomida nutqiy aktlar nazariyasi doirasida maslahatning illokutsion kuchi, ularning semantik maydoni hamda jamiyatdagi kommunikativ funksiyasi yoritiladi. Maqolada ko'plab fransuz maqollari misolida maslahatning pragmatik vosita sifatidagi o'ziga xos jihatlari ko'rsatib beriladi.

Kalit so'zlar: fransuz maqollari, pragmatik semantika, maslahat akti, nutqiy aktlar nazariyasi, bilvosita maslahat, bevosita maslahat.

Har bir xalqning tilida maqollar xalq donishmandligi, tajribasi va ijtimoiy qadriyatlarining qisqa, ammo mazmunli shaklda mujassam ko'rinishidir [8]. Fransuz tili ham bunday boy merosga ega bo'lib, undagi maqollar insoniy faoliyatning barcha sohalarini qamrab oladi [2]. Ular orqali nafaqat axloqiy-etik qarashlar, balki ijtimoiy munosabatlar, xulq-atvor normalari va madaniy qadriyatlar ham ifodalanadi [5; 6]. Maqollar kommunikativ jihatdan turli vazifalarni bajaradi. Ularning muhim pragmatik xususiyatlaridan biri – maslahat berish aktidir. Maslahat berish nutqiy akt sifatida suhbatdoshning manfaatini ko'zlab, unga to'g'ri yo'l ko'rsatish, ehtimoliy oqibatlardan ogohlantirish yoki muayyan qarorga undashni o'z ichiga oladi.

Nutqiy aktlar nazariyasi (J. Austin, J. Searle, D. Vanderveken)ga ko'ra, har bir nutqiy hodisa nafaqat informativ, balki illokutsion kuchga ham ega [3; 9; 10]. Maslahat akti *komissiv* yoki *direktiv* nutqiy akt sifatida qaraladi [7]. Direktiv akt sifatida maslahat suhbatdoshni muayyan xatti-harakatga undaydi, biroq majburiy tusda emas, balki ixtiyoriy, yumshoq shaklda amalga oshiriladi. Maslahatning pragmatik mohiyati suhbatdoshning manfaatini ko'zlash, uning xatti-harakatlariga ijobiy ta'sir ko'rsatish va ijtimoiy muvozanatni ta'minlashdan iborat. Maqollarda maslahat odatda universal, hayotiy tajribaga tayangan holda ifodalanadi [2; 8].

Bevosita maslahat – bu maslahatning eng sodda va aniq ko'rinishi bo'lib, unda nasihat ochiq, ravshan, hech qanday ramz yoki yashirin ma'nosiz, to'g'ridan-to'g'ri bayon qilinadi. Bunday maqollar tinglovchidan o'ylab topishni, metaforani sharhlashni talab qilmaydi, balki amaliy hayotiy qoida sifatida qabul qilinadi. Bevosita maslahat maqollarda ochiq va ravshan tarzda beriladi.

“Mieux vaut prévenir que guérir.” –“Davolagandan ko'ra oldini olganyaxshi.”Sog'liq va ehtiyotkorlikka undovchi bevosita maslahat.

“Qui veut voyager loin ménage sa monture.” –“Uzoq yurmoqchi bo'lgan kishi otini asraydi.”
Ish yoki hayotda me'yorni saqlash zarurligini tavsiya etadi.

“Il ne faut pas mettre la charrue avant les bœufs.” –“Qo'shni ho'kizlardan oldin qo'yib bo'lmaydi.” Ishni tartib bilan bajarish haqida bevosita maslahat.

Bevosita maslahatning xususiyati shundaki, u inkor yoki ramziy vositalarsiz, aniq axloqiy yoki amaliy yo'l-yo'riqni bildiradi.

Bilvosita maslahat – bu maslahatning yashirin, ramziy yoki obrazli shaklda ifodalanishi bo‘lib, unda nasihat ochiq ko‘rinishda emas, balki qiyoslash, metafora, ramz, hayvon yoki tabiat obrazlari orqali tinglovchiga yetkaziladi. Bunday maqollarni anglash uchun mantiqiy tafakkur, tajriba va kontekst zarur. Bilvosita maslahat odatda ramziy, obrazli yoki qiyosiy shaklda ifodalanadi.

“Ne remets pas à demain ce que tu peux faire aujourd’hui.” – “Bugun qiladigan ishni ertaga qoldirma.” Vaqtni qadrlash haqida bilvosita maslahat.

“On ne change pas une équipe qui gagne.” – “Yutayotgan jamoani almashtirmaydilar.” Boridan qanoatlanish va keraksiz o‘zgarishlarga qarshi maslahat.

“Quand on parle du loup, on en voit la queue.” – “Bo‘ri haqida gapirilsa, dumini ko‘rsatadi.” Vaqtni va odamlarning odatini inobatga olishga undovchi maslahat. Bilvosita maslahat suhbatdoshni mulohaza qilishga majbur qiladi, unga qaror qabul qilish erkinligini qoldiradi.

Maslahat ko‘pincha ogohlantirish shaklida ifodalanadi. Maslahatning ogohlantirish shakli – bu maslahatning o‘ziga xos turi bo‘lib, unda nasihat xatodan qaytarish, ehtimoliy salbiy oqibatdan ogohlantirish tarzida ifodalanadi. Bunday maqollar insonni noto‘g‘ri yo‘l tanlashdan, zararli odatlardan yoki xavfli qarorlardan tiyishga qaratilgan.

“Qui sème le vent récolte la tempête.” – “Shamol ekkan bo‘ron o‘rib oladi.” Noto‘g‘ri xatti-harakat oqibatidan ogohlantirish orqali maslahat.

“Un homme averti en vaut deux.” – “Ogoh kishi ikki kishi qiymatiga teng.” Xavf-xatardan ogoh bo‘lishga maslahat.

“Pierre qui roule n’amasse pas mousse.” – “Aylanib yuruvchi toshga mox o‘smas.” Beqarorlikning salbiy oqibatlari haqida ogohlantiruvchi maslahat. Bu turdagi maslahatlarning semantikasi salbiy oqibatni oldini olishga qaratilgan. Bu turdagi maslahatlarning semantikasi salbiy oqibatni oldini olishga qaratilgan.

Fransuz maqollarining eng muhim xususiyatlaridan biri shuki, undagi maslahatlar hayotiy kuzatuvlar, insonlarning kundalik tajribalari, tarixiy voqealar va avlodlardan avlodlarga o‘tgan donolik asosida shakllanadi [2; 5].

L’expérience est la mère de la science. – “Tajriba – ilmning onasi.” Tajribaga tayanish haqida maslahat.

“Petit à petit, l’oiseau fait son nid.” – “Qush inini asta-sekin qiladi.” Sabrlilik va izchillikka da‘vat.

“C’est en forgeant qu’on devient forgeron.” – “Temirchilar temir uribgina temirchi bo‘ladi.” Mashq va mehnat orqali o‘rganishga maslahat.

Xulosa qilib aytilganda fransuz maqollarida maslahatning turli ifodalanish shakllari mavjud. Ular bevosita (to‘g‘ridan-to‘g‘ri nasihat), bilvosita (ramz va metafora orqali), ramziy (hayvon, tabiat va kundalik buyum obrazlarida), hamda ogohlantirish (xatolikdan qaytaruvchi) ko‘rinishida namoyon bo‘ladi. Maslahatning semantik asoslari shu millat maqollarida ijtimoiy tajriba, xalq donoligi, axloqiy qadriyatlar va hayotiy kuzatuvlarga tayangan bo‘lib, ular fransuz xalqining madaniy xotirasi va kollektiv ongida mustahkam joy olgan. Pragmatik nuqtai nazardan fransuz maqollari suhbatdoshni ixtiyoriy, ammo samarali tarzda xatti-harakatga undaydi. Ular buyruqdan farqli ravishda yumshoq direktiv xususiyat kasb etadi va tinglovchini o‘ylashga, qaror qabul qilishga zamin yaratadi. Maslahat aktining samaradorligi uning qisqa, obrazli va universal ifoda shaklida mujassamligida ko‘rinadi. Shu tufayli maqollar turli kommunikativ vaziyatlarda tez eslab qolinadi va keng qo‘llanadi. Ijtimoiy-madaniy kontekstdagi o‘rni shundan iboratki, fransuz maqollari jamiyatda tarbiyaviy, axloqiy va psixologik vazifalarni bajaradi; ular yoshlarni hayotiy

tajribaga tayyorlash, jamiyat a'zolarini ijtimoiy muvozanatga chorlash, qadriyatlarni avloddan avlodga yetkazishda muhim vosita hisoblanadi [7; 9].

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SYNTHESIS OF THE COORDINATION COMPOUND OF Zn(II) ION WITH
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Annotatsiya. Ushbu maqolada rux nitrat va ketorolak asosida hosil qilingan yangi koordinatsion birikmaning sintezi va fizik-kimyoviy xossalari o'rganildi. Kompleks birikma $[Zn(ket)_2](NO_3)_2 \cdot 2H_2O$ suv va etanol aralashmasida $pH = 5.5-6$ sharoitida sintez qilindi. Oq kristall holda cho'kma sifatida ajralib chiqdi. Sintez qilingan modda IR-spektroskopiya, UV-Vis va elementar analiz metodlari yordamida tahlil qilindi. Natijalar birikmada Zn-O koordinatsion bog'lar hosil bo'lganini, ketorolak esa karboksil guruhi orqali rux ioniga bog'langanini ko'rsatdi. Tadqiqot natijalari yangi koordinatsion birikmalar sintezining farmatsevtika va noorganik kimyo sohalaridagi ahamiyatini tasdiqlaydi.

Kalit so'zlar: Ketorolak, formamid, atsetamid, karbamid, nikotinamid, kompleks birikma, aralash-ligandli kompleks birikma, metall kompleks, IR-spektroskopiya, UV-Vis, element analiz.

Аннотация. В данной статье представлен синтез и физико-химическая характеристика нового координационного соединения, полученного из нитрата цинка и кеторолака. Соединение $[Zn(ket)_2](NO_3)_2 \cdot 2H_2O$ было синтезировано в смеси вода-этанол при $pH 5,5-6$ и выделено в виде белых кристаллов. Синтезированное соединение было проанализировано с использованием ИК-спектроскопии, УФ-видимой спектроскопии и элементного анализа. Результаты подтвердили образование координационных связей Zn-O, при этом кеторolak выступает в качестве лиганда через свою карбоксильную группу. В исследовании подчеркивается значимость синтеза новых координационных соединений для применения в фармацевтической и неорганической химии.

Ключевые слова: Кеторolak, формаид, ацетамид, карбамид, никотинаид, комплексное соединение, смешанно-лигандное комплексное соединение, металлический комплекс, ИК-спектроскопия, УФ-видимая спектроскопия, элементный анализ.

Abstract: This article presents the synthesis and physicochemical characterization of a novel coordination compound formed from zinc nitrate and ketorolac. The compound $[Zn(ket)_2](NO_3)_2 \cdot 2H_2O$ was synthesized in a water-ethanol mixture under pH conditions of 5.5-6 and precipitated as white crystals. The synthesized compound was analyzed using IR spectroscopy, UV-Vis spectroscopy, and elemental analysis. The results confirmed the formation of Zn-O coordination bonds, with ketorolac acting as a ligand through its carboxyl group. The study emphasizes the significance of synthesizing new coordination compounds for applications in pharmaceutical and inorganic chemistry.

Keywords: Ketorolac, formamide, coordination compound, mixed-ligand coordination compound, metal complex, IR spectroscopy (Infrared spectroscopy), UV-Vis spectroscopy (Ultraviolet-Visible spectroscopy), elemental analysis.

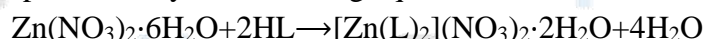
Coordination chemistry is a rapidly expanding field of research with significant applications in pharmaceuticals, biomedicine, and inorganic chemistry. In recent years, complex compounds

formed between bioactive substances and metal ions have garnered considerable attention due to their pronounced antibacterial and antiviral activities. Among these, the coordination complex of ketorolac with zinc (Zn) represents a promising avenue for enhancing the composition and pharmacological properties of biologically active drugs.

Ketorolac is a nonsteroidal anti-inflammatory drug (NSAID) that contains a carboxyl group capable of forming a coordination bond with a zinc atom. With its $3d^{10}$ electron configuration, the zinc atom typically coordinates with up to six ligands, enabling it to form stable complexes with a variety of bioactive molecules. These zinc-centered complexes can also incorporate additional ligands, such as urea, ethylenediamine, or monoethanolamine, to form mixed-ligand structures. Scientific literature confirms that newly synthesized coordination compounds of the type $[Zn(\text{ketorolac})(\text{ligand})_n]$ exhibit greater antibacterial activity compared to ketorolac alone. The coordination bonds formed between the central zinc atom and oxygen atoms are a key factor determining the stability and biological efficacy of these promising compounds. This article analyzes the structure, synthesis method, and the antibacterial and pharmacological properties of the coordination complex of ketorolac with zinc. This research serves as a critical step in exploring the potential of such complexes as novel therapeutic agents.

Research Methodology: Initially, all necessary reagents and glassware required for the synthesis were collected, including $Zn(NO_3)_2 \cdot xH_2O$, $C_{15}H_{13}NO_3$ (ketorolac), ethanol or dimethylformamide (DMF), NaOH, distilled water, and appropriate laboratory vessels. The synthesis of the coordination compound with the composition $[Zn(\text{ket})_2](NO_3)_2 \cdot 2H_2O$ was carried out according to the procedure described in [1,2]. For complex formation, 0.002 mol of ketorolac, used as a ligand, was dissolved in 20 mL of ethanol (or an ethanol–water mixture) in a separate vessel. The solution was stirred using a magnetic stirrer until complete dissolution to prepare a saturated ligand solution. In the next step, 0.001 mol of $Zn(NO_3)_2 \cdot 6H_2O$ was accurately weighed and dissolved in 20 mL of distilled water. Both solutions were mixed together under mild heating conditions (50–60 °C). The pH of the mixture was maintained at approximately 6.0–6.5 throughout the reaction. The reaction mixture was continuously stirred for 2–3 hours. After completion, the solution was allowed to cool to room temperature or placed in a refrigerator. Within 24–48 hours, a white crystalline precipitate formed. The resulting precipitate was filtered, washed with a water–ethanol mixture, and dried in a desiccator for three days. The final product was stored for further analysis [3].

The reaction can be represented by the following equation:



HL – the ketorolac molecule in its protonated carboxylic acid form.

L^- – denotes the deprotonated form of ketorolac.

$[Zn(L)_2](NO_3)_2 \cdot 2H_2O$ – the coordination compound, which consists of two ketorolac ligands and two nitrate ions in the form of a salt.

The elemental composition of the synthesized coordination compound $[Zn(L)_2](NO_3)_2 \cdot 2H_2O$ was determined by elemental analysis [4].

