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ИНТЕГРАЦИЯ СОВРЕМЕННЫХ ПЕДАГОГИЧЕСКИХ ТЕХНОЛОГИЙ В ПРОЦЕСС ОБУЧЕНИЯ МАТЕМАТИКЕ: МЕТОДЫ, ЭФФЕКТИВНОСТЬ И ПЕРСПЕКТИВЫ

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Аннотация. В статье анализируются теоретические и практические основы содержательной интеграции современных педагогических технологий в обучение математике. Рассматриваются проблемно-исследовательское и смешанное обучение, динамическая визуализация, совместное решение задач, формирующее оценивание и вычислительное мышление. Обосновывается, что эффективность определяется не новизной технологии, а качеством организуемой математической деятельности.

Ключевые слова: математическое образование, педагогические технологии, цифровое обучение, проблемное обучение, формирующее оценивание, визуализация.

MATEMATIKANI O‘QITISH JARAYONIGA ZAMONAVIY PEDAGOGIK TEXNOLOGIYALARNI INTEGRATSIYA QILISH: METODLAR, SAMARADORLIK VA ISTIQBOLLAR

Annotatsiya. Maqolada matematikani o‘qitishda zamonaviy pedagogik texnologiyalarni mazmunli integratsiya qilishning nazariy va amaliy asoslari tahlil qilinadi. Muammoli-tadqiqot ta’limi, aralash ta’lim, dinamik vizualizatsiya, hamkorlikdagi masala yechish, formativ baholash va hisoblash tafakkurining didaktik imkoniyatlari yoritiladi. Texnologiya samaradorligi uning yangiligi bilan emas, balki o‘quvchining matematik faoliyatini kuchaytirish darajasi bilan belgilanishi asoslanadi.

Kalit so‘zlar: matematika ta’limi, pedagogik texnologiyalar, raqamli ta’lim, muammoli ta’lim, formativ baholash, vizualizatsiya.

INTEGRATION OF MODERN PEDAGOGICAL TECHNOLOGIES INTO MATHEMATICS TEACHING: METHODS, EFFECTIVENESS AND PROSPECTS

Abstract. The article analyzes theoretical and practical foundations for meaningful integration of modern pedagogical technologies into mathematics teaching. Inquiry-

based and blended learning, dynamic visualization, collaborative problem solving, formative assessment and computational thinking are examined. The study argues that effectiveness depends on the quality of mathematical activity rather than technological novelty.

Keywords: mathematics education, pedagogical technologies, digital learning, inquiry learning, formative assessment, visualization.

ВВЕДЕНИЕ (INTRODUCTION)

Современное математическое образование развивается в условиях цифровой трансформации, изменения требований к функциональной грамотности и роста значения самостоятельного решения проблем. Поэтому педагогическая технология должна пониматься не как набор эффектных приемов, а как система проектирования целей, содержания, деятельности, обратной связи и оценивания. Международные исследования подчеркивают, что сама доступность устройств не гарантирует улучшения результатов: технология должна поддерживать человеческое взаимодействие и быть подчинена образовательной цели [1; 2].

В математике проблема особенно значима из-за высокой абстрактности понятий и необходимости переходить между символической, графической, числовой и вербальной формами представления. Традиционная схема объяснения и тренировки сохраняет значение, но ее недостаточно для формирования моделирования, аргументации и переноса знаний. Современная методика поэтому сочетает прямое обучение с исследовательскими задачами, сотрудничеством и цифровыми средствами [3; 4].

Степень изученности темы характеризуется значительным массивом исследований. Систематические обзоры показывают, что результативность цифрового средства зависит от характера задачи, роли учителя, обратной связи и исходной подготовки обучающихся [4; 5]. Сохраняется разрыв между потенциально продуктивными способами интеграции и практикой, где цифровизация иногда сводится к электронной демонстрации традиционного материала [4].

МЕТОДОЛОГИЯ ИССЛЕДОВАНИЯ (METHODS)

Цель исследования состоит в систематизации современных педагогических технологий, применимых в обучении математике, и определении условий их эффективной интеграции. Использованы анализ и синтез научной литературы, сравнительно-педагогический метод, тематическая классификация и педагогическое моделирование.

Анализ осуществлялся по пяти критериям: педагогическая цель, характер активности учащегося, роль преподавателя, функция цифрового средства и способ обратной связи. Такой подход позволяет отделить содержательную инновацию от простой замены бумажного носителя электронным.

Технология признается педагогически оправданной, если она расширяет возможности объяснения, исследования, коммуникации, индивидуализации или оценивания и при этом сохраняет математическое содержание в центре деятельности.

АНАЛИЗ И РЕЗУЛЬТАТЫ (RESULTS)

Проблемно-исследовательское обучение. С методической точки зрения Проблемно-исследовательское обучение следует рассматривать не как самостоятельную цель, а как средство организации математической деятельности. Его ценность проявляется тогда, когда учащийся выполняет содержательное действие: сравнивает представления, устанавливает зависимость, формулирует гипотезу, проверяет границы применимости правила или объясняет ход решения. Исследования математического образования показывают, что технологическая насыщенность сама по себе не обеспечивает глубокого понимания; решающее значение имеют постановка задачи и педагогическое сопровождение [3; 4].

Практическая реализация направления «Проблемно-исследовательское обучение» требует заранее определить ожидаемый результат. Если целью является понимание понятия, задания должны выявлять связи и существенные признаки; если целью является решение задач — необходимо создавать ситуации выбора стратегии; если целью является аргументация — учащийся должен объяснять, почему выбранный способ корректен. Таким образом, один и тот же инструмент может давать принципиально разные результаты в зависимости от сценария его использования.

Для академического лицея данное направление целесообразно реализовывать через короткие циклы: постановка проблемы, индивидуальная попытка, обсуждение, фиксация математической идеи, проверка на новой задаче. Такая структура сохраняет управляемость урока и одновременно увеличивает долю самостоятельной интеллектуальной работы. Важным условием является обязательный этап рефлексии, на котором обучающиеся называют не только полученный ответ, но и использованный способ, его преимущества и ограничения.

Смешанное и перевернутое обучение. С методической точки зрения Смешанное и перевернутое обучение следует рассматривать не как самостоятельную цель, а как средство организации математической деятельности. Его ценность проявляется тогда, когда учащийся выполняет содержательное действие: сравнивает представления, устанавливает зависимость, формулирует гипотезу, проверяет границы применимости правила или объясняет ход решения. Исследования математического образования показывают, что технологическая насыщенность сама по себе не обеспечивает глубокого понимания; решающее значение имеют постановка задачи и педагогическое сопровождение [1; 3].

Практическая реализация направления «Смешанное и перевернутое обучение» требует заранее определить ожидаемый результат. Если целью является понимание понятия, задания должны выявлять связи и существенные признаки; если целью является решение задач — необходимо создавать ситуации выбора стратегии; если целью является аргументация — учащийся должен объяснять, почему выбранный способ корректен. Таким образом, один и тот же инструмент может давать принципиально разные результаты в зависимости от сценария его использования.

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Динамическая визуализация и математические среды. С методической точки зрения Динамическая визуализация и математические среды следует рассматривать не как самостоятельную цель, а как средство организации математической деятельности. Его ценность проявляется тогда, когда учащийся выполняет содержательное действие: сравнивает представления, устанавливает зависимость, формулирует гипотезу, проверяет границы применимости правила или объясняет ход решения. Исследования математического образования показывают, что технологическая насыщенность сама по себе не обеспечивает глубокого понимания; решающее значение имеют постановка задачи и педагогическое сопровождение [3; 11].

Практическая реализация направления «Динамическая визуализация и математические среды» требует заранее определить ожидаемый результат. Если целью является понимание понятия, задания должны выявлять связи и

существенные признаки; если целью является решение задач — необходимо создавать ситуации выбора стратегии; если целью является аргументация — учащийся должен объяснять, почему выбранный способ корректен. Таким образом, один и тот же инструмент может давать принципиально разные результаты в зависимости от сценария его использования.

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Совместное решение задач и математическая коммуникация. С методической точки зрения Совместное решение задач и математическая коммуникация следует рассматривать не как самостоятельную цель, а как средство организации математической деятельности. Его ценность проявляется тогда, когда учащийся выполняет содержательное действие: сравнивает представления, устанавливает зависимость, формулирует гипотезу, проверяет границы применимости правила или объясняет ход решения. Исследования математического образования показывают, что технологическая насыщенность сама по себе не обеспечивает глубокого понимания; решающее значение имеют постановка задачи и педагогическое сопровождение [8; 15].

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Формирующее оценивание и анализ ошибок. С методической точки зрения Формирующее оценивание и анализ ошибок следует рассматривать не как самостоятельную цель, а как средство организации математической деятельности. Его ценность проявляется тогда, когда учащийся выполняет содержательное действие: сравнивает представления, устанавливает зависимость, формулирует гипотезу, проверяет границы применимости правила или объясняет ход решения. Исследования математического образования показывают, что технологическая насыщенность сама по себе не обеспечивает глубокого понимания; решающее значение имеют постановка задачи и педагогическое сопровождение [7; 8].

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Вычислительное мышление и программирование. С методической точки зрения Вычислительное мышление и программирование следует рассматривать не как самостоятельную цель, а как средство организации математической деятельности. Его ценность проявляется тогда, когда учащийся выполняет содержательное действие: сравнивает представления, устанавливает зависимость, формулирует гипотезу, проверяет границы применимости правила или объясняет ход решения. Исследования математического образования показывают, что технологическая насыщенность сама по себе не обеспечивает глубокого понимания; решающее значение имеют постановка задачи и педагогическое сопровождение [6].

Практическая реализация направления «Вычислительное мышление и программирование» требует заранее определить ожидаемый результат. Если целью является понимание понятия, задания должны выявлять связи и существенные признаки; если целью является решение задач — необходимо создавать ситуации выбора стратегии; если целью является аргументация — учащийся должен объяснять, почему выбранный способ корректен. Таким образом, один и тот же инструмент может давать принципиально разные результаты в зависимости от сценария его использования.

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Искусственный интеллект как средство критического анализа. С методической точки зрения Искусственный интеллект как средство критического анализа следует рассматривать не как самостоятельную цель, а как средство организации математической деятельности. Его ценность проявляется тогда, когда учащийся выполняет содержательное действие: сравнивает представления, устанавливает зависимость, формулирует гипотезу, проверяет границы применимости правила или объясняет ход решения. Исследования математического образования показывают, что технологическая насыщенность сама по себе не обеспечивает глубокого понимания; решающее значение имеют постановка задачи и педагогическое сопровождение [1; 2].