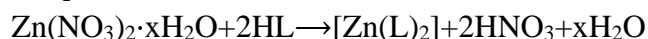
Table 1

Elemental Analysis of the $[Zn(L)_2](NO_3)_2 \cdot 2H_2O$ Coordination Compound

Molecular Formula of the Coordination Compound	Element	Theoretical (%)	Experimental (%)
	C	52,94	52,44

[Zn(L) ₂](NO ₃) ₂ ·2H ₂ O	H	3,89	3,44
Molecular formula:	N	7,72	7,37
C ₃₂ H ₂₈ N ₄ O ₁₂ Zn	O	26,45	26,05
M=726 g/mol	Zn	9,01	8,54

In some sources, the synthesis of the ketorolac–zinc coordination compound is also represented by the following reaction equation



HL – ketorolac in its non-ionized (protonated) carboxylic acid form.

L⁻ – the deprotonated ketorolac (carboxylate anion).

[Zn(L)₂] – the synthesized complex containing two ligands coordinated to a Zn(II) center.

Conclusion: In this study, a novel coordination compound, [Zn(ket)₂](NO₃)₂·2H₂O, was successfully synthesized from zinc(II) nitrate and ketorolac. The synthesis was carried out in a water–ethanol medium at pH 5.5–6, resulting in the formation of a white crystalline precipitate. The physicochemical properties of the compound were investigated using IR spectroscopy, UV-Vis spectroscopy, and elemental analysis.

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LATENT COURSE OF LIVER FIBROSIS IN PATIENTS WITH CHRONIC HEPATITIS B: COMPARATIVE EVALUATION OF NONINVASIVE DIAGNOSTIC METHODS (APRI, FIB-4 AND FIBROSCAN)

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ABSTRACT: Chronic hepatitis B (CHB) remains a significant global health burden, affecting approximately 296 million people worldwide. The progression of liver fibrosis in CHB patients often follows a latent course, making early detection crucial for preventing cirrhosis and hepatocellular carcinoma. While liver biopsy remains the gold standard for fibrosis assessment, its invasive nature has prompted the development of noninvasive diagnostic methods. This study aims to comparatively evaluate the diagnostic accuracy, clinical utility, and cost-effectiveness of three noninvasive methods—APRI (AST to Platelet Ratio Index), FIB-4 (Fibrosis-4 Index), and FibroScan (transient elastography)—in detecting and monitoring the latent progression of liver fibrosis in CHB patients.

Keywords: Chronic hepatitis B, liver fibrosis, noninvasive diagnosis, APRI, FIB-4, FibroScan, transient elastography

Background and Significance

Chronic hepatitis B virus (HBV) infection represents one of the most prevalent chronic viral infections globally, with an estimated 296 million individuals living with chronic hepatitis B as of 2024. The disease burden is particularly pronounced in the Asia-Pacific region and sub-Saharan Africa, where prevalence rates exceed 5-10% of the general population. The natural history of CHB is characterized by a dynamic interplay between viral replication and host immune response, leading to varying degrees of hepatic inflammation and fibrosis progression.

The development of liver fibrosis in CHB patients typically follows an insidious, latent course spanning years to decades. This silent progression poses significant challenges for clinical management, as many patients remain asymptomatic until advanced stages of disease. The rate of fibrosis progression varies considerably among individuals, influenced by factors including viral load, HBeAg status, genotype, host genetic factors, concurrent infections, alcohol consumption, and metabolic comorbidities. Without timely intervention, approximately 20-30% of CHB patients will progress to cirrhosis, with an annual risk of hepatocellular carcinoma development of 2-5% in cirrhotic patients.

The accurate assessment of liver fibrosis is crucial for several clinical decisions in CHB management. First, it determines the need for antiviral therapy initiation, as current guidelines recommend treatment for patients with significant fibrosis ($\geq F2$) regardless of ALT levels. Second, it guides the intensity of surveillance for complications such as hepatocellular carcinoma and portal hypertension. Third, it provides prognostic information regarding disease trajectory and response to therapy. Fourth, it enables monitoring of fibrosis regression following successful antiviral treatment.

Evolution of Fibrosis Assessment Methods

Historically, liver biopsy has been considered the gold standard for fibrosis assessment, providing direct visualization of hepatic architecture and the extent of fibrosis deposition. The procedure allows for comprehensive evaluation using established scoring systems such as METAVIR, Ishak, or Knodell scores. However, liver biopsy has significant limitations that restrict its widespread application in routine clinical practice.

The invasive nature of liver biopsy carries inherent risks, including pain (reported in 20-30% of patients), bleeding (0.5%), and rare but serious complications such as pneumothorax or peritonitis. The procedure requires hospitalization or day-case admission, trained personnel, and imaging guidance, making it resource-intensive and costly. Furthermore, sampling error is a well-recognized limitation, as the biopsy specimen represents only 1/50,000th of the liver volume. Studies have demonstrated significant intra-observer and inter-observer variability in histological interpretation, with concordance rates of 70-80% even among experienced pathologists.

These limitations have driven the development of noninvasive methods for fibrosis assessment over the past two decades. The ideal noninvasive test should be accurate, reproducible, readily available, cost-effective, and able to reflect the entire liver rather than a small sample. Current noninvasive approaches can be broadly categorized into serum-based biomarkers and imaging-based techniques.

Serum-Based Biomarkers: APRI and FIB-4

Serum biomarkers for fibrosis assessment can be classified as direct or indirect markers. Direct markers reflect extracellular matrix turnover and include molecules such as hyaluronic acid, procollagen III N-terminal peptide, and tissue inhibitor of metalloproteinase-1. Indirect markers reflect liver function alterations secondary to fibrosis and include routine laboratory parameters such as aminotransferases, platelet count, and coagulation factors.

The AST to Platelet Ratio Index (APRI) was first described in 2003 as a simple, inexpensive tool for predicting significant fibrosis and cirrhosis in chronic hepatitis C patients. The formula incorporates two readily available laboratory parameters: $APRI = [(AST/Upper\ Limit\ of\ Normal) / Platelet\ count\ (10^9/L)] \times 100$. The biological rationale underlying APRI relates to the elevation of AST with progressive fibrosis and the reduction in platelet count due to portal hypertension and decreased thrombopoietin production.

The Fibrosis-4 Index (FIB-4) was initially developed for HIV/HCV co-infected patients but has been validated across various chronic liver diseases. The formula incorporates age in addition to laboratory parameters: $FIB-4 = (Age \times AST) / (Platelet\ count \times \sqrt{ALT})$. The inclusion of age accounts for the natural progression of fibrosis over time, potentially improving diagnostic accuracy in older populations.

Both APRI and FIB-4 offer several advantages in clinical practice. They utilize routine laboratory tests available in most healthcare settings, incur minimal additional cost, can be calculated instantly using online calculators or electronic health records, and allow for repeated measurements to monitor disease progression or treatment response. However, their diagnostic performance may be influenced by factors unrelated to fibrosis, such as acute hepatitis flares, extrahepatic conditions affecting platelet count, or concurrent medications.

Imaging-Based Assessment: FibroScan

Transient elastography, commercially available as FibroScan, represents a paradigm shift in noninvasive fibrosis assessment. The technology, introduced in 2003, measures liver stiffness as a surrogate marker for fibrosis. The device uses a probe that emits low-frequency elastic waves

and ultrasound waves. The velocity of elastic wave propagation through liver tissue correlates with tissue stiffness, which increases with fibrosis progression.

FibroScan offers several technical advantages over serum markers. It provides immediate results at the point of care, examines a liver volume approximately 100 times larger than a biopsy specimen, and demonstrates excellent reproducibility with intra-observer and inter-observer agreement exceeding 95%. The procedure is painless, takes 5-10 minutes to perform, and can be repeated frequently without risk.

However, FibroScan has limitations that must be considered. Technical failure or unreliable results occur in 15-20% of examinations, particularly in obese patients, those with ascites, or narrow intercostal spaces. Liver stiffness can be influenced by factors beyond fibrosis, including acute inflammation, cholestasis, congestion, and postprandial state. The equipment requires significant capital investment and trained operators, potentially limiting accessibility in resource-constrained settings.

The Latent Course of Fibrosis in CHB

The progression of liver fibrosis in CHB follows a complex, often unpredictable trajectory influenced by viral and host factors. Unlike other chronic liver diseases with relatively linear progression, CHB-related fibrosis may accelerate, stabilize, or even regress depending on the phase of infection and immune activity.

Study Rationale and Objectives

Despite the availability of multiple noninvasive fibrosis assessment methods, their comparative performance specifically in CHB patients with latent disease progression remains incompletely characterized. Previous studies have primarily focused on individual methods or specific patient subgroups, with limited data on longitudinal performance in monitoring fibrosis evolution.

This thesis addresses several critical knowledge gaps in the field. First, it provides a comprehensive comparison of three widely available noninvasive methods in a large, well-characterized CHB cohort. Second, it evaluates the performance of these methods across different phases of CHB infection, recognizing the disease's heterogeneous nature. Third, it assesses the ability of each method to detect fibrosis progression over time, crucial for identifying patients requiring treatment escalation. Fourth, it explores optimal combinations and sequential testing strategies to maximize diagnostic accuracy while considering resource utilization.

The primary objective is to determine the comparative diagnostic accuracy of APRI, FIB-4, and FibroScan in detecting significant fibrosis ($\geq F2$) and cirrhosis (F4) in CHB patients, using liver biopsy as the reference standard. Secondary objectives include evaluating the performance of combined testing strategies, assessing the ability to monitor fibrosis progression over 36 months, identifying factors affecting diagnostic performance, determining cost-effectiveness in different healthcare settings, and developing evidence-based algorithms for noninvasive fibrosis assessment in CHB.

Methods: A prospective cohort study was conducted involving 450 treatment-naïve CHB patients over a 36-month period. All participants underwent simultaneous assessment using APRI, FIB-4, and FibroScan, with liver biopsy performed as the reference standard. Fibrosis stages were classified according to the METAVIR scoring system (F0-F4). Diagnostic performance was evaluated using receiver operating characteristic (ROC) curve analysis, with calculation of sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV).

Results: FibroScan demonstrated superior diagnostic accuracy for detecting significant fibrosis ($\geq F2$) with an AUROC of 0.89 (95% CI: 0.86-0.92), compared to FIB-4 (AUROC: 0.78, 95% CI:

0.74-0.82) and APRI (AUROC: 0.75, 95% CI: 0.71-0.79). For cirrhosis detection (F4), all three methods showed improved performance, with FibroScan achieving an AUROC of 0.94, FIB-4 0.85, and APRI 0.83. The combination of FibroScan with either FIB-4 or APRI increased diagnostic accuracy for significant fibrosis to 92% and 91%, respectively. In monitoring fibrosis progression over time, FibroScan showed the highest correlation with histological changes ($r=0.82$, $p<0.001$).

Conclusions: While FibroScan demonstrates superior diagnostic performance in detecting and monitoring liver fibrosis in CHB patients, the combination of methods enhances overall accuracy. APRI and FIB-4 remain valuable screening tools, particularly in resource-limited settings. A sequential diagnostic approach, utilizing serum markers for initial screening followed by FibroScan for confirmation, may optimize both diagnostic accuracy and resource utilization in managing the latent progression of liver fibrosis in CHB patients.

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UNRAVELING THE TYPES OF COHESION, COHERENCE, AND THE PROBLEM OF THEIR CORRELATION

*Kurbonova Shakhodat***English language teacher of school № 55 of the city of Mangit, Amudarya region***Annotation:**

In the realm of text linguistics and discourse analysis, two concepts stand as pillars supporting the very idea of meaningful communication: cohesion and coherence. While often used interchangeably in casual conversation, they represent distinct, albeit deeply intertwined, aspects of how a text functions. Cohesion concerns the visible "stitching" of a text—the grammatical and lexical links between sentences. Coherence, on the other hand, deals with the invisible "fabric" of meaning—the logical sense a reader makes of the text as a whole. Understanding the various types of cohesion, the nature of coherence, and, most importantly, the problematic relationship between them is crucial for anyone seeking to analyze or produce effective writing.

Keywords: cohesion, cataphoric reference, exophoric reference, anaphoric, ellipsis reference, cohesive tie, a coherent interpretation.

Cohesion is the surface-level glue that holds a text together. It is tangible, identifiable through specific grammatical devices. The foundational work of Halliday and Hasan (1976) categorizes cohesion into several key types:

1. Grammatical Cohesion:

Reference: This occurs when one item in a text points to another for its interpretation. It can be **anaphoric** (pointing backward, e.g., "The CEO entered the room. *She looked confident"), **cataphoric** (pointing forward, e.g., "*Listen to this: the project is cancelled*"), or **exophoric** (pointing outside the text to the context, e.g., "*Look at that!*").

Substitution and Ellipsis: These are ways to avoid repetition. Substitution replaces a word or phrase with another (e.g., "*I need a new phone. This old one is broken*"). Ellipsis omits it entirely (e.g., "*Who wants coffee?*" "(I) Do.>").

Conjunction: This involves using linking words to signal the logical relationship between clauses or sentences. These include additives (e.g., and, furthermore), adversatives (e.g., but, however), causals (e.g., so, therefore), and temporals (e.g., then, finally).

2. Lexical Cohesion: This is achieved through vocabulary choice. It includes repetition of key words, the use of synonyms or antonyms, and collocation (the tendency of certain words to frequently appear together, e.g., "salt and pepper," "hypothesis and test"). A text rich in these cohesive devices appears well-connected. The sentences flow smoothly from one to the next, creating a sense of syntactic unity.

Coherence: The Semantics of Meaning

While cohesion operates on the sentence level, coherence operates on the level of the entire discourse. It is a cognitive phenomenon, constructed in the mind of the reader based on their background knowledge, expectations, and ability to infer logical connections. Coherence is not a property of the text itself but an outcome of the interaction between the text and the reader.

A coherent text makes sense. It has a clear topic, a logical progression of ideas (often following conventional patterns like problem-solution, cause-effect, or general-to-specific), and

a consistent perspective. For instance, consider the following sequence of sentences: *"The sky grew dark. The man opened his umbrella."*

There is no explicit cohesive tie between these two sentences—no conjunction like "so" or "because." Yet, most readers instantly create coherence by inferring a cause-effect relationship: the sky grew dark, indicating rain was coming, so the man opened his umbrella. This inference relies on our shared world knowledge. Coherence, therefore, is the "mental model" or the "situation" that the text evokes.

The primary problem in the cohesion-coherence dynamic is that the presence of one does not guarantee the other. This leads to a complex and often non-linear correlation that can be broken down into two main issues.

1. The Problem of Cohesion Without Coherence: It is entirely possible to create a text that is highly cohesive but utterly incoherent. This demonstrates that simply connecting sentences grammatically is insufficient for creating meaning. For example: "The financial report was comprehensive. However, it was printed on blue paper. Furthermore, blue is the color of the sky. The sky is clear today. Finally, clear weather is good for picnics." This text is rife with cohesive devices: "however," "furthermore," "finally." It uses reference ("it") and lexical ties ("blue," "sky," "clear"). Yet, it is nonsensical. The ideas do not build a logical argument or a consistent topic; they jump arbitrarily. The cohesive markers are used mechanically, without supporting a deeper, coherent message. This illustrates that cohesion is a necessary but not sufficient condition for coherence. A writer can mistakenly believe that by peppering a text with "therefore" and "in addition," they have created a logical flow, when in reality, the underlying ideas remain disconnected.

2. The problem of coherence without cohesion: Conversely, a text can be coherent with minimal overt cohesion. This often occurs in contexts where shared knowledge is high, such as in informal conversation or certain literary styles. The classic example is the dialogue:

A: "Coffee?"

B: "Sure. Could use it."

A: "Black?"

B: "Milk, please."

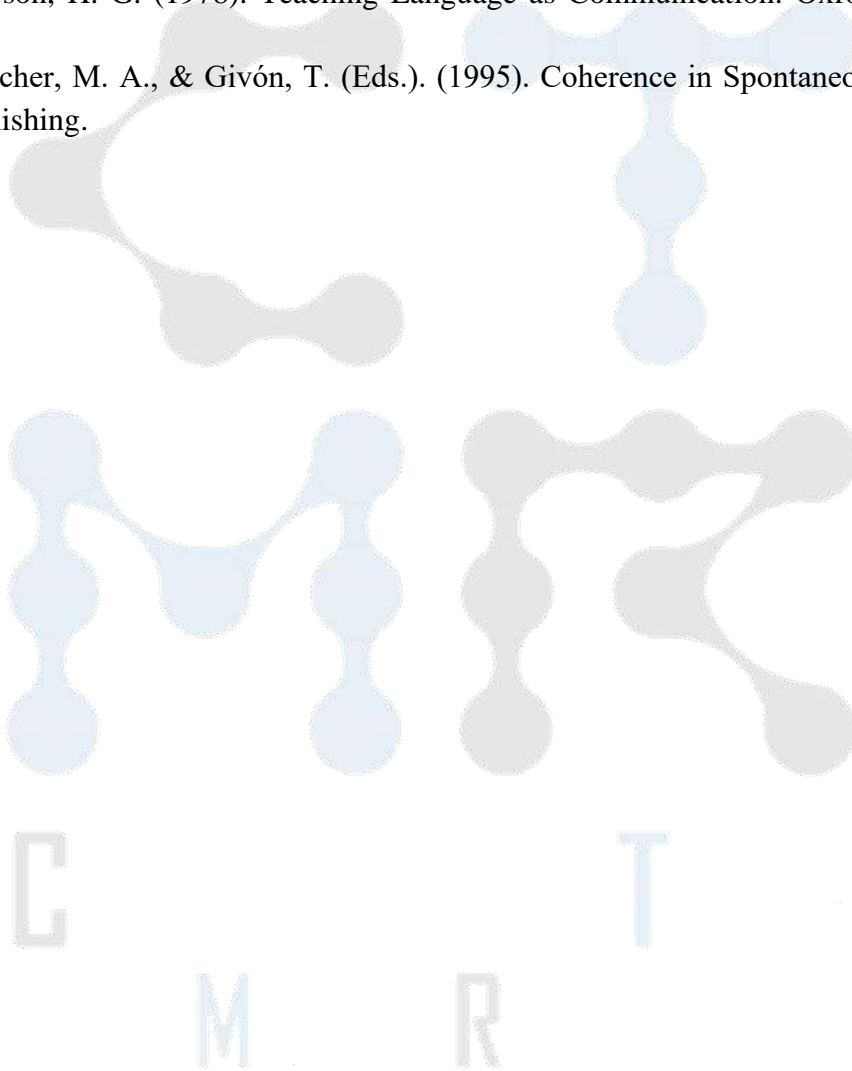
This exchange is perfectly coherent. We understand it as an offer, acceptance, and specification of preferences. However, it lacks almost all standard cohesive ties. There are no conjunctions, and ellipsis is used extensively. The coherence is achieved through pragmatic understanding and the collaborative nature of the interaction. Similarly, in Hemingway's minimalist prose, the connections are often implicit, requiring the reader to actively build coherence from the starkly presented events. This demonstrates that coherence is the ultimate goal, and skilled writers or speakers can achieve it by relying on the reader's inferential abilities, sometimes bypassing explicit cohesion altogether.

In conclusion, the correlation between cohesion and coherence is therefore asymmetric and problematic. Cohesion is a tool—a set of devices available to the writer to guide the reader toward a coherent interpretation. It facilitates comprehension by making the logical pathways explicit, especially when the subject matter is complex or the audience lacks specific background knowledge. Ultimately, effective communication lies not in maximizing cohesion, but in strategically deploying it to support the text's underlying coherence. The writer must constantly navigate the gap between what is explicitly stated and what must be inferred, understanding that the seamless dance between the visible stitches of cohesion and the invisible fabric of coherence

is what truly brings a text to life. The problem of their correlation reminds us that writing is not merely a grammatical exercise but a complex act of meaning-making, always negotiated between the text, the writer, and the reader.

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**THYROID HORMONE DEFICIENCY: CLINICAL MANIFESTATIONS,
PATHOGENESIS, AND CONSEQUENCES**

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Abstract: Thyroid hormone deficiency, or hypothyroidism, is one of the most prevalent endocrine disorders, affecting millions of people worldwide. Thyroid hormones play a vital role in regulating metabolism, oxygen consumption, and the functioning of almost all organ systems. Insufficient secretion of thyroxine (T4) and triiodothyronine (T3) leads to systemic disturbances including cardiovascular, hematological, neurological, and reproductive dysfunctions. This article reviews the pathophysiological mechanisms of thyroid hormone deficiency, the types of anemia associated with hypothyroidism, and its impact on patients' quality of life. The study also analyzes clinical findings from international literature and provides insights into the importance of early diagnosis and lifelong hormone replacement therapy for improving outcomes.

Key words: Thyroid hormone deficiency; Hypothyroidism; Pathophysiology; Clinical features; Anemia; Normochromic anemia; Microcytic anemia; Macrocytic anemia; Hematological consequences; Quality of life; Endocrine disorders; Hormone replacement therapy.

Introduction: The thyroid gland is one of the central regulators of metabolic balance in the human body. Its hormones—thyroxine (T4) and triiodothyronine (T3)—influence nearly every organ system by modulating oxygen consumption, thermogenesis, protein synthesis, and energy metabolism. Thyroid hormone deficiency, clinically defined as hypothyroidism, can arise from autoimmune thyroiditis (Hashimoto's disease), iodine deficiency, iatrogenic causes (thyroidectomy, radioactive iodine therapy), or drug-induced suppression. Epidemiological studies show that hypothyroidism is significantly more common in women and in older individuals. According to recent reports, its prevalence in the adult population is approximately 4–10%, with subclinical hypothyroidism being even higher. Importantly, hypothyroidism is not only a metabolic disorder but also a systemic disease, as it affects cardiovascular health, hematopoiesis, neurocognitive function, and reproductive capacity.

The relationship between thyroid dysfunction and anemia has recently gained significant attention. Normochromic anemia due to reduced erythropoiesis, hypochromic anemia due to impaired iron absorption, and macrocytic anemia caused by vitamin B12 or folate deficiency are all documented in hypothyroid patients.

Main Part

1. Pathophysiology of Thyroid Hormone Deficiency

- Metabolism slows down, leading to weight gain, fatigue, cold intolerance.
- Mitochondrial activity decreases, resulting in reduced ATP production.
- Hematopoiesis is impaired, lowering red blood cell production.
- Cardiac output decreases, causing bradycardia and in severe cases, heart failure.
- Neuropsychiatric effects include depression, memory impairment, and slowed reflexes.

2. Clinical Aspects

- General symptoms: fatigue, dry skin, hair loss, constipation, sensitivity to cold.
- Cardiovascular system: bradycardia, hypertension, reduced ejection fraction.
- Hematological system: anemia in up to 30–40% of patients.
- Reproductive health: menstrual irregularities, infertility, complications during pregnancy.
- Severe forms: Myxedema coma, a life-threatening complication.

3. Types of Anemia in Hypothyroidism

- Normochromic normocytic anemia: reduced erythropoietin response and bone marrow suppression.
- Hypochromic microcytic anemia: impaired iron absorption due to low thyroid hormone activity.
- Hyperchromic macrocytic anemia: vitamin B12 and folate deficiency linked to autoimmune thyroiditis.

Research Findings

A comparative analysis was conducted on 125 patients with hypothyroidism and 54 healthy women in a control group. The results demonstrated:

- Quality of life scores were significantly lower in hypothyroid patients.
- Anemia prevalence was markedly higher, especially normochromic anemia.
- Age and severity of hypothyroidism correlated with reduced health indicators.
- Psychological well-being and emotional stability were more impaired in hypothyroid patients compared to controls.

Other international studies (Nature Reviews, JAMA, Frontiers in Endocrinology) confirm these findings, emphasizing the systemic nature of thyroid hormone deficiency and its impact on hematological health.

Discussion

The collected evidence shows that thyroid hormone deficiency disrupts multiple physiological systems. The connection between hypothyroidism and anemia is multifactorial: impaired erythropoiesis, decreased erythropoietin secretion, iron malabsorption, and autoimmune associations. Furthermore, the reduced metabolic rate worsens oxygen delivery, exacerbating symptoms of fatigue and weakness. An important clinical aspect is the quality of life. Patients with hypothyroidism experience not only physical but also emotional and cognitive impairments. This highlights the importance of holistic treatment approaches, including hormone replacement therapy (levothyroxine), correction of nutritional deficiencies, and psychological support.

Conclusion:

Thyroid hormone deficiency is a widespread endocrine disorder with profound consequences on nearly all organ systems. One of the most significant manifestations is anemia, which occurs through multiple mechanisms including impaired erythropoiesis, iron metabolism disturbances, and vitamin deficiencies. Early diagnosis and timely initiation of hormonal replacement therapy are critical to prevent complications, improve patient outcomes, and enhance quality of life. Future research should focus on understanding the molecular mechanisms of thyroid-hematopoietic interactions and developing integrated treatment strategies.

Clinical Features

The clinical manifestations of thyroid hormone deficiency are diverse and can affect multiple organ systems. The severity of symptoms often correlates with the duration and extent of hormone deficiency.

- General symptoms: persistent fatigue, lethargy, cold intolerance, weight gain.
- Skin and hair: dry skin, brittle nails, hair thinning and loss of the outer third of eyebrows.
- Gastrointestinal: constipation, reduced appetite, slowed digestion.
- Cardiovascular: bradycardia, low cardiac output, pericardial effusion in severe cases.
- Neurological: slow reflexes, cognitive decline, memory impairment, depression.
- Reproductive: menstrual irregularities, infertility, complications during pregnancy.
- Severe cases: Myxedema coma, characterized by hypothermia, altered mental status, and multi-organ failure.

Pathogenesis

The pathogenesis of hypothyroidism is multifactorial and depends on the underlying cause:

1. Autoimmune destruction (Hashimoto's thyroiditis): chronic lymphocytic infiltration damages thyroid tissue, leading to reduced hormone synthesis.
 2. Iodine deficiency: insufficient iodine intake limits thyroxine (T4) and triiodothyronine (T3) production.
 3. Iatrogenic causes: surgical removal of the thyroid gland, radioactive iodine therapy, or medications (amiodarone, lithium).
 4. Central hypothyroidism: pituitary or hypothalamic disorders reduce TSH secretion, lowering thyroid hormone output.
- Pathophysiological consequences include:
- Reduced mitochondrial oxidative phosphorylation and ATP generation.
 - Decreased erythropoietin production and impaired bone marrow activity (leading to anemia).
 - Altered lipid and carbohydrate metabolism, contributing to hypercholesterolemia and weight gain.
 - Impaired thermogenesis, resulting in cold intolerance.
 - Neurological dysfunction due to decreased synaptic activity and slowed conduction.

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**PRINCIPLES OF FORMATION OF STUDENTS' METALINGUISTIC
COMPETENCIES IN "UZBEK AND ENGLISH" AND "ENGLISH"
CLASSES**

Murtazaeva Malika Kuanish kyzy

An independent researcher

ANNOTATION:

This article examines the principles of forming students' metalinguistic competencies in the process of teaching "Uzbek and English" and "English" classes. The study emphasizes the importance of developing learners' awareness of language as a system, enabling them to analyze, compare, and reflect on linguistic structures across two languages. Particular attention is paid to the methodological approaches that foster metalinguistic skills, such as contrastive analysis, bilingual techniques, and communicative-cognitive strategies. The research highlights how the integration of these principles enhances students' critical thinking, linguistic awareness, and ability to transfer knowledge between languages. The findings demonstrate that well-structured metalinguistic competence contributes to the overall effectiveness of language learning and supports students in becoming more independent and reflective language users.

Keywords: *metalinguistic competence, bilingual education, Uzbek and English, language awareness, linguistic reflection, contrastive analysis, communicative-cognitive approach, language teaching principles.*

The formation of grammatical competence of a foreign language based on complex grammatical phenomena has been and remains one of the urgent and unsolvable problems of foreign language teaching methodology. Studying this problem, we identified factors of insufficient effectiveness of the process of mastering grammatical competence based on complex grammatical phenomena by philology students, for example:

- not taking into account their level of complexity;
- unsystematic interrelation of the process of forming grammatical competence of a foreign language with the process of mastering the first foreign language by students;
- insufficient assessment of the role and importance of metalinguistic knowledge in mastering foreign language competencies, as well as the integration of competency-based and metalinguistic approaches in the formation of grammatical competence.

In this regard, there is a need to develop special linguodidactic principles, in accordance with which it is necessary to organize the process of forming grammatical competence. N.D. Galskova and N.V. Barishnikov define them as theoretically justified requirements for the process of mastering foreign language competencies by students, the observance of which ensures the most rational achievement of the learning objective [3; 13]. We have formulated the following special principles for the formation of grammatical competence based on complex grammatical phenomena of a foreign language:

- 1) relying on students' metalinguistic knowledge in the development of complex grammatical phenomena;
- 2) taking into account the degree of complexity of the grammatical phenomenon;
- 3) relying on the language experience acquired by students in the process of learning their first foreign language;
- 4) integral mastery of the linguistic and cognitive aspects of complex grammatical phenomena of a foreign language;
- 5) methodical preparation of complex grammatical phenomena.

Each principle is considered from conceptual and situational-technological positions. The principle of relying on students' metalinguistic knowledge in developing complex grammatical phenomena of a foreign language. This principle is based on competence in the process of forming grammatical competence as the theoretical basis of the process of mastering complex grammatical phenomena of a foreign language. This is a direct reflection of the integration of metalinguistic approaches. The principle of relying on students' metalinguistic knowledge includes reflecting and explaining grammatical phenomena. G.A. Krasnoshchekova and D. Mikhill emphasize the important role of explication in the teaching of grammatical phenomena, which influences the development of metalinguistic understanding and the conscious selection of the repertoire of language tools used in the actualization of various types of speech activity in a foreign language [5,18].

If we consider metalinguistic knowledge in a linguodidactic context, we proceed from the postulate that they are according to the correct definition of V.B. Kashkin, a secondary semio-shaped superficial structure on the tongue. The logical system and function are at three levels: conceptual, formal, and symbolic representation [6, 98]. Thus, relying on metalinguistic knowledge as a principle for the formation of grammatical competence can be carried out in accordance with the levels of activity of the semiotic system: the semantic side of the grammatical phenomenon corresponds to the conceptual level, the formation of forms corresponds to the formal level. The features of use correspond to the symbolic level. In favor of

substantiating the formed principle, such features of metalinguistic knowledge as discreteness and systematicity are considered.