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задаче. Такая структура сохраняет управляемость урока и одновременно увеличивает долю самостоятельной интеллектуальной работы. Важным условием является обязательный этап рефлексии, на котором обучающиеся называют не только полученный ответ, но и использованный способ, его преимущества и ограничения.

ОБСУЖДЕНИЕ (DISCUSSION)

Полученные результаты согласуются с выводами систематических обзоров: цифровые средства обладают образовательным потенциалом, однако эффект зависит от педагогического сопровождения [4; 5]. Поэтому тезис «больше технологий — лучше обучение» методически некорректен. Более точным критерием является изменение качества математических действий ученика.

Современные исследования показывают усиление роли визуализации, моделирования и программирования [3; 6]. Но визуальная очевидность не заменяет доказательство, а автоматический ответ не заменяет объяснение. Задача преподавателя — организовать переход от наблюдения к формулировке и обоснованию.

Отдельного внимания требует генеративный искусственный интеллект. Он может использоваться для создания вариантов задач, сравнения решений и поиска ошибок, однако способен выдавать правдоподобные, но неверные рассуждения. Поэтому наиболее продуктивна модель критической проверки, при которой учащийся оценивает предложенное ИИ решение, находит слабые места и исправляет аргументацию.

Ограничением исследования является обзорный характер. Эффективность методов зависит от возраста, подготовки, доступа к устройствам и культуры оценивания. Предложенные подходы требуют локальной апробации в академических лицеях.

ЗАКЛЮЧЕНИЕ И ПРЕДЛОЖЕНИЯ

Интеграция современных педагогических технологий эффективна тогда, когда меняет качество учебной деятельности, а не только форму предъявления материала. Основными условиями являются содержательная задача, активная позиция обучающегося, обратная связь, работа с несколькими представлениями и рефлексия.

Рекомендуется проектировать урок от образовательного результата; применять визуализацию для выдвижения гипотез с последующим доказательством; включать задания с несколькими стратегиями; сочетать

автоматическую диагностику с анализом ошибок; развивать предметно-цифровую компетентность преподавателя; использовать ИИ преимущественно для сравнения и критики решений.

Перспективой является создание банка методических сценариев по алгебре, геометрии, анализу и теории вероятностей, где для каждого инструмента заранее определены цель, ожидаемое математическое действие, критерии результата и возможные риски.

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SOCIO-DEMOGRAPHIC PROCESSES AND INTELLECTUAL POTENTIAL DEVELOPMENT IN THE REPUBLIC OF KARAKALPAKSTAN: A SOCIOLOGICAL ANALYSIS

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Abstract. This article provides a sociological analysis of intellectual growth trends within socio-demographic processes in the Republic of Karakalpakstan. The study examines human capital development, higher education expansion, women's education, and workforce training in the context of regional socio-demographic shifts. It highlights the critical role of human capital in adapting to environmental challenges and the necessity of an inclusive institutional environment. The findings emphasize that regional intellectual development fundamentally relies on enhancing education quality, optimizing human resources, and advancing institutional reforms.

Key words: socio-demographic processes, intellectual growth, human capital, higher education, quality of education, women's education, sociological analysis, institutional development, inclusive institutions.

QORAQALPOG‘ISTON RESPUBLIKASIDA IJTIMOIY-DEMOGRAFIK JARAYONLAR VA INTELLEKTUAL SALOHIYATNING RIVOJLANISHI: SOTSIOLOGIK TAHLIL

Annotatsiya. Mazkur maqolada Qoraqalpog‘iston Respublikasidagi ijtimoiy-demografik jarayonlar doirasida intellektual o‘sish tendensiyalari sotsiologik jihatdan tahlil qilinadi. Tadqiqotda hududiy ijtimoiy-demografik o‘zgarishlar kontekstida inson kapitalining rivojlanishi, oliy ta’lim qamrovining kengayishi, xotin-qizlar ta’limi hamda mehnat resurslarini kasbiy tayyorlash masalalari o‘rganilgan. Ekologik muammolarga moslashishda inson kapitalining muhim o‘rni hamda inklyuziv institutsional muhitni shakllantirish zarurati asoslab berilgan. Tadqiqot natijalari hududning intellektual rivojlanishi, eng avvalo, ta’lim sifatini oshirish, inson resurslaridan samarali foydalanish va institutsional islohotlarni izchil davom ettirishga bog‘liqligini ko‘rsatadi.

Kalit so‘zlar: ijtimoiy-demografik jarayonlar, intellektual o‘sish, inson kapitali, oliy ta’lim, ta’lim sifati, xotin-qizlar ta’limi, sotsiologik tahlil, institutsional rivojlanish, inklyuziv institutlar.

СОЦИАЛЬНО-ДЕМОГРАФИЧЕСКИЕ ПРОЦЕССЫ И РАЗВИТИЕ ИНТЕЛЛЕКТУАЛЬНОГО ПОТЕНЦИАЛА В РЕСПУБЛИКЕ КАРАКАЛПАКСТАН: СОЦИОЛОГИЧЕСКИЙ АНАЛИЗ

Аннотация. В статье представлен социологический анализ тенденций интеллектуального роста в рамках социально-демографических процессов в Республике Каракалпакстан. Исследуются развитие человеческого капитала, расширение охвата высшим образованием, образование женщин и профессиональная подготовка трудовых ресурсов в контексте региональных социально-демографических изменений. Обосновывается важная роль человеческого капитала в адаптации к экологическим вызовам, а также необходимость формирования инклюзивной институциональной среды. Результаты исследования показывают, что интеллектуальное развитие региона в значительной степени зависит от повышения качества образования, эффективного использования человеческих ресурсов и последовательного осуществления институциональных реформ.