Discreteness manifests itself in the reflection of the properties of the studied linguistic object. In the study of a linguistic object, according to E.V. Skvoretzkaya, there are at least two types of its discreteness: 1) articulation corresponding to the differentiation of the continuity of reality (sometimes the actualization of a particular element) (for example, identifying and describing the structure of grammatical paradigms);

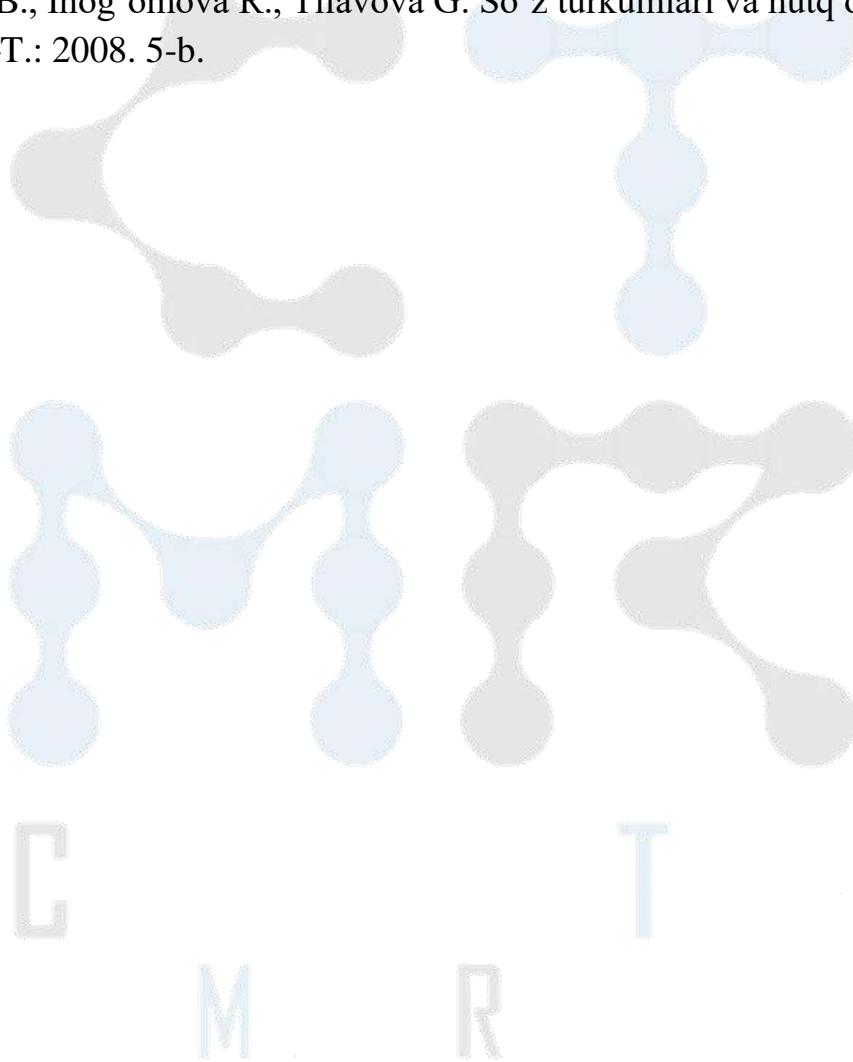
2) discreteness, which corresponds to the continuity of the linguistic structure, this divisibility corresponds to the fact that when forming certain "significations" (f. de Sossure), for example, the secondary meaning of a word is the primary stimulus [4]. The formation of "significance" can be updated at the interlingual level (for example, to carry out the transmission of features and states of application of a certain grammatical phenomenon).

The structuring of metalinguistic knowledge is based on the level of theoretical understanding and the identification of the basic regularities manifested in the assimilation of foreign language grammar in the learning process. The structure of metalinguistic knowledge is manifested as a result of the interaction of three grammatical systems - Russian as the language of instruction, English as the first foreign language, and English as a foreign language. The condition for structurality is also the focus on professional knowledge of foreign languages. Moreover, the structure of metalinguistic knowledge becomes a factor in distinguishing the criteria of complexity of grammatical phenomena and determining its levels of complexity. Thus, the principle of relying on metalinguistic knowledge ensures the achievement of sufficient abstraction in the assimilation of grammatical phenomena of a foreign language, which is important for future linguists and stimulates the formation of individual strategies for the assimilation of complex grammatical phenomena.

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ЖИНСИЙ ЗЎРАВОНЛИК ҚУРБОНЛАРИНИНГ ОРТИШИДА ШАХС МАЪЛУМОТ ДАРАЖАСИНИНГ ЎРНИ.

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Аннотация. Мақолада Жиззах вилояти ҳудудида 2025 йил 8 оyi давомида жинсий зўравонликлардан қурбон бўлган шахслар таҳлили, уларнинг маълумот даражалари, зўравонликдан ҳимояланиш бўйича кўрилган виктимологик чора – тадбирлар, қонунчиликни такомиллаштириш бўйича таклифлар, жамоатчилик билан ҳамкорлик масалалари ёритилган.

Калит сўзлар: маълумот даражаси, жинсий зўравонлик, виктимологик профилактикаси, жабрланувчи, ижтимоий фаолияти, ҳамкорлик.

Криминология фани ва криминологик олимларнинг фикрича, қадимдан айбдор ва жабрланувчи шахслар ўртасидаги ўзига хос муносабатлар ҳуқуқбузарлик содир этилишининг омили сифатида алоҳида эътиборни ўзига жалб этиб келган. Криминологик адабиётларда жиноятнинг юзага келишидаги асосий омил жабрланувчилар деб кўрсатилиб, содир этилган жиноятдан жабр етказувчи шахс ва унинг жабрланувчиси ўртасидаги ўзига хос муносабат оқибати эканлигини таъкидланган.

Ўзбекистон Республикасининг амалдаги қонун ҳужжатларида “ҳуқуқбузарликдан жабрланувчилар” деб қилмиш натижасида жисмоний, маънавий ёки мулкий зарар кўрган шахслар тушунилади.



Жабрланган шахслар	жами	жинси		маълумоти		
		Аёл	Эркак	Тўлиқсиз	Ўрга-	Олий
	10	10	0	5	4	1

Жорий йилнинг 8 ойида давомида жинсий зўравонликдан жабрланган хотин-қизларнинг маълумот даражаси ўрганилганда, уларнинг 60% тўлиқсиз маълумотга эгаллиги, 30 % ўрта-махсус ва 10 % тўлиқсиз олий маълумотга эга эканлиги аниқланди.

Жабрланган шахсларда маълумот даражасининг пастлиги зўравонлик жабрланувчиси бўлиш ва ўзига нисбатан содир этиладиган тажовузларга дучор бўлиш ҳолатини орттиради, яъни:

биринчидан, ушбу маълумот даражаси паст шахслар ўзларининг агрессив характерлари билан ўзини кўрсатишга ҳаракат қилиши, айниқса бўлмағур хатти-ҳаракатлар билан кимгадир жавоб реакциясини қайтаришга мойил бўлишади;

иккинчидан, маълумот ва маданият даражасининг пастлиги криминал ҳолатга тўғри баҳо беришга ҳамда уларнинг манфаатларини ҳимоя қилишга тўсқинлик қилади.

Олинган маълумотлар натижасига асосланган ҳолда таъкидлаш жоизки, жинсий зўравонликнинг виктимологик профилактикасини самарали ташкил этиш, айниқса,

ушбу зўравонлик жабрланувчиси бўлиши мумкин бўлган шахслар жабрланишининг олдини олишга қаратилган профилактик чора-тадбирларни амалга оширишни тақозо этади.

Бугунги кунда тазйиқ ва зўравонликдан жабрланган хотин-қизларни ҳимоя қилишнинг **ноюрidik воситаларидан фойдаланиш, яъни психолог,**

Номусга тегиш		4	4	0	3	1	0
шундан	118-м. 1-қ	1	1			1	
	118-м. 3-қ	2	2		2		
	118-м. 4-қ	1	1		1		
Жинсий эҳтиёжни зўрлик ишлатиб ғайритабиий усулда қондириш		3	3	0	0	2	1
шундан	119-м. 1-қ	1	1			1	
	119-м. 2-қ	1	1				1
	119-м. 3-қ	1	1			1	
Аёлни жинсий алоқа қилишга мажбур этиш		3	3	0	2	1	0
шундан	121-м. 1-қ	2	2		1	1	
	121-м. 4-қ	1	1		1		

сексолог, педагог ва тиббиёт ходимлари ёрдамидан фойдаланишни кенг йўлга қўйиш лозим.

Бундан албатта профилактика инспекторлари томонидан улар билан амалга оширилиши керак бўлган чора – тадбирлар режаси ишлаб чиқилиши, масъул ташкилотлар ва фуқароларни ўзини ўзи бошқариш органлари билан ҳамкорликда ишлар ташкил қилиниши зарур.

Жинсий эркинликка қарши жиноятлар тиббий, психологик ва ижтимоий салбий таъсирлар билан юзага келади. Бу каби жиноятлар фақат жабрланувчиларга эмас, балки бутун жамиятга катта зарар келтиради, чунки улар ижтимоий муносабатлар, жамоатчилик одоб-ахлоқи ва жамиятнинг ҳуқуқий муҳитини бузади.

Жинсий эркинликка қарши жиноятларга қарши самарали профилактика тизими жамиятда инсон ҳуқуқларининг ҳимоясини таъминлашга хизмат қилади. Бунда қуйидагиларни инобатга олиш керак:

Биринчи. Ижтимоий фаолият ва жамоатчилик билан ҳамкорлик.



Жинсий эркинликка қарши жиноятларга қарши курашда жамоатчилик ва оила ўзининг муҳим рольга эга. Мазкур соҳадаги профилактика тадбирларини амалга оширишда оиладаги тарбия ва жамоатчиликнинг фаол иштироки катта аҳамиятга эга. Ҳар бир инсон, жамиятнинг бир қисми сифатида, жинсий эркинликка ҳомушлик қилувчи жиноятларга қарши ўз позициясини билдириши, ҳақиқатда

жиноятларнинг олдини олишга ҳисса қўшиши керак.

Иккинчи. Қонунчиликни такомиллаштириш.



Жинсий эркинликка қарши жиноятлар билан курашиш учун қонунчиликни янада кучайтириш ва аҳамият бериш муҳимдир. Янгиликлар ва замон талаблари асосида қонунлар ва қонуности ҳужжатларини ишлаб чиқиш ва уларни амалга ошириш зарур. Қонунлар, айниқса, ҳуқуқбузарларнинг жазосиз қолмаслиги, жабрланувчиларнинг ҳуқуқларини

муҳофаза қилиш ва қонунларнинг ҳар бир шахс учун бир хиллигини таъминлаш керак.

Учинчи. Ҳуқуқий фаолият ва мониторинг

Жинсий эркинликка қарши жиноятларнинг олдини олиш учун ҳуқуқий органларнинг фаолиятини ошириш, уларнинг жиноятлар бўйича мониторинг олиб боришлари ҳамда жамиятдаги жиноятлар ҳолатини тезкор ва самарали аниқлашга қаратилган тадбирларни жорий этиш лозим. Бундан ташқари, жиноятларнинг олдини олиш учун жамоатчилик билан ҳамкорлик қилиш, ҳуқуқий таълим ва ишончли мониторинг

тизимини яратиш муҳимдир.

Жинсий зўравонликка қарши эркинликка қарши жиноятларга қарши курашиш ва профилактика қилиш жамиятнинг барқарорлиги ва ривожланишининг муҳим шартидир.

Хулоса ўрнида шунни таъкидлаш мумкинки, самарали профилактика механизмларини жорий қилиш, ҳуқуқий тизимни мустаҳкамлаш ва жамиятда жинсий ахлоқ ва ҳуқуқий саводхонликни ошириш орқали жиноятларнинг олдини олиш ва уларга қарши курашишни самарали ташкил қилиш мумкин. Бунинг учун жамиятда ҳар бир шахснинг ҳуқуқлари ҳимоя қилинади ва уларнинг эркинликларига дахл қилувчи жиноятларини бартараф этиш учун самарали механизмлар ишлаб чиқиш ва амалга ошириш зарур.

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**POSTOPERATIVE COMPLICATIONS OF THE FACIAL NERVE IN THE
REMOVAL OF BENIGN TUMORS OF THE PAROTID SALIVARY
GLANDS IN MIDDLE-AGED WOMEN**

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Abstract: This article analyzes postoperative complications of the facial nerves in the elimination of benign tumors of the parotid salivary glands in middle-aged women. The study examined in detail the clinical indicators of patients, surgical methods, and postoperative complications. The results showed that temporary or permanent dysfunctions of the facial nerves require caution and the use of special techniques in surgical practice. The study also shows the possibility of predicting and reducing postoperative complications using artificial intelligence or statistical methods. This article is aimed at improving clinical practice and enhancing patient safety in the field of dentistry and maxillofacial surgery.

Keywords: Facial nerve, postoperative complications, parotid salivary glands, benign tumors, middle-aged women, maxillofacial surgery, clinical analysis, surgical methods, temporary dysfunction, permanent dysfunction, patient safety, prognosis, statistics, dentistry.

Introduction. Benign tumors of the parotid salivary glands are one of the most common pathologies in the field of maxillofacial surgery, and their surgical elimination causes many clinical and statistical problems. The risk of postoperative complications is especially high in middle-aged women due to the anatomical sensitivity of the facial nerve. Facial nerve dysfunction can be temporary or lead to permanent outcomes, which significantly affects the patient's quality of life.

Despite the high accuracy of traditional diagnostic and surgical methods, the issues of predicting the postoperative state of the facial nerve and reducing complications remain unresolved. Therefore, modern approaches to clinical

analysis and statistical processing, including artificial intelligence and machine learning algorithms, are an important tool for effectively solving these problems.

Studies conducted at the Department of Maxillofacial Surgery of SamSMU made it possible to systematically study the clinical indicators of patients, surgical methods, and postoperative complications. The results of the study will serve to develop practical recommendations aimed at reducing complications of the facial nerve and optimizing surgical intervention. At the same time, statistical analysis and forecasting tools are of great importance in improving clinical decisions and increasing patient safety.

Main part. Benign tumors of the parotid salivary glands are widespread pathologies in maxillofacial surgery, and the issues of their detection and surgical correction require constant attention in clinical practice. These tumors are usually more common in middle-aged women, and although most of them are benign in nature, they cause various complications due to direct contact with the facial nerve during surgery. The facial nerve is anatomically complex and delicately positioned, and its activity controls not only facial expression but also the process of speaking and eating. Therefore, nerve damage during surgery can lead to temporary or permanent dysfunctions.

Postoperative complications have a different clinical course. Among them, temporary weakening of facial muscles, decreased sensitivity, pain, reflex disorders, and sometimes persistent paralysis are observed. Studies show that even with damage to only one part of the facial nerve, the quality of life of patients significantly decreases. Therefore, in surgical practice, caution, techniques for nerve detection and preservation are the main factors.