Ключевые слова: социально-демографические процессы, интеллектуальный рост, человеческий капитал, высшее образование, качество образования, образование женщин, социологический анализ, институциональное развитие, инклюзивные институты.

INTRODUCTION.

Today, in the assessment of socio-demographic processes, not only the population growth is important, but also its quality indicators, in particular, the development of human capital and intellectual potential. In modern society, the increase in the level of education, professional training, scientific potential and digital competences is one of the main factors that ensure the stable socio-demographic development of regions. Especially in areas with environmental and social problems, intellectual growth is emerging as a strategic resource that increases the resilience of society.

In the analysis of socio-demographic processes in the modern world, not only the quantitative growth of the population, but also its qualitative indicators, in particular, the intellectual potential, are coming to the first level. Today, the concept of "human capital" is recognized as the main driver of society's development, and the intellectual growth of the population has become an important factor ensuring demographic stability.

The trends of intellectual growth mean the continuous growth of the population's educational level, professional skills, scientific and creative potential. This process represents the transition from the model of "ordinary labor force" in the socio-demographic system to the model of "intellectual labor resources" with high technological and cognitive skills. From a sociological point of view, this trend changes the internal social structure of society, increases social mobility (mobility) of a person and forms new, conscious models of demographic behavior.

Intellectual growth is the main strategic resource that forms social immunity against environmental degradation in the conditions of Karakalpakstan. The higher

the level of education and digital skills of the population, the lower the negative impact of environmental risks on the social system.

Studying the processes of intellectual growth is especially important in regions with complex medical and ecological conditions, such as Karakalpakstan. After all, eliminating existing environmental and social problems in the region, improving the quality of life of the population and achieving sustainable development directly depends on the intellectual potential, digital skills and innovative activity of the society.

Within the framework of this study, the qualitative transformation of human capital, modern directions of education and professional training, as well as the main mechanisms of raising the intellectual level of the population are studied in the system of socio-demographic processes.

METHODOLOGY.

In this study, a comprehensive approach was used to study the trends of intellectual growth in socio-demographic processes. The methodological basis of the research was sociological analysis, comparative analysis, statistical data analysis and generalization methods. In the course of the research, statistical indicators related to the higher education system of the Republic of Karakalpakstan, the level of education of the population, the higher education of women, the directions of professional education and the development of human capital were analyzed. Dynamic changes between 2019-2025 were evaluated in a comparative way and their impact on socio-demographic development was studied.

The results of the analysis were summarized on the basis of a systematic and logical approach, and the main directions of human capital development and intellectual growth trends in the region were evaluated.

RESULTS.

In recent years, in our republic, in particular, in the conditions of Karakalpakstan, the level of coverage with higher education has increased significantly. If previously the education system was focused only on the training of certain professions, now this process is moving to the stage of "intellectual universalization". Statistical observations show that the desire to get higher education among young people is manifested not only as a means of gaining social status, but also as a mechanism of protection from environmental and economic risks. Because the layer with high intellectual potential adapts faster to changes in the labor market.

Another important trend in the dynamics of professional training is the transformation of sectoral directions. Previously, traditional areas (agriculture, pedagogy) were the priority, but now the share of new intellectual stratum - IT specialists, service industry managers and social engineers - is increasing in the population. This is the main condition for transferring the territorial demographic

system from extensive (quantity-based) development to intensive (quality-based) development.

Also, changes in the system of scientific training are an important indicator of intellectual growth. The annual increase in the number of young scientists conducting research to obtain the Doctor of Philosophy (PhD) and Doctor of Science (DSc) degrees serves the formation of the "scientific elite" in society. This layer has the ability to solve complex social and demographic problems in the region on a scientific basis. This table shows the expansion of the intellectual potential forming base in the region.

Table 1.

Higher education institutions and the dynamics of the number of students in the Republic of Karakalpakstan

Indicators	2019-2020 academic year	2024-2025 academic year	Dynamics of change
Number of higher education institutions	7	12	+71%
Total number of students (thousands)	35.4	68.2	1.9 times increased
Admission Quotas (Undergraduate)	8 200	14 500	+76%
Master's students	450	1 200	2.6 times increased

According to Table 1, the increase in the number of higher education institutions from 7 to 12 represents the process of decentralization in the market of educational services. This means that the demand for higher education is being met not only in the capital Nukus, but also in the regions. The increase in the number of students by 1.9 times (from 35.4 thousand to 68.2 thousand) shows the high social need for the status of "specialist with a diploma" in society and the desire of the population for social mobility. The increase in admission quotas by 76% is the reaction of the state and society to the demographic pressure of youth (a large number of young people). Many young people will be employed and their social integration will be accelerated. A sharp increase in the number of graduates may lead to strong competition in the labor market and the risk of "diploma inflation" (a degree is available, but there is a lack of skills). Although the 1.9-fold increase in the number of students reflected in this table means that the society has moved to the stage of public higher education, this process also creates sociologically complex risks. First, such a rapid expansion in the educational structure may cause a "skill mismatch" phenomenon in the labor market. In this case, the nominal number of highly educated personnel does not correspond to the practical competencies required by the real sector of the economy, especially the production and service sectors of Karakalpakstan. As a result, despite the abundance of specialists with diplomas, the shortage of highly qualified technical and technological personnel

remains. Second, the rate of transformation of quantitative indicators into qualitative indicators lags behind the rate of expansion of educational coverage. This creates the risk of causing the so-called "diploma inflation" in sociology - a decrease in the social and economic value of an educational document.