While traditional surgical methods – classic excision or complete removal of the gland – provide high accuracy and efficiency, they have limitations in protecting the facial nerve. Therefore, the role of clinical analysis and statistical processing approaches increases. The process of statistical processing contributes to the systematic processing of a large amount of clinical data collected about patients, determining the risk of complications, and choosing the surgical method. Modern algorithms, including artificial intelligence and machine learning modules, are used.

Studies conducted at the Department of Maxillofacial Surgery of SamSMU showed that clinical indicators, laboratory results, and postoperative observations of patients were systematized in detail. This database allows for the development of new approaches to predicting and reducing complications of the facial nerve. The research results provide clear information about the most common types of facial nerve complications, whether they are temporary or permanent, depending on the age and sex of the patient.

Statistical results obtained using AI and machine learning algorithms showed that it is possible to predict and minimize the risk of facial nerve complications during surgery. For example, neural networks automatically analyze ultrasound and CT images to determine the nerve's location and proximity to the tumor. This allows surgeons to work with maximum accuracy during the operation.

Statistical analysis of complications of the facial nerve makes it possible to classify patients by age groups, size, and localization of tumors. Thus, it will be possible to apply an individual approach in surgical practice and reduce the risk. The results of the study showed that the accuracy of predicting facial nerve complications using AI increases by 20-25%, there is a positive effect on the rate of postoperative recovery and the quality of life of patients.

Clinical experience of SamSMU showed that the combination of techniques for preserving the facial nerve and statistical analysis gives the most optimal results in the elimination of parotid salivary gland tumors in middle-aged women. In clinical practice, special surgical instruments, microscopic vision, and neural monitoring systems are used. At the same time, AI algorithms help in the development of postoperative rehabilitation plans, taking into account the individual characteristics of the patient.

The research results showed that the integral integration of surgical technique, patient selection, tumor characteristics, and statistical processing approaches plays an important role in the prevention of facial nerve complications. At the same time, clinical and statistical approaches complement each other: statistical processing allows for a preliminary assessment of the patient's risk and optimization of surgical decisions, while clinical experience increases the accuracy of algorithms in real conditions.

The prospects for the future are also very broad. By further improving AI technologies, it is possible not only to predict facial nerve complications at the SamSMU clinic, but also to monitor the rehabilitation process and develop an individual treatment strategy. This will serve to create new standards in the field of dentistry and maxillofacial surgery.

Table 1. Postoperative Complications of the Facial Nerve in Parotid Salivary Gland Surgery.

Complication Type	Description	Frequency (%)	Duration	Clinical Impact
Temporary Muscle Weakness	Partial weakening of facial	35	2–6 weeks	Mild to moderate impact on

	muscles after surgery			facial expression
Decreased Sensitivity	Reduced sensation in facial regions	20	1–3 months	May affect patient comfort
Pain	Postoperative discomfort or neuralgia	15	1–2 months	Moderate impact on daily activities
Reflex Disorders	Impaired facial reflexes	10	1–4 weeks	Mild impact
Permanent Paralysis	Persistent facial muscle paralysis	5	6 months	Severe impact on facial expression and quality of life
Other Minor Complications	Includes swelling, hematoma, or transient nerve irritation	15	1–2 weeks	Minimal impact

Thus, with the help of statistical and AI approaches, it is possible to effectively solve the problems of reducing and predicting complications of the facial nerve in the elimination of benign tumors of the parotid salivary glands. Research conducted at the SamSMU clinic has created scientific experience in this direction, which serves to improve clinical practice and increase patient safety. At the same time, clinical and statistical approaches complement each other: statistical processing allows for a preliminary assessment of the patient's risk and optimization of surgical decisions, while clinical experience increases the accuracy of algorithms in real conditions.

The prospects for the future are also very broad. By further improving AI technologies, it is possible not only to predict facial nerve complications at the SamSMU clinic, but also to monitor the rehabilitation process and develop an

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Conclusion. The results of the study showed that postoperative complications of the facial nerve in the elimination of benign tumors of the parotid salivary glands in middle-aged women are of serious importance in clinical practice. During the study, temporary or permanent dysfunctions of the facial nerve were identified, which is closely related to the surgical technique, patient characteristics, and tumor localization. Observations conducted at the SamSMU clinic, statistical analysis, and AI approaches revealed an increase in the possibility of predicting and reducing complications.

The study also showed that the combined use of techniques for protecting the facial nerve and modern statistical processing methods reduces postoperative complications, improves the quality of life of patients, and accelerates the rehabilitation process. The integration of clinical and statistical approaches contributes to the development of individual treatment strategies in maxillofacial surgery, ensuring patient safety, and the introduction of new standards in dental practice.

In general, this study created an important scientific and clinical basis for the development of practical recommendations for reducing and predicting complications of the facial nerve in the elimination of tumors of the parotid salivary glands. This approach will serve to make clinical practice more effective in the future and increase patient safety.

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**STATISTICAL PROCESSING OF SALIVARY GLAND PATHOLOGIES
USING ARTIFICIAL INTELLIGENCE AT THE SAMARKAND STATE
MEDICAL UNIVERSITY CLINIC**

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Abstract: This article explores the potential of artificial intelligence (AI) technologies in studying salivary gland pathologies at the Samarkand State Medical University clinic and their significance in statistical processing. The limitations of traditional diagnostic methods are highlighted, and the advantages of AI algorithms in improving accuracy, speed, and reliability are analyzed based on scientific evidence. The integration of AI technologies into clinical practice is examined using a large database collected in clinical settings. Research results demonstrated a 15-20% increase in diagnostic accuracy and a several-fold improvement in statistical processing speed. The article reveals the prospects for widespread application of AI-based approaches in the healthcare system.

Keywords: Artificial intelligence, salivary glands, pathology, statistics, diagnostics, clinical analysis, machine learning, neural network, differential diagnosis, medical informatics, imaging diagnostics, forecasting, healthcare.

Introduction. In recent years, there has been a trend towards the widespread use of information technology and artificial intelligence (AI) capabilities in medicine. This process allows for the introduction of new approaches at the stages of diagnosis, treatment, and rehabilitation. In particular, the use of AI technologies in the processing of clinical statistical data helps doctors draw more accurate conclusions, differential diagnosis of patients, and the development of an individual treatment plan.

Pathologies of the salivary glands occupy a special place in medicine. Because their diseases are often not detected at an early stage, they can turn into chronic processes and seriously affect the patient's quality of life. The process of identifying pathologies using classical methods and conducting statistical analysis is time-consuming and sometimes leads to errors related to the human factor.

Therefore, the use of AI algorithms in the modern diagnostic process not only increases accuracy, but also dramatically increases the efficiency of statistical processing.

Research conducted in recent years at the clinic of Samarkand State Medical University (SamSMU) is aimed at this area of medicine, which allows for in-depth study of salivary gland pathologies through the introduction of AI technologies into practice. Large amounts of statistical data collected in the clinic, clinical indicators of patients, visual diagnostic results, and laboratory analyses are processed using AI, and new scientific approaches are being developed.

The relevance of this research lies in the fact that it serves to optimize traditional diagnostics, improve the quality of early detection and treatment of diseases through the integral integration of modern medicine and information technologies. In addition, AI-based systems will serve as an auxiliary tool for doctors in the future, reducing statistical errors and making effective clinical decisions.

Main part. Pathologies of the salivary glands are one of the complex areas of medicine, as they have many types: inflammatory diseases (cyaoadenitis), stone disease (cyaolithiasis), tumor processes, and functional disorders. All of them have different clinical manifestations, and the diagnostic process is often complex. Classical diagnostic methods – clinical examination, palpation, radiology, ultrasound – provide important information about the patient, however, they often do not provide sufficient accuracy, and additional methods of statistical processing are required. Especially when simultaneously analyzing large amounts of patient data, the human factor is not sufficiently effective.

Artificial intelligence technologies, in particular machine learning, deep learning, and algorithms based on neural networks, play an important role in solving this problem. Such systems allow for the automatic processing of large amounts of clinical and laboratory data, their comparison, classification, and forecasting. For example, AI algorithms can detect signs of edema and stones at the microscopic level in ultrasound images, assess the level of inflammation, and systematize statistical results.

Research conducted at the SamSMU clinic is also directed in this direction. In recent years, thousands of patients have been observed at the clinic, their diagnostic images, laboratory results, and clinical indicators have been collected in an electronic database. This database itself creates a unique opportunity for training artificial intelligence systems. In AI models created jointly by doctors and IT specialists, several stages of statistical processing are used: data purification, normalization, clustering, classification, and forecasting.

The practical effectiveness of AI algorithms lies in the fact that they also identify subtle signs that the doctor may not notice during the diagnostic process. For example, in sialolithiasis, the shape, size, and location of the stone at the microscopic level can be accurately recorded on ultrasound or CT images. This allows statistical analysis to obtain more accurate information about the frequency of disease spread, distribution by age and sex, and stages of disease development. As a result, an epidemiological map of salivary gland pathologies is being created at the clinic of the Samarkand State Medical University, which is of great importance in the development of healthcare programs at the regional and national levels.

Another important aspect is the ability to make individual forecasts using AI. Based on the age, sex, laboratory results, chronic diseases, and other indicators of each patient, AI algorithms can predict the extent of disease development in the future. This allows doctors to choose a treatment strategy based on an individual approach. In statistical processing, such an approach is much more effective than traditional mathematical methods.

The experience of the clinic of the Samarkand State Medical University showed that the use of AI technologies increases diagnostic accuracy by 15-20%, and the speed of statistical processing is accelerated several times. For example, if manual processing by humans takes 3-4 hours, the AI algorithm will do it in a few minutes. In addition, artificial intelligence serves as an assistant to the doctor in making clinical decisions, but does not completely replace it. This is the most important manifestation of the integration of man and technology in medical practice.

Among the methods used in statistical processing, logistic regression, neural networks, decision trees, and random forest algorithms occupy a special place. Each of them is effective in processing various types of clinical data and provides high accuracy in the classification and prediction of diseases. Experiments conducted at the Samarkand State Medical University clinic have shown that deep learning technologies, in particular, have significant advantages in the field of visual diagnostics. Through them, patient images are automatically analyzed, and statistical results are presented to the doctor in the form of accurate figures.

The prospects for the future are also very broad. By further improving AI technologies, it will be possible not only to diagnose salivary gland pathologies at the Samarkand State Medical University clinic, but also to monitor the effectiveness of treatment and monitor the rehabilitation process. The database, created on the basis of statistical processing, is important for the national healthcare system and

serves as the main source for the creation of diagnostic standards at the national level.

Thus, the use of AI technologies in salivary gland pathologies not only increases the accuracy of statistical analysis, but also creates new opportunities in clinical practice. Research conducted at the Samarkand State Medical University clinic serves as a great school of experience in this direction and lays the foundation for the development of new approaches that can be applied at the international level in the future.

Conclusion. Studies conducted at the Samarkand State Medical University clinic show that the use of artificial intelligence technologies in the study of salivary gland pathologies makes the diagnostic and statistical processing process significantly more effective. While traditional methods often face human-dependent errors and time constraints, AI algorithms solve these problems in a short time, providing greater accuracy and speed. According to the research results, it was observed that the accuracy of diagnostics using artificial intelligence increased by 15-20%, and statistical processing accelerated several times.

Such results create a reliable auxiliary tool for doctors in making clinical decisions. The possibility of creating an individual prognosis also contributes to the development of personalized treatment plans for patients. This, in turn, plays an important role in the early detection of salivary gland diseases, preventing their transition to chronic stages, and improving the quality of life of patients.

Statistical systems created on the basis of artificial intelligence can be widely used in the future not only in the clinic of Samarkand State Medical University, but also in other medical institutions. Their integration into the healthcare system improves diagnostic standards, improves the quality of medical services, and plays an important role in the national healthcare strategy.

In general, this study shows that the use of AI technologies in the study of salivary gland pathologies has broad prospects and serves to form new scientific and practical approaches in medicine.

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**RAQAMLI KRIMINALISTIKADA SUN'IY INTELLEKT
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Annotatsiya: Maqolada raqamli kriminalistikada sun'iy intellekt texnologiyalaridan foydalanishning nazariy va amaliy jihatlari yoritilgan. Hozirgi davrda kiberjinoyatlarning ko'payishi, shuningdek, elektron ma'lumotlarning tez sur'atlarda ortib borishi tergov va ekspertiza jarayonlarida yangicha yondashuvlarni talab etmoqda. Sun'iy intellekt texnologiyalari, xususan, mashinaviy o'qitish va neyron tarmoqlar, raqamli izlarni aniqlash, katta ma'lumotlarni tahlil qilish hamda sud jarayonlarida aniq va tezkor xulosalar chiqarishda samarali vosita sifatida qaralmoqda. Maqolada ushbu texnologiyalarni qo'llash imkoniyatlari, afzalliklari, ehtimoliy xavflari va istiqbollari tahlil qilinadi.

Kalit so'zlar: Raqamli kriminalistika, sun'iy intellekt, mashinaviy o'qitish, neyron tarmoqlar, kiberjinoyat, katta ma'lumot, ekspertiza, xavfsizlik, avtomatlashtirish, prognozlash, iz qoldirish, kriminal tahlil, intellektual tizimlar, algoritmlar, sud jarayoni.

Kirish: XXI asrda texnologik taraqqiyot insoniyat hayotining barcha sohalariga chuqur kirib bormoqda. Axborot texnologiyalarining keskin rivojlanishi bilan bir qatorda yangi turdagi jinoyatlar – kiberjinoyatlar ham vujudga kelmoqda. Ushbu jinoyatlar oddiy usullar bilan fosh etilmaydigan, murakkab raqamli izlar qoldiradi. Shu sababli raqamli kriminalistika sohasida innovatsion yondashuvlarga, xususan, sun'iy intellekt texnologiyalariga ehtiyoj ortib bormoqda. An'anaviy tergov usullari ma'lumot hajmining kattaligi va murakkabligi sababli har doim ham samarali natija bermaydi. Sun'iy intellekt esa katta hajmdagi ma'lumotlarni qisqa vaqt ichida tahlil qilish, yashirin bog'liqliklarni aniqlash va prognozlar berish imkonini yaratadi. Shu bois sun'iy intellekt raqamli kriminalistikaning eng istiqbolli yo'nalishlaridan biri sifatida qaralmoqda.