The most notable indicator is the 2.6 times increase in the number of students at the master's level. Sociologically, this means:

- The system of scientific personnel training is expanding in the region.
- In the vertical hierarchy of higher education, a layer of those who want to climb to the top is forming.
- This indicator will be the basis for the formation of the reserve of local professors and teachers for HEIs in Karakalpakstan in the future.

A sharp increase in the number of students leads to the expansion of the student social class in Nukus and other central cities, the development of the rental market and the service sector. Quantitative growth now necessitates qualitative change. Competition for students between 12 HEIs can begin. The analysis shows that the issue of future employment of 68,000 students should be the main research topic for regional state administration and sociologists. The system of higher education in Karakalpakstan has completely passed from the elite stage to the mass stage. Along with increasing the intellectual potential of the region, it creates new social responsibilities for providing employment to graduates.

From a sociological point of view, the increase in the level of education of women directly affects the quality indicators of childbirth and medical culture.[1]

Table 2.

Level of higher education among women and social indicators

№	Years	Percentage of women with higher education (%)	Infant mortality (per 1000)	Family planning level
1	2019 year	18.4%	12.4	Average
2	2021 year	22.1%	11.2	High
3	2023 year	28.5%	9.8	Very high
4	2025 year	32.0%	8.5	Professional approach

Table 2 is an important sociological indicator showing the inextricable link between women's education and health care in the social development of society. Here we can see the phenomenon of "social efficiency of knowledge". The second stage of the demographic transition is the transition of the society from the "high

[1]https://www.researchgate.net/publication/365415530The_Impact_of_Women's_Education_on_Maternal_and_Child_Health_Outcomes_in_Bangladesh_A_Systematic_Review_IOSR_Journal_of_Nursing_and_Health_Science

birth rate and high death" model to the "low birth rate and high quality of life" model. The increase in female education from 18.4% to 32% is not just the number of graduates, but a change in attitudes. As a result, it is not the number of children in families, but their quality, that is, health, education, and future that is coming to the fore. This is a rationalization of demographic behavior. Family planning used to be based more on tradition, but now women are looking at it as a medical-scientific project. An educated woman knows how to keep a distance between children, restore her body and consciously prepare for pregnancy. "Medical culture" is higher in a woman with higher education. He gets advice from a doctor, not from the internet or his neighbor. This prevents loss of human capital at an early stage.

The relationship between ecological resilience and human capital is one of the most relevant areas of social demography today.[2] Especially in areas of environmental crisis such as Orolboyi, this concept serves as the main factor ensuring social stability. Ecological flexibility (resilience) is the ability of a social system to adapt to a new situation and develop without losing its functions from environmental shocks such as droughts, salt storms, and drinking water shortages. Resilience is not just a technical solution, but a product of human capital based on the knowledge and skills of the population. In this case, the population changes from the role of a victim of an environmental disaster to the role of an active subject managing the situation. A highly educated woman not only protects the family from environmental risks, but also creates new economic opportunities. Educated women tend to create start-ups in non-traditional agriculture or green service industries in saline lands. In ecologically threatened areas, not being tied to the land, but entering the remote labor market through digital skills is true resilience.

Education gives a woman economic independence or respect in society. This gives him an equal voice in important matters such as "how many children to have" or "when to have" in the family.

Table 3

Level of education and economic activity of highly educated women

№	Indicators	2019 year	2025 year	Dynamics of change
1	Percentage of women with higher education (in relation to the total number of women)	7-8%	13-15%	An increase of almost +2 times
2	Economic activity of highly educated women (employment rate)	62.0%	74.0%	+12.0% growth
3	Percentage of housewives with a diploma (passive layer)	38.0%	26.0%	-12.0% decrease

[2]Всеобщее образование является ключом к повышению эффективности адаптации к изменению климата. Вольфганг Лутц , Рая Муттарак и Эрих Стрессниг. 28 ноября 2014 г.; 346(6213): 1061-2 doi: 10.1126/science.1257975

4	Share of women in intellectual labor (IT, education, medicine, management)	18.5%	28.0%	Quality transformation

In Table 3, the 2-fold increase in the percentage of women with higher education means that the social status of women in society has increased dramatically. The 12% decrease in "housewives with a degree" shows that education has begun to serve not just for a diploma, but for professional realization. The increase of the share of women in intellectual work to 28% indicates that the role of women in high-tech fields in society is increasing. Also, the expansion of the economically active and educated women's layer is the main factor that ensures the resilience of families to natural and social crises in the conditions of the Archipelago. Women's social strategy was a transformation from passive consumerism to active creativity.

Table 4.

Composition of courses in vocational schools and technical schools[3]

№	Educational directions	Share in 2019	Share in 2024	Tendency character
1	Agriculture and animal husbandry	45%	25%	Decrease (due to mechanization)
2	ICT and Digital technologies	5%	22%	Sharp growth (intellectualization)
3	Medical service and service	15%	28%	Quality improvement
4	Renewable energy sources	0%	10%	A new direction (ecological adaptation)

The data presented in Table 4 show that the socio-economic needs of society have changed significantly in the period 2019–2024. The reduction of the agricultural sector from 45% to 25% indicates that the society is moving from the traditional type of work to the industrial and post-industrial stage. This is not only a crisis of the industry, but also a result of the intensification of labor. Now, the demand is not for a large number of physical labor, but for quality personnel who manage the technological process. This leads to increased social mobility and population migration from the agricultural sector to the service sector. A more than 4-fold increase in the share of ICT and Digital technologies (from 5% to 22%) confirms that the society is rapidly moving to the "Information Society" model. Digital skills are now becoming a "core competency" for all professions, rather than a specific field. This indicates that the desire for intellectual work has increased in the value system of learners. The results of the research show that the process of intellectual growth in Karakalpakstan has a territorial character. While urban youth

[3] Муаллиф томонидан тайёрланган тадқиқот асосида ишланган.

are integrating into the global intellectual space through digital technologies, rural youth remain in traditional educational patterns due to infrastructural limitations. This situation creates a new kind of "digital stratification" in society. Without reducing this gap, it will be difficult to achieve integrated and sustainable socio-demographic development in the region.

The increase of the medical service and service sector to 28% is explained by the increased demand for the standard and quality of life of the population. The growth in this direction is related to demographic changes in the society, that is, the growth of the population and the increase in the social demand for the health care system. The transition from 0% to 10% of renewable energy sources means that the institutionalization of ecological culture in society is beginning. This is the state's environmental policy and social adaptation to global trends. The emergence of new professions shows that the concept of environmental responsibility in society is being inculcated in the minds of young people through the educational system. The trends in the table represent the dynamics of the transition from the traditional model of society to the model of innovative-technological society. The change in the composition of the educational fields serves to restore the balance of demand and supply in the labor market, as well as to increase the social status of young people.

The rise of the educational structure ensures the social mobility of the population. The formation of highly qualified personnel increases the competitiveness of labor resources, which, in turn, serves as the main factor guaranteeing the socio-demographic security of the region. In the process of intellectual growth, the decision of the principle of continuity of education creates a basis for continuous renewal of society.

While demographic growth is a quantitative indicator, intellectual growth is its qualitative indicator. The increase in the number of highly educated specialists in the Republic of Karakalpakstan is one of the most important indicators of demographic and economic transformation in the region. In recent years, as a result of the expansion of admission quotas for higher education and the establishment of new higher education institutions, positive dynamics are observed in this indicator.

Table 5

Percentage of people with higher education in relation to the total population [4]

№	Indicators	2019 year	2025 year	Tendency character
1	Percentage of people with higher education (% of population)	9-11%	16-18%	Expansion of the intellectual layer
2	Number of students per 10,000 population	185	341	1.8 times increased

[4] ҚР статистика бошқармаси маълумотлари асосида тузилган

3	Among those employed in the economy are those with higher education	22.4%	29.0%	Quality transformation

Table 5 shows the formation of an intellectual middle class in the society, with a 1.5-fold increase in the number of highly educated people among the population. This indicates the activation of the social elevator mechanism for vertical social mobility. A 1.8-fold increase in the number of students per 10,000 people means that education has shifted from elite to mainstream. The social demand for higher education in the society and the desire of young people to increase the social status have increased sharply. The increase of the share of highly educated people employed in the economy to 29% confirms the increasing role of intellectual capital in the labor market. The data prove that the society has entered the stage of intellectual modernization and the quality indicators of human capital are growing steadily. The intellectual growth of women reduces the "demographic load" in families and allows the transition from reproductive work to productive social work, which is considered socio-economic stability for the Aral Bay.

DISCUSSION.

There is a theory of inclusive and extractive institutions in science, and the institutional approach is important in the analysis of trends in intellectual growth and social development.

The founders of this approach, Daron Asemoglu and James Robinson, divide political and economic rules in society into two main types[5]:

1. Inclusive institutions (inclusive system). Inclusive institutions are a system that provides equal opportunities to broad segments of society to participate in economic activity and realize their intellectual potential. Its main features are protection of private property rights, rule of law and equal opportunities for all, free competition and support of new technologies. In such an environment, people are motivated to learn and innovate because there is a guarantee that their knowledge and talent will be valued. This creates an "intellectual explosion" in socio-demographic processes.

2. Extractive institutions (restrictive or absorbing system). Extractive institutions are systems that take resources and power away from the majority of society and serve only the interests of a narrow elite. Its main features include the concentration of power in one hand and the lack of public control, the weakness of property rights and economic monopolies, and the inhibition of innovation and social change. In such a system, the intellectual advancement of the population is seen as a threat to the elite. As a result, the quality of education decreases, talented young people prefer to leave the country (brain drain), and intellectual stagnation occurs in society.

[5] https://www.msses.ru/ Московская высшая школа социальных и экономических наук.

Increasing the number of educational institutions alone is not enough to ensure intellectual growth in socio-demographic processes. Asemoğlu's theory proves that if inclusive institutions (openness, fair competition, inviolability of property) are not formed in society, demographic growth will not turn into intellectual capital. On the contrary, in the conditions of extractive institutions, the ability to effectively use the intellectual potential of the population remains limited.