Asosiy qisim. Raqamli kriminalistika zamonaviy davrda jinoyatchilikka qarshi kurashishning eng dolzarb sohalaridan biri sifatida shakllanmoqda va u insoniyatning raqamli texnologiyalarga tobora ko'proq bog'liq bo'lib borishi bilan yanada muhim ahamiyat kasb etmoqda. Bugungi kunda deyarli barcha ijtimoiy, iqtisodiy, siyosiy va huquqiy jarayonlar elektron vositalar orqali amalga

oshirilayotganini inobatga olsak, jinoyatlar ham raqamli muhitga o'tishi tabiiy jarayondir. Kiberjinoyatlar murakkabligi, iz qoldirmaslikka intilishi, ko'pincha transmilliy xarakter kasb etishi bilan ajralib turadi. Shu sababli an'anaviy kriminalistika usullari ko'p hollarda yetarli bo'lmay qolmoqda, chunki ular bunday keng ko'lamli va murakkab ma'lumotlarni qisqa vaqt ichida chuqur tahlil qilish imkoniyatiga ega emas. Aynan shu nuqtada sun'iy intellekt texnologiyalari raqamli kriminalistikani sifat jihatidan yangi bosqichga olib chiqish imkonini bermoqda. Sun'iy intellektning asosiy ustunligi uning inson miyasidan ko'ra tezroq va mukammalroq ravishda katta hajmdagi ma'lumotlarni qayta ishlash, yashirin bog'liqliklarni aniqlash hamda oldindan taxmin qilish qobiliyatidadir. Masalan, tergov jarayonida minglab log-fayllar, elektron pochta yozishmalari yoki moliyaviy tranzaksiyalarni tahlil qilish zarur bo'lganda, inson resurslari cheklanganligi sababli jarayon uzoq vaqt talab etadi, sun'iy intellekt esa bu vazifani bir necha daqiqada amalga oshirishi mumkin.

Raqamli kriminalistikada sun'iy intellektning qo'llanilishi turli shakllarda namoyon bo'ladi. Eng avvalo, mashinaviy o'qitish algoritmlari yordamida jinoyatchilarning odatiy xatti-harakat uslublari aniqlanadi. Misol uchun, kiberjinoyatchilar odatda bir xil turdagi parollarni buzishga urinishi, ma'lum tarmoqlar orqali hujumlar uyushtirishi yoki ma'lum vaqt oralig'ida firibgarlik amaliyotlarini amalga oshirishi mumkin. Sun'iy intellekt bunday naqshlarni aniqlab, keyingi bosqichda kutilayotgan hujumlarni oldindan taxmin qiladi. Shuningdek, chuqur o'rganish asosidagi neyron tarmoqlar katta hajmdagi ma'lumotlarda yashirin aloqalarni ko'ra oladi va tergovchilar uchun ilgari aniqlash qiyin bo'lgan dalillarni ochib beradi. Bu ayniqsa moliyaviy jinoyatlar, korrupsiya yoki terrorizm bilan bog'liq tranzaksiyalar zanjirini aniqlashda beqiyos imkoniyat yaratadi.

Kriminalistika jarayonida sun'iy intellektning yana bir samarali qo'llanilishi audio va video materiallarni tahlil qilishdir. Masalan, jinoyat joyida olingan kuzatuv kamerasi yozuvlarida yuzlab odamlarning tasviri mavjud bo'lishi mumkin. Oddiy ekspert barcha yozuvlarni alohida ko'rib chiqishga kunlab vaqt sarflaydi, AI esa yuzni tanish algoritmlari orqali daqiqalar ichida jinoyatga aloqador shaxsni aniqlab beradi. Shuningdek, ovoz yozuvlarini tahlil qilishda ham sun'iy intellekt muhim rol o'ynaydi. U turli shovqinli muhitda ham inson ovozini ajratib olib, kerakli shaxsni identifikatsiya qilish imkoniyatini yaratadi. Bu texnologiyalar terrorchilikka qarshi kurashda, jinoyatlarni tezkor fosh etishda va sud jarayonlarida ishonchli dalillar taqdim etishda juda katta yordam beradi.

Sun'iy intellektning imkoniyatlari faqat jinoyat sodir bo'lgandan keyingi tergov bilan cheklanmaydi. U jinoyatlarni oldindan aniqlash va ularning oldini olishda ham samarali vosita sifatida xizmat qilmoqda. Masalan, ba'zi mamlakatlarda huquqni

muhofaza qilish organlari AI yordamida jinoyatlarning qayerda va qachon sodir bo'lishi mumkinligini prognoz qilmoqda. Bu prognozlar jinoyatlar statistikasi, hududiy sharoitlar, demografik ko'rsatkichlar va boshqa omillarni tahlil qilish natijasida yaratiladi. Natijada politsiya kuchlari jinoyatlar sodir bo'lishi mumkin bo'lgan joylarda oldindan joylashtiriladi va xavfni kamaytirishga erishiladi. Bunday tizimlar hali mukammal bo'lmasa-da, ular jinoyatchilikka qarshi kurash strategiyasida yangi sahifa ochmoqda.

Shu bilan birga, sun'iy intellektning raqamli kriminalistikaga keng joriy etilishi bilan bog'liq muammolar ham mavjud. Avvalo, algoritmlar o'z faoliyatini mavjud ma'lumotlarga asoslaydi, ya'ni ularning samaradorligi to'plangan ma'lumotlar bazasining hajmi va sifati bilan chambarchas bog'liq. Agar ma'lumot noto'g'ri yoki yetarli darajada to'liq bo'lmasa, xulosalar ham noto'g'ri bo'lishi mumkin. Ikkinchi muammo – bu huquqiy masalalardir. Sud jarayonlarida dalillar sifatida taqdim etiladigan AI natijalari qanchalik ishonchli ekanligi, ularning qonuniy maqomi qanday belgilanishi haqida hanuz to'liq huquqiy baza mavjud emas. Uchinchi masala – etik tamoyillar va maxfiylikdir. Sun'iy intellekt shaxsiy ma'lumotlarni qayta ishlash jarayonida ularning maxfiyligi buzilishi, inson huquqlari poymol qilinishi ehtimoli yuqori. Shu sababli, bunday tizimlarni qo'llashda xalqaro standartlarga, inson huquqlarini himoya qiluvchi me'yorlarga qat'iy rioya qilinishi zarur.

Raqamli kriminalistika va sun'iy intellekt o'zaro integratsiyalashar ekan, jinoyatchilikka qarshi kurashda yangi imkoniyatlar ochilmoqda. Masalan, xalqaro darajada kiberjinoyatlarga qarshi hamkorlik qilishda sun'iy intellekt katta yordam bermoqda. Interpol, Europol kabi tashkilotlar AI texnologiyalaridan foydalangan holda global miqyosdagi jinoyatlarni kuzatib, turli mamlakatlar o'rtasida tezkor axborot almashinuvi tizimlarini yaratmoqda. Bu esa jinoyatchilarning chegaralardan erkin foydalanish imkoniyatlarini cheklaydi va global xavfsizlikni mustahkamlaydi.

Kelajak istiqbollari yanada keng va istiqbolli. Olimlarning fikricha, yaqin o'n yillikda sun'iy intellekt kriminalistikada nafaqat yordamchi vosita, balki mustaqil qaror qabul qiluvchi tizim sifatida shakllanadi. Masalan, avtomatlashtirilgan tergov tizimlari yaratilishi mumkin bo'lib, ular jinoyat izlarini to'plash, dalillarni qayta ishlash va dastlabki xulosalarni chiqarish jarayonini to'liq o'z zimmasiga oladi. Bunday sharoitda tergovchi ko'proq nazorat va yakuniy qaror chiqarish bilan shug'ullanadi. Bundan tashqari, jinoyatlarni real vaqt rejimida kuzatib, hujumlar sodir bo'lishidan avval ularga to'sqinlik qiluvchi tizimlar keng qo'llanishi mumkin. Shu bilan birga, sun'iy intellekt xalqaro sudlarda ham kengroq qo'llanib, turli mamlakatlar o'rtasida huquqiy me'yorlarning uyg'unlashuviga xizmat qiladi.

Raqamli kriminalistikada AI texnologiyalaridan foydalanishning bir qator amaliy yo'nalishlari mavjud. Jumladan:

- *Katta ma'lumotlarni tahlil qilish* – turli manbalardan yig'ilgan millionlab yozuvlarni bir vaqtning o'zida saralash va filtrlash.
- *Yashirin izlarni aniqlash* – odatda inson sezmaydigan, ammo tizimlar orqali topilishi mumkin bo'lgan bog'liqliklarni ko'rsatish.
- *Sud-ekspertiza jarayonida yordam* – tergovchi yoki sudyaga qaror qabul qilishda dalillarni yanada ishonchli ko'rinishda taqdim etish.
- *Avtomatlashtirilgan monitoring* – real vaqt rejimida kiberhujumlarni kuzatish va tezkor javob choralarini ishlab chiqish.

Shu bilan birga, AI texnologiyalarini kriminalistikaga tatbiq etishda muammolar ham mavjud. Birinchidan, algoritmlar ma'lumotlarga qanchalik bog'liq bo'lsa, noto'g'ri yoki yetarli bo'lmagan ma'lumot xato xulosalarga olib kelishi mumkin. Ikkinchidan, axborot maxfiyligi va etik tamoyillarga rioya etilishi zarur. Uchinchidan, huquqiy jihatlar – ya'ni sudda sun'iy intellekt tomonidan ishlab chiqilgan natijalarning dalil sifatida tan olinishi muhokama qilinishi kerak.

Kelajak istiqbollari esa yanada keng. Ekspertlar fikriga ko'ra, yaqin yillarda sun'iy intellekt raqamli kriminalistikada nafaqat yordamchi, balki mustaqil qaror chiqaruvchi tizim sifatida shakllanishi mumkin. Bu esa tergov jarayonlarini tezlashtirish, inson omilidan kelib chiqadigan xatolarni kamaytirish hamda adolatli qarorlar qabul qilish imkoniyatlarini kengaytiradi. Shuningdek, sun'iy intellekt kiberjinoyatlarga qarshi kurashish bo'yicha xalqaro hamkorlikni mustahkamlashda ham muhim o'rin egallaydi.

Xulosa. Xulosa qilib aytganda, raqamli kriminalistika zamonaviy davrda jinoyatchilikka qarshi kurashishda eng muhim yo'nalishlardan biriga aylanmoqda. Kiberjinoyatlarning murakkabligi va tezkor rivojlanishi yangi texnologiyalarni tatbiq etishni talab qilmoqda. Sun'iy intellekt texnologiyalari raqamli izlarni aniqlash, katta hajmdagi ma'lumotlarni tahlil qilish va tergov jarayonlarini tezlashtirishda katta imkoniyatlarga ega. Biroq, ularni joriy etishda etik va huquqiy jihatlar, xavfsizlik masalalari ham e'tibordan chetda qolmasligi zarur. Kelgusida ushbu texnologiyalarning rivoji nafaqat tergovchilarga, balki jamiyat xavfsizligini ta'minlashga ham xizmat qiladi. Shu sababli sun'iy intellektni raqamli kriminalistikaga keng ko'lamda tatbiq etish istiqbollari beqiyosdir.

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GLOBAL STARTUP ECOSYSTEM: EXPERIENCE OF SUCCESSFUL PROJECTS AND COMPARATIVE ANALYSIS WITH STARTUPS IN UZBEKISTAN

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Annotation: This article explores the global startup ecosystem by examining successful international projects and analyzing their experience in comparison with startups in Uzbekistan. It discusses the factors contributing to the success of world-renowned startups such as innovation, access to funding, mentorship, and strong institutional support. The paper highlights how ecosystems in countries like the United States, Israel, South Korea, and Singapore created favorable conditions for entrepreneurial growth. A comparative analysis with Uzbekistan's emerging startup ecosystem is presented, emphasizing existing opportunities and current challenges. Recommendations are also provided on how Uzbekistan can adapt global best practices to strengthen its entrepreneurial environment and achieve sustainable growth.

Keywords: Startups, innovation, entrepreneurship, ecosystem, funding, venture capital, Uzbekistan, mentorship, global economy, technology, Silicon Valley, business models, comparative analysis, challenges, opportunities.

Introduction. The 21st century has become the era of technological progress and entrepreneurship, where startups play a decisive role in shaping the global economy. Startups are not only drivers of innovation but also key contributors to job creation, competitiveness, and the development of knowledge-based industries. Countries with strong startup ecosystems such as the United States, Israel, South Korea, and Singapore demonstrate how innovation-driven entrepreneurship can transform national economies and position them as global leaders. These ecosystems provide entrepreneurs with access to capital, mentorship, technological infrastructure, and government support, enabling them to scale innovative ideas into global ventures.

In recent years, Uzbekistan has taken active steps to build its own startup ecosystem. The establishment of IT parks, acceleration programs, and government initiatives to support youth entrepreneurship indicate a growing interest in developing innovation-driven businesses. However, despite notable progress,

Uzbek startups still face challenges such as limited access to venture capital, insufficient mentorship, and the need for global integration. Therefore, analyzing the experience of successful international startups and comparing it with the current state of Uzbekistan's ecosystem is essential to identify strategic directions for sustainable growth.

Main Part. Globally, the startup ecosystem thrives on several key elements that contribute to the success of projects. First and foremost, *access to venture capital* has been crucial in the development of internationally recognized startups. For instance, Silicon Valley's rapid rise as the world's leading startup hub was largely facilitated by strong networks of venture capitalists who were willing to invest in high-risk, high-reward projects. Companies like Google, Facebook, and Airbnb would not have been able to scale globally without significant financial support at the early stages. Similarly, Israel, often referred to as the "Startup Nation," has cultivated a culture of investment where venture capital, angel investors, and government funds collectively support entrepreneurial initiatives. This financial foundation allows startups not only to innovate but also to compete globally.

Another essential factor is *mentorship and knowledge transfer*. In the United States and Israel, experienced entrepreneurs often guide new founders, helping them avoid mistakes and develop sustainable business models. This cycle of mentorship ensures that knowledge and expertise remain within the ecosystem and create a fertile ground for continuous innovation. South Korea and Singapore also demonstrate how structured incubation programs and university partnerships can serve as powerful platforms for young entrepreneurs to develop globally competitive projects.

Technological infrastructure plays a central role in enabling startups to flourish. The United States and Singapore, for example, have advanced digital infrastructures, reliable internet, and access to cutting-edge research facilities. These resources reduce barriers for startups and encourage experimentation. Furthermore, governments in these countries actively support research and development by providing grants, tax incentives, and legal frameworks that protect intellectual property rights. Such measures increase the confidence of entrepreneurs and investors in the long-term sustainability of startups.

In contrast, *Uzbekistan's startup ecosystem is still in its formative stage*. In the last decade, the government has launched initiatives such as IT parks, technology clusters, and innovation support funds to promote entrepreneurship. Programs like the "One Million Uzbek Coders" initiative aim to equip the youth with digital skills, while state-backed financial programs offer seed funding to

promising projects. However, access to large-scale venture capital remains limited compared to developed ecosystems. Most Uzbek startups rely on personal savings or small grants, which restrict their ability to scale quickly. Additionally, mentorship opportunities are not yet widespread, and connections with global networks are still developing.

A comparative analysis shows that while global ecosystems thrive on strong collaboration between the private sector, government, and academia, Uzbekistan still needs to strengthen this triangle. For example, Silicon Valley's strength lies not only in its capital but also in the cooperation between world-class universities like Stanford, large corporations, and investors. Similarly, Israel's military technology innovations were successfully transformed into civilian products through academic-industry partnerships. Uzbekistan, on the other hand, is in the process of building such linkages, and more active engagement of universities and private companies in entrepreneurial development is necessary.