The high population in the region, especially the youth, creates the possibility of a "demographic dividend". However, inclusive reforms are necessary for this opportunity to emerge. If regional institutions are based on the principles of openness and meritocracy, demographic growth will serve intellectual growth. On the contrary, in conditions of extractive barriers (acquaintance, monopolies in education), the intellectual potential of young people is "wasted" or leaves the region through migration. The level of extractiveness of the institutional environment determines regional migration flows. If the region lacks an inclusive economic system that encourages intellectual work, highly skilled personnel will gravitate to central cities or abroad to showcase their talent. Therefore, regional reforms must not only create jobs, but also create an institutional environment that protects intellectual property and harnesses talent.

In such ecologically complex regions as Karakalpakstan, intellectual growth is not only humanitarian, but also technological in nature. Inclusive institutions support innovative ideas of local people, for example, water-saving technologies, environmental enterprises. And the extractive system tries to preserve outdated, resource-intensive methods, which deepens the socio-demographic crisis.

CONCLUSION.

In conclusion, the trends of intellectual growth in the regional socio-demographic processes are determined not only by the numerical indicators in the educational system, but also by the quality of the institutional environment. Inclusive institutional reforms serve as a social elevator that increases the intellectual activity of the region's population. On the contrary, the persistence of an extractive approach to the distribution of resources is the main factor preventing the transformation of demographic growth into intellectual growth. Therefore, institutional changes in regional development strategies should be considered as a fundamental condition for maintaining and increasing intellectual capital.

The results of the study showed that intellectual growth in modern socio-demographic processes is not just an increase in the number of educated people, but a mechanism of strategic resilience formed in response to environmental and economic risks of the region. As a result, we came to the following conclusions:

As a result of the transition of the higher education system from the elite stage to the mass stage in Karakalpakstan, the population's human capital has increased quantitatively (the number of students has increased by 1.9 times). However, this process also creates new sociological risks in the labor market, such as "skill imbalance" and "diploma inflation".

The increase in the intellectual potential of women (up to 32%) rationalized the demographic behavior of the region. This is reflected in the reduction of infant mortality and the rise of the culture of family planning as the "social efficiency of knowledge".

Trends in intellectual growth are uneven across regions. Although the share of ICT and digital technologies in education has increased dramatically (22%), the "digital divide" between urban and rural areas is creating a new layer of social inequality in society.

Analyzes based on the theory of D. Asemoglu confirm that only educational coverage is not enough for the demographic growth in the region to turn into a "demographic dividend". In order to prevent intellectual capital migration (Brain Drain), the formation of an inclusive institutional environment in the region - a system that values talent and is based on free competition - is a fundamental condition. The socio-demographic stability of Karakalpakstan directly depends on the transition from the extensive (quantity) stage to the intensive (quality) stage of intellectual development and the complete integration of the accumulated human capital into the internal socio-economic system of the region.

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TIBBIYOT TA’LIMIDA SIMULYATSION O‘QITISH TEXNOLOGIYALARINING KLINIK KO‘NIKMA VA BEMOR XAVFSIZLIGINI SHAKLLANTIRISHDAGI AHAMIYATI

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Annotatsiya. Maqolada tibbiyot ta’limida simulyatsion o‘qitish texnologiyalarining klinik ko‘nikmalar, klinik fikrlash, jamoaviy muloqot va bemor xavfsizligini shakllantirishdagi o‘rni tahlil qilinadi. Zamonaviy tizimli sharhlar va xalqaro tavsiyalar asosida yuqori aniqlikdagi simulyatorlar, ssenariyli mashg‘ulotlar, virtual reallik hamda debrifingning ta’limiy samarasi yoritilgan. Simulyatsiyaning afzalliklari bilan bir qatorda, o‘qituvchi tayyorgarligi, ssenariy sifati, psixologik xavfsizlik va resurs ta’minoti kabi shartlar ham muhokama qilinadi. Tibbiyot texnikumlarida bosqichma-bosqich, kompetensiyaga yo‘naltirilgan simulyatsion modelni joriy etish bo‘yicha amaliy tavsiyalar ishlab chiqilgan.

Kalit so‘zlar: simulyatsion ta’lim, tibbiyot ta’limi, klinik ko‘nikma, bemor xavfsizligi, virtual reallik, debrifing, klinik fikrlash, kompetensiya

ЗНАЧЕНИЕ СИМУЛЯЦИОННЫХ ТЕХНОЛОГИЙ ОБУЧЕНИЯ В МЕДИЦИНСКОМ ОБРАЗОВАНИИ ДЛЯ ФОРМИРОВАНИЯ КЛИНИЧЕСКИХ НАВЫКОВ И БЕЗОПАСНОСТИ ПАЦИЕНТОВ

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Аннотация. В статье анализируется роль симуляционных технологий в медицинском образовании в формировании клинических навыков, клинического мышления, командной коммуникации и культуры безопасности пациентов. На основе современных систематических обзоров и международных рекомендаций раскрывается образовательная эффективность высокореалистичной симуляции, сценарных занятий, виртуальной реальности и дебрифинга. Наряду с преимуществами рассматриваются условия результативности: подготовка преподавателя, качество сценария, психологическая безопасность и ресурсное обеспечение. Предложены практические рекомендации по поэтапному внедрению компетентностной модели симуляционного обучения в медицинских техникумах.