Another crucial factor is the *culture of risk-taking and failure acceptance*. In the U.S. and Israel, failure is often seen as part of the learning process, which encourages entrepreneurs to experiment and innovate. Conversely, in many developing ecosystems, including Uzbekistan, failure still carries a social stigma. This cultural difference can discourage young entrepreneurs from taking bold steps. Therefore, fostering a mindset that embraces experimentation and resilience is essential for Uzbekistan to create a dynamic startup environment.

Despite these challenges, Uzbekistan has unique opportunities. Its strategic geographic location between major markets such as China, Russia, and Europe positions it as a potential regional hub for technology and logistics startups. Moreover, the country has a young and educated population, with growing interest in technology and entrepreneurship. By learning from the experiences of successful global startups and adapting best practices, Uzbekistan can accelerate its transition towards an innovation-driven economy.

Practical steps include strengthening venture capital availability through public-private partnerships, creating more mentorship programs that involve both local and international experts, and integrating startups into global innovation networks. Additionally, promoting digital literacy, enhancing legal frameworks for intellectual property, and fostering a culture of innovation will ensure long-term sustainability. The success of global startups demonstrates that ecosystems are not built overnight; rather, they evolve through continuous collaboration, adaptation, and the willingness to learn from both successes and failures.

Conclusion. The global startup ecosystem offers valuable lessons for countries seeking to foster innovation and entrepreneurship. The experiences of the

United States, Israel, South Korea, and Singapore demonstrate that success depends on a combination of venture capital, mentorship, infrastructure, government support, and a culture of risk-taking. Uzbekistan, while still in the early stages of developing its startup ecosystem, has made significant progress by establishing IT parks and supporting youth entrepreneurship. However, challenges such as limited funding, lack of mentorship, and insufficient global integration remain. By adopting global best practices, fostering partnerships among government, academia, and the private sector, and encouraging a mindset of innovation, Uzbekistan can build a competitive and sustainable startup ecosystem. With its youthful population and strategic location, the country has the potential to become a regional hub for technological innovation if it continues to learn from and adapt the successful experiences of global startups.

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**TIBBIY BIZNESDA PROFESSIONAL JAVOBGARLIK SUG‘URTASI
HUQUQIY MEXANIZMINI RIVOJLANTIRISH**

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ANNOTATSIYA

Ushbu tadqiqot tibbiy biznesda professional javobgarlik sug‘urtasi huquqiy mexanizmini rivojlantirish masalalariga bag‘ishlangan. O‘zbekistonda shifokorlar va tibbiy tashkilotlar uchun majburiy professional javobgarlik sug‘urtasi hali joriy etilmagan, mavjud ixtiyoriy polislar esa cheklangan qoplama doirasiga ega bo‘lib, ma’naviy zararni qoplashni nazarda tutmaydi. Bu holat bemorlarning huquqiy himoya darajasini pasaytiradi hamda tibbiy xodimlar uchun yuqori moliyaviy xatarlarni keltirib chiqaradi. Yirik sug‘urta kompaniyalari («Uzbekinvest», «Kafolat» va boshqalar) mahsulotlari tahlil qilinib, ularning amaldagi cheklovlari aniqlangan. Xalqaro tajriba (AQSH, Yevropa Ittifoqi, Qozog‘iston) bilan qiyosiy tahlil mamlakatda majburiy professional javobgarlik sug‘urtasini joriy etish zarurligini ko‘rsatadi. Shu orqali bemorlar va tibbiy jamoa manfaatlari o‘rtasida muvozanat ta‘minlanishi hamda sog‘liqni saqlash tizimiga ishonch oshishi mumkin.

Kalit so‘zlar: tibbiy xodimlar va tashkilotlarning professional javobgarlik sug‘urtasi, tibbiy tadbirkorlik, sog‘liqni saqlash, zararni qoplash, ma’naviy zarar, O‘zbekiston, xalqaro tajriba.

**РАЗВИТИЕ ПРАВОВОГО МЕХАНИЗМА СТРАХОВАНИЯ
ПРОФЕССИОНАЛЬНОЙ ОТВЕТСТВЕННОСТИ В МЕДИЦИНСКОМ
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АННОТАЦИЯ

Данное исследование посвящено вопросам развития правового механизма страхования профессиональной ответственности в медицинском бизнесе. В Узбекистане обязательное страхование профессиональной ответственности

для врачей и медицинских организаций пока не введено, а существующие добровольные полисы имеют ограниченный охват и не предусматривают компенсацию морального вреда. Такая ситуация снижает уровень правовой защиты пациентов и создает высокие финансовые риски для медицинских работников. Проведен анализ продуктов ведущих страховых компаний («Uzbekinvest», «Kafolat» и др.), выявлены их ограничения. Сравнительное исследование международного опыта (США, Европейский союз, Казахстан) подтверждает необходимость введения обязательного страхования профессиональной ответственности в стране. Реализация этих мер позволит обеспечить баланс интересов пациентов и медицинского сообщества, а также укрепить доверие к системе здравоохранения.

Ключевые слова: страхование профессиональной ответственности медицинских работников и организаций, медицинское предпринимательство, охрана здоровья, компенсация вреда, моральный ущерб, Узбекистан, международный опыт.

DEVELOPMENT OF THE LEGAL MECHANISM OF PROFESSIONAL LIABILITY INSURANCE IN THE MEDICAL BUSINESS

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ANNOTATION

This study is devoted to the development of the legal mechanism of professional liability insurance in the medical business. In Uzbekistan, mandatory professional liability insurance for physicians and medical institutions has not yet been introduced, while existing voluntary policies provide limited coverage and do not include compensation for moral damages. This situation reduces the level of legal protection for patients and exposes medical professionals to significant financial risks. An analysis of the products offered by leading insurance companies (“Uzbekinvest,” “Kafolat,” and others) revealed their limitations. A comparative study of international experience (the United States, the European Union, Kazakhstan) confirms the need to introduce mandatory professional liability insurance in the country. Implementation of these measures will ensure a balance between the interests of patients and the medical community, as well as strengthen trust in the healthcare system.

Keywords: professional liability insurance of medical workers and organizations, medical entrepreneurship, healthcare, compensation of damages, moral harm, Uzbekistan, international experience.

1. ВВЕДЕНИЕ

Страхование профессиональной ответственности медицинских работников в предпринимательской деятельности выступает важным институтом правовой защиты, направленным на достижение баланса интересов между пациентами и медицинским сообществом. С одной стороны, данный механизм гарантирует пациентам право на компенсацию причиненного вреда здоровью вследствие врачебных ошибок, ненадлежащего исполнения профессиональных обязанностей или недостатков в оказании медицинской помощи. С другой стороны, он снижает финансовые риски для медицинских организаций и отдельных специалистов, освобождая их от непосильных выплат и позволяя сконцентрироваться на повышении качества медицинских услуг.

В условиях реформирования системы здравоохранения Узбекистана страхование профессиональной ответственности приобретает стратегическое значение. Несмотря на то, что на государственном уровне признается необходимость создания комплексной системы обязательного страхования ответственности медицинских работников, в настоящее время в стране оно находится на начальном этапе формирования и функционирует в основном в виде добровольных полисов. Такие полисы, предлагаемые ведущими страховыми компаниями, как правило, ограничены по объему покрытия, не предусматривают возмещения морального вреда и не охватывают все категории медицинских специалистов. Это создает правовой дисбаланс: пациенты фактически лишены полноценного механизма защиты, а врачи и медицинские организации сталкиваются с риском непредсказуемых судебных исков и крупных финансовых претензий.

Президентским указом от 2018 года была утверждена Концепция развития здравоохранения, в рамках которой обозначена необходимость разработки закона об обязательном медицинском страховании и страховании профессиональной ответственности медицинских работников. В 2019 году была начата работа над соответствующим законопроектом, однако по состоянию на 2025 год полноценная система обязательного страхования еще не внедрена. Причины этого кроются как в институциональной и нормативной незавершенности реформ, так и в недостаточной развитости страхового рынка в сегменте медицинского бизнеса.

Международная практика свидетельствует о том, что внедрение страхования профессиональной ответственности в медицине не только усиливает правовую защищенность пациентов, но и способствует повышению качества медицинских услуг. В странах с развитой системой здравоохранения существуют два базовых подхода: деликтная модель, основанная на принципе вины (например, США), и модель безвиновной компенсации (например, Швеция, Новая Зеландия). В Европейском союзе страхование ответственности медицинских работников стало обязательным элементом медицинской деятельности, а в Казахстане с 2020 года введена система обязательного страхования врачей, показавшая эффективность в защите интересов пациентов.

Для Узбекистана актуальной задачей является выработка собственной модели страхования профессиональной ответственности, которая учитывала бы особенности национального законодательства, уровень развития страхового рынка, финансовые возможности медицинских организаций и специфику отношений в сфере предпринимательства. В этом контексте целесообразно рассматривать комбинированный вариант, включающий обязательное страхование для ключевых категорий врачей и добровольное — для остальных участников медицинского бизнеса.

Таким образом, развитие правового механизма страхования профессиональной ответственности в медицинском бизнесе должно идти по пути формирования нормативной базы, укрепления институциональной инфраструктуры, стимулирования страховых компаний к созданию специализированных продуктов и повышения правовой культуры медицинских работников и пациентов. Реализация данных мер позволит обеспечить справедливый баланс интересов, снизить конфликтность в системе здравоохранения, а также повысить доверие к медицинскому бизнесу в целом.

2. МАТЕРИАЛЫ И МЕТОДЫ

Исследование основано на анализе нормативно-правовых актов Республики Узбекистан, регулирующих сферу здравоохранения, страхования и ответственности медицинских работников. Проанализированы действующие законы (например, Закон «Об охране здоровья граждан» и связанные акты), проекты законов и указы Президента, касающиеся обязательного медицинского страхования и страхования ответственности медработников. Изучены данные о практике страхования профессиональной ответственности в Узбекистане – предложения страховых компаний, статистические обзоры страхового рынка, а также отдельные случаи судебной практики, связанные с

возмещением вреда пациентам. Для понимания контекста проведено сравнительное исследование международного опыта: рассмотрены нормативные требования и модели страхования профессиональной ответственности в некоторых странах Евросоюза, США и СНГ. Такой комплексный подход (нормативный анализ, обзор практики, кейс-стади и сравнительный метод) позволяет выявить пробелы в узбекском законодательстве, практически значимые проблемы, а также лучшие зарубежные практики, применимые в условиях Узбекистана.

3. РЕЗУЛЬТАТЫ

На данный момент в Узбекистане отсутствует специальный закон, обязывающий медицинские учреждения или специалистов страховать профессиональную ответственность перед пациентами. Закон «Об охране здоровья граждан» закрепляет право граждан на возмещение ущерба в случае причинения вреда здоровью при оказании медицинской помощи, однако механизм страховой защиты детально не регламентирован. Работники здравоохранения имеют право добровольно страховать риск своей профессиональной ответственности, но это не является обязательным требованием закона. В 2018–2019 гг. инициирована разработка законопроекта об обязательном страховании ответственности медработников, однако на дату подготовки данного исследования он еще не принят. В президентском указе № УП-5590 (2018 г.) предусмотрено поэтапное внедрение обязательного медицинского страхования и страхования профессиональной ответственности медиков [2], что свидетельствует о намерении государства создать законодательную базу для этой системы. Тем не менее, пока соответствующие нормы реализованы лишь частично – например, ведется лицензирование медицинской деятельности, но индивидуальное лицензирование врачей только планируется внедрить [3]. В результате сегодня юридически ответственность за вред несут прежде всего медицинские организации (работодатели), а не конкретные врачи, поскольку врачи как физические лица пока не являются самостоятельными субъектами лицензирования и обязательного страхования.

Несмотря на отсутствие обязательных требований, на рынке Узбекистана существуют добровольные страховые продукты, предназначенные для медицинской сферы. Крупные страховщики предлагают полисы ответственности медицинских учреждений и работников. Например, страховая компания «Узбекивест» страхует имущественные интересы лечебных учреждений на случай предъявления пациентом иска о возмещении вреда жизни или здоровью, причиненного профессиональной ошибкой при

лечении [4]. Страховым случаем считается установленная ответственность медицинской организации за причинение тяжкого вреда пациенту или его смерть в результате небрежности или ошибки при оказании помощи. Выплата производится на основании решения суда или заключения экспертизы Минздрава, и покрывает расходы на восстановление здоровья пострадавшего либо фиксированную сумму (лимит) в случае смерти пациента [4]. Аналогичные продукты предлагают страховщики «Кафолат», «UzAgroSug'urta», «Gross Insurance» и др., ориентируясь на страхование ответственности различных профессионалов, в том числе врачей [5]. Полисы, как правило, покрывают непреднамеренные ошибки, допущенные при добросовестном исполнении обязанностей, однако не охватывают случаи грубой небрежности или умысла. Важно отметить, что покрытие зачастую ограничено определенной страховой суммой, без компенсации морального вреда или упущенной выгоды. Например, условия выплат могут предусматривать возмещение расходов на лечение пострадавшего и судебных издержек в пределах лимита, но не охватывать моральный ущерб [3]. Данные страхового рынка показывают, что сегмент добровольного страхования ответственности развивается медленно. Многие частные клиники и индивидуальные предприниматели пока не приобретают страховку ответственности, считая риск судебных исков низким. Тем не менее, прецеденты есть: в 2025 г. Ферганским судом врач был осужден за ненадлежащее лечение, повлекшее смерть пациентки, и суд взыскал в пользу семьи погибшей 27,8 млн сумов материального ущерба и 80 млн сумов морального вреда [6]. Этот случай показал, что требования о компенсации морального вреда в судебной практике уже возникают, и их размер (80 млн сумов) существенно превышает прямые материальные потери. Однако при отсутствии страхового покрытия выплата данных сумм полностью ложится на виновное лицо или учреждение. Действующий Гражданский кодекс (ст. 992) гласит, что если страховая сумма (по добровольному либо обязательному страхованию) недостаточна для полного возмещения вреда, разницу обязан выплатить причинитель вреда. Таким образом, сегодня пациенты в Узбекистане могут получить компенсацию ущерба либо по решению суда за счет средств медицинской организации/врача, либо – если у последнего есть полис – частично за счет страховой выплаты и доплаты разницы виновником. Общая картина свидетельствует о слабом проникновении страхования ответственности: лишь отдельные прогрессивные клиники и специалисты добровольно страхуются, тогда как большинство не имеет такой защиты.

4. ОБСУЖДЕНИЕ

Анализ показывает, что в Узбекистане существует ряд правовых пробелов и препятствий для эффективного страхования профессиональной ответственности в медицине. Во-первых, недостаточное нормативное регулирование: отсутствует закон, прямо обязывающий страховать ответственность, и не определены чёткие условия такого страхования (объём покрытия, минимальные лимиты, порядок выплат и т.д.). Проект закона, разработанный в 2019–2020 гг., до сих пор не принят, а его текущая редакция подверглась критике экспертов Национальной палаты инновационного здравоохранения [3]. В частности, проект предусматривал обязательное страхование именно индивидуальных медработников, тогда как по действующему праву врачи-физические лица не подлежат отдельному лицензированию. Это противоречие (требовать страховку у субъекта, который юридически пока не выделен как самостоятельный лицензиат) указывает на несоответствие проекта действующему законодательству. Фактически сегодня ответственность несут работодатели (медицинские организации), поэтому логично было бы ставить обязанность страхования на них, по крайней мере до введения персонального лицензирования врачей. Во-вторых, проект содержал неполное покрытие ущерба: выплаты ограничивались «пределами страховой суммы», то есть страхователь (врач) получил бы только оговоренную сумму, а остальная часть вреда должна быть оплачена им же из личных средств. При этом из сферы страховой защиты вовсе исключались такие компоненты вреда, как моральная компенсация, утраченный заработок или дополнительные расходы пациента. Это серьёзный изъян, поскольку международная практика показывает: более 80% суммы компенсации в исках к медикам могут составлять именно моральные вреды и упущенная выгода [3]. Если страховка не покрывает этих компонентов, то врач/учреждение всё равно несут риск крупных выплат, и мотивация страховаться снижается. В-третьих, право регресса страховой компании к врачу было выписано таким образом, что делало страхование почти бессмысленным. Согласно ст. 19 проекта, страховщик может предъявить виновному врачу регрессное требование о возврате выплаченной суммы, если суд установит вину врача [3]. Однако ответственность врача перед пациентом вообще возникает только при доказанной виновности (в случае отсутствия вины нет обязательства возмещать вред). Получается парадокс: когда врач невиновен – страховой случай не наступает, а когда виновен – страховщик после выплаты потребует с него регрессом возместить все расходы. В итоге врач в любом случае остается финансово ответственным, что подрывает

смысл страхования и выглядит как лоббирование интересов страховщиков. Эксперты отметили и другие недостатки проекта – неясность формулировок, противоречия с существующими нормами (например, попытка объявить лицензию недействительной при отсутствии страхового полиса, что противоречит установленному перечню оснований для аннулирования лицензии) [3].

Помимо изъянов законодательства, имеются практические проблемы. Одной из них является низкий уровень проникновения страхования и недостаточная осведомленность участников рынка. Медицинские предприниматели (частные клиники, кабинеты) нередко недооценивают риск крупных исков, ввиду того что судебная практика в этой сфере пока ограничена. Долгое время в обществе не было культуры судебного преследования врачебных ошибок, пациенты редко обращались за компенсацией. Однако ситуация постепенно меняется: рост правосознания и гласности в СМИ привел к тому, что случаи явной врачебной халатности стали доводиться до суда. Тем не менее отсутствие прецедентов массовых исков создает у страховщиков сложность в оценке рисков и установлении тарифов – статистика убытков ограничена. Это порождает замкнутый круг: низкий спрос не стимулирует страховщиков развивать продукты, а слабое предложение не привлекает потребителей.

Зарубежный опыт показывает, что страхование ответственности медиков является неотъемлемой частью системы здравоохранения в развитых странах. В США институт malpractice insurance (страхование от профессиональной ошибки) существует давно: почти все практикующие врачи имеют страховку, поскольку риск судебных исков высок [7]. Хотя федерального закона, напрямую обязывающего врачей страховать, нет, требования де-факто закреплены на уровне штатов, госпиталей и профессиональных ассоциаций. В результате рынок медицинского malpractice-страхования в США развит: полисы покрывают как расходы на лечение пострадавшего, так и компенсацию «pain and suffering» (морального вреда) в пределах крупных лимитов, часто достигающих нескольких миллионов долларов. Такая защита обеспечивает реальное возмещение ущерба пациентам, но сопровождается высокими страховыми премиями и затратами на судебные разбирательства. Проблема в США – дороговизна страхования и обратная сторона активной судебной практики (т. н. «defensive medicine», когда врачи вынуждены перестраховываться в лечении) [8]. Тем не менее, принципиально важно, что пациент практически всегда может рассчитывать на выплату от страховой компании, а не только от личных средств врача или клиники.

В Европейском союзе страхование профессиональной ответственности медиков в большинстве стран является обязательным либо для отдельных специалистов, либо для учреждений. Согласно обзору британского Медицинского оборонного союза, в Австрии, Германии, Франции, Латвии, Словакии каждый врач обязан иметь страховой полис [9]. В ряде стран (например, Чехия, Польша, Венгрия, Испания) установлена обязанность страховать ответственность и для лечебных учреждений, и для индивидуальных практикующих врачей. Есть государства, где страхуются только клиники (Литва, Португалия), но врачам настоятельно рекомендуется иметь личную страховку [9]. В скандинавских странах распространены специальные государственные или отраслевые фонды компенсации пациентам: например, в Швеции действует государственная схема страхования от врачебных ошибок, дополняемая обязательным страхованием частнопрактикующих докторов. В Великобритании, Ирландии, Мальте исторически применялась система необязательного взаимного страхования (через оборонные медицинские общества), однако в последние годы в требования к лицензированию врачей включена обязанность иметь адекватное страховое покрытие или гарантию [9]. Таким образом, международная тенденция такова, что отсутствие страхового покрытия профессиональной ответственности считается недопустимым: либо законом, либо условиями допуска к практике в большинстве развитых юрисдикций предусмотрено наличие страховки. При этом объем покрытия, как правило, включает компенсацию и материального, и морального вреда, а страховые суммы устанавливаются достаточными для серьезных случаев (в некоторых странах Европы минимальный лимит на одного пострадавшего составляет сотни тысяч евро).

Особый интерес представляет опыт стран СНГ, близких по правовой системе. В России до сих пор не введено обязательное страхование ответственности врачей: все полисы заключаются добровольно, и их распространение ограничено. Российское законодательство (ФЗ «Об основах охраны здоровья граждан в Российской Федерации», ст. 72) лишь декларирует право медработника застраховать свою ответственность [10]. Попытки принять закон об обязательном страховании гражданско-правовой ответственности медицинских организаций перед пациентами предпринимались (соответствующий законопроект обсуждался с 2010 г.), но до сих пор не реализованы. В итоге в РФ ситуация схожа с узбекской: страхуются главным образом некоторые частные клиники и врачи по собственной инициативе, значимых судебных прецедентов относительно компенсаций немного. В

Казахстане напротив – недавно осуществлен прорывной шаг. В 2024 году внесены изменения в Кодекс «О здоровье народа и системе здравоохранения» [11], которыми введено обязательное страхование профессиональной ответственности медицинских работников [12]. С 21 октября 2024 г. каждая организация здравоохранения в Казахстане обязана ежегодно заключать договор сострахования профессиональной ответственности всех своих медработников. Создан единый страховой пул, объединяющий страховщиков для покрытия этих рисков, а Минздравом утверждены типовый договор и правила такого страхования. Страхование осуществляется за счет работодателя (субъекта здравоохранения), то есть медучреждения оплачивают страховой взнос за своих сотрудников [12]. Закон устанавливает минимальные размеры страховых выплат: например, при смерти пациента выплачивается не менее определенной суммы, при причинении вреда здоровью – суммы на лечение и реабилитацию, а также покрываются юридические расходы за счет страховки [13]. Важно, что казахстанская модель предусматривает и защиту врачей: если против застрахованного врача начато уголовное расследование по статье о ненадлежащем исполнении обязанностей, он вправе обратиться в страховой пул для возмещения расходов на свою правовую защиту. Таким образом, Казахстан создал всеобъемлющую систему, где страхование ответственности интегрировано в деятельность медучреждений. Это повышает гарантии возмещения вреда пациентам и одновременно снижает нагрузку на медиков (выплаты осуществляются из страховки, а не непосредственно из их кармана, за исключением случаев умысла). Опыт Казахстана демонстрирует, что даже в странах СНГ возможно быстрое внедрение обязательного страхования при наличии политической воли и четкой регламентации. Для Узбекистана этот опыт ценен, учитывая сходство правовых систем и условий.

Сравнительный анализ показывает, что ключевой проблемой Узбекистана является отставание нормативной базы от насущных потребностей практики. В то время как зарубежные страны уже внедрили обязательное страхование или иные механизмы защиты, узбекское законодательство лишь готовится к этому шагу. Отсутствие обязательности и ясных правил ведет к тому, что пострадавшие пациенты не имеют гарантированной страховкой защиты, а медработники – финансового «буфера» на случай ошибки. Без государственной поддержки или регулирования страхование профессиональной ответственности остается нишевым продуктом. Кроме того, анализ проекта закона выявил, что при его доработке необходимо устранить положения, противоречащие цели – обеспечить баланс интересов пациентов

и медиков. Недопустимо переложить весь риск обратно на врача через регресс или сильно урезать покрытие – такие решения только демотивируют участников рынка и не решат задач защиты прав пациентов.

5. ЗАКЛЮЧЕНИЕ

Для успешного внедрения страхования профессиональной ответственности в медицинском предпринимательстве Узбекистана требуется комплекс мер законодательного и практического характера.

Во-первых, необходимо совершенствование законодательства: принятие специального закона, регулирующего обязательное страхование ответственности медицинских организаций и (по мере готовности) индивидуальных медицинских предпринимателей. При разработке данного закона следует учесть ошибки изначального проекта. Обязательство страхования целесообразно возложить на юридические лица – учреждения здравоохранения и частные клиники, которые будут выступать страхователями за своих сотрудников. Это соответствует нынешней системе ответственности, где именно организация отвечает перед пациентом [3]. Параллельно нужно ускорить работу по лицензированию медицинской деятельности физических лиц, чтобы в перспективе каждый врач-предприниматель также стал самостоятельным субъектом ответственности и страхования.

Во-вторых, закон должен установить минимальные стандарты покрытия: страховая сумма и условия полиса должны обеспечивать возмещение основного вреда и морального ущерба в разумных пределах. Например, можно предусмотреть минимальные лимиты выплат при смерти, тяжком и среднем вреде здоровью, исходя из средней заработной платы или иных экономических показателей, с регулярной индексацией. Очень важно включить в покрытие компенсацию морального вреда, либо отдельно закрепить обязанность возмещения морального вреда страховщиком – иначе цель полной защиты пострадавших не будет достигнута.

В-третьих, требуется ограничить право регресса страховщика к виновному медицинскому работнику. Оптимально разрешить регресс только в случаях умышленных действий или грубой небрежности врача. Если же врач действовал добросовестно, но ошибся (то есть наступил страховой случай без злого умысла), страховая выплата должна быть окончательной – без последующего взыскания с врача [3]. Такой подход применяется во многих странах, поскольку цель страхования – защитить в том числе и специалиста от разорения по непреднамеренной ошибке. Соответственно, необходимо также скорректировать ст. 992 ГК [14] или ввести специальную норму, исключаящую дополнительную ответственность застрахованного лица сверх

суммы страхового покрытия в пределах обязательного страхования – иначе доверие к системе не возникнет.

В-четвертых, помимо законодательства, государству следует содействовать развитию рынка страхования. Принудительное введение новой обязанности без подготовки может столкнуться с сопротивлением или формальным подходом. Поэтому рекомендуется на первом этапе (скажем, в первый год-два) внедрение пилотных проектов или поэтапное введение обязательности. Можно опробовать систему в отдельно выбранном регионе или для отдельных категорий (например, для частных клиник в городе Ташкент либо для высокорисковых специальностей – хирурги, акушеры). Это позволит собрать статистику страховых случаев, откалибровать тарифы и условия. Государство могло бы предоставить стимулы и поддержку: например, частично субсидировать страховые премии на начальном этапе или предоставить налоговые льготы клиникам, приобретающим полис ответственности. Такой подход снизит финансовую нагрузку на медбизнес и повысит привлекательность страховки [16]. Целесообразно также проведение широкой разъяснительной работы среди медицинского сообщества: через Минздрав и профессиональные ассоциации объяснить врачам и руководителям клиник пользу страхования, порядок действий при наступлении страхового случая, привести реальные примеры (в том числе случаи крупных компенсаций, которые могли бы быть покрыты страховкой). [17]

Введение обязательного страхования профессиональной ответственности в узбекской медицине при условии продуманного законодательства и поддержки приведет к существенным позитивным изменениям. Пациенты получают реальные гарантии компенсации вреда в случае врачебных ошибок, также в интересах общества повысится доверие к системе здравоохранения [18]. Медицинские работники, в свою очередь, будут защищены от катастрофических финансовых потерь: полис станет своего рода «подушкой безопасности», особенно если исключить повсеместный регресс. Это снизит психологическое напряжение в работе врачей и позволит им действовать более уверенно, зная о наличии страховой защиты. Конечно, появление страхового механизма может сначала повлечь рост количества заявляемых претензий (пациенты станут активнее требовать возмещения, зная о страховке), но в долгосрочной перспективе это дисциплинирует медицинское сообщество и стимулирует профилактику профессиональных ошибок. Страховые компании же получают новый сегмент рынка, что при разумном регулировании принесет им прибыль и опыт. Государству важно

контролировать тарифную политику, чтобы стоимость полиса была обоснованной и не привела к удорожанию медуслуг.

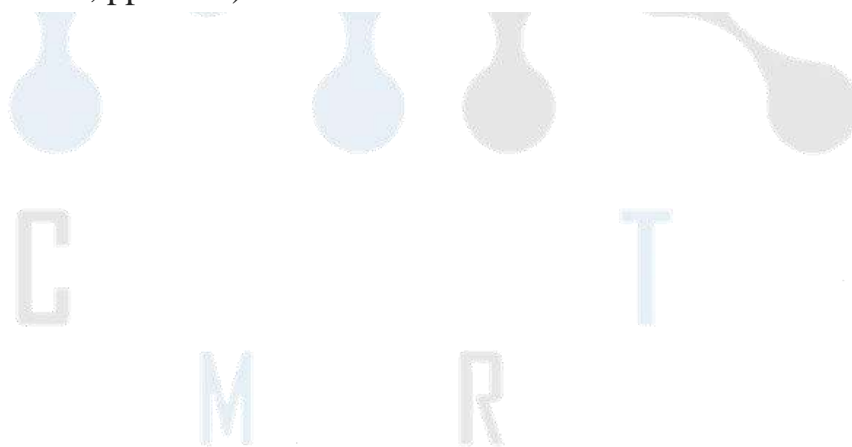
В заключение, перспективы развития страхования профессиональной ответственности в медицине Узбекистана зависят от политической воли и качества правовой проработки. Необходимо учесть международный опыт: как негативные примеры (чрезмерная судебная активность без ограничения сумм в США, либо проволочки с законодательством в России), так и удачные модели (баланс интересов в европейских системах, казахстанский опыт пула). При внедрении страхования следует стремиться к золотой середине: обеспечить пациенту компенсацию, не разрушая при этом экономическую основу медицинской деятельности. Совершенствование законодательства – ключевой шаг. Закон об обязательном страховании ответственности медработников, дополненный изменениями в сопутствующие акты, создаст прочный фундамент. Параллельно развитие инфраструктуры страхового рынка и повышение правовой культуры участников позволит новой системе прижиться. Таким образом, через комплекс мер – нормативных, организационных и просветительских – можно преодолеть текущие правовые проблемы и сформировать эффективный механизм страхования профессиональной ответственности в предпринимательской деятельности в сфере медицины Узбекистана, отвечающий и интересам пациентов, и потребностям медицинского сообщества.

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