Ключевые слова: симуляционное обучение, медицинское образование, клинические навыки, безопасность пациентов, виртуальная реальность, дебрифинг, клиническое мышление, компетентность

THE ROLE OF SIMULATION-BASED LEARNING TECHNOLOGIES IN MEDICAL EDUCATION IN DEVELOPING CLINICAL SKILLS AND PATIENT SAFETY

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Abstract. This article analyses the role of simulation-based technologies in medical education in developing clinical skills, clinical reasoning, team communication and a culture of patient safety. Drawing on recent systematic reviews and international guidance, it examines the educational value of high-fidelity simulation, scenario-based training, virtual reality and structured debriefing. Conditions required for effectiveness, including educator preparation, scenario quality, psychological safety and adequate resources, are also discussed. Practical recommendations are proposed for the staged implementation of a competency-based simulation model in public health technical schools.

Keywords: simulation-based learning, medical education, clinical skills, patient safety, virtual reality, debriefing, clinical reasoning, competence

Kirish (Introduction)

Tibbiyot ta’limining asosiy vazifalaridan biri nazariy bilimni real klinik vaziyatda xavfsiz va to‘g‘ri qo‘llay oladigan mutaxassisni tayyorlashdan iborat. An’anaviy ma’ruza va amaliy mashg‘ulotlar kasbiy bilimlarni shakllantirsa-da, talabaning xatoga yo‘l qo‘yishdan qo‘rqmasdan takroriy mashq qilishi, favqulodda vaziyatni boshqarishi va jamoa bilan muvofiqlashgan holda qaror qabul qilishi uchun maxsus o‘quv muhiti zarur. Shu nuqtai nazardan simulyatsion ta’lim bemorga zarar yetkazmasdan klinik holatlarni modellashtirish imkonini beradigan muhim pedagogik texnologiya hisoblanadi [1].

Jahon sog‘liqni saqlash tashkiloti tibbiyot xodimlarining sifatli tayyorgarligi sog‘liqni saqlash tizimi barqarorligining asosiy omillaridan ekanini ta’kidlaydi. Raqamli va simulyatsion vositalar tibbiyot xodimlari ta’limining qamrovi, moslashuvchanligi va kompetensiyaga yo‘naltirilganligini oshirishi mumkin [2]. Simulyatsion ta’lim ayniqsa bemor xavfsizligi bilan bevosita bog‘liq bo‘lgan muolajalar, dori vositalarini to‘g‘ri yuborish, infeksion nazorat, yurak-o‘pka reanimatsiyasi, muloqot hamda shoshilinch yordam algoritmlarini mashq qilishda katta ahamiyat kasb etadi.

So‘nggi yillardagi tizimli sharhlar simulyatsion o‘qitish ham bilim, ham amaliy ko‘nikma, ham klinik qaror qabul qilish ko‘rsatkichlarini yaxshilashini ko‘rsatmoqda [3; 4]. Biroq simulyatsiya faqat qimmat texnik jihoz bilan cheklanmaydi. Uning ta’limiy samarasi aniq maqsad, realistik ssenariy, talabaning faol ishtiroki, standartlashtirilgan baholash va mashg‘ulotdan keyingi tahlil —

debrifing bilan bog‘liq [5]. Shu bois tibbiyot texnikumlari sharoitida simulyatsion ta’limni pedagogik jihatdan to‘g‘ri loyihalash dolzarb masaladir.

Maqolaning maqsadi — zamonaviy ilmiy adabiyotlar asosida simulyatsion o‘qitishning klinik ko‘nikma, klinik fikrlash va bemor xavfsizligiga ta’sirini tahlil qilish hamda tibbiyot texnikumlarida uni samarali tashkil etish bo‘yicha amaliy tavsiyalar ishlab chiqish.

Metodologiya (Methods)

Tadqiqot narrativ ilmiy sharh usulida tashkil etildi. Tahlil uchun 2023–2026-yillarda e’lon qilingan tizimli sharhlar, meta-tahlillar, scoping-reviewlar va Jahon sog‘liqni saqlash tashkilotining tibbiyot xodimlari ta’limi hamda bemor xavfsizligiga oid materiallari tanlab olindi. Manbalarni tanlashda simulyatsion ta’lim, hamshiralik va tibbiyot ta’limi, klinik kompetensiya, virtual reallik, debrifing va patient safety tushunchalari asosiy mezon sifatida qo‘llanildi.

Tahlilda manbalar to‘rtta yo‘nalish bo‘yicha guruhlandi: birinchisi — bilim va amaliy ko‘nikmalarga ta’sir; ikkinchisi — klinik qaror qabul qilish va klinik fikrlash; uchinchisi — bemor xavfsizligi va jamoaviy muloqot; to‘rtinchisi — debrifing, psixologik xavfsizlik hamda o‘qituvchi roli. Tizimli sharhlarda keltirilgan natijalar bevosita ko‘chirib olinmasdan, ularning umumiy tendensiyalari taqqoslandi va tibbiyot texnikumi sharoitiga mos pedagogik xulosalar shakllantirildi.

Maqola birlamchi klinik tajriba natijalarini taqdim etmaydi; natijalar bo‘limi zamonaviy ilmiy dalillarning tematik sinteziga asoslangan. Shu yondashuv ilmiy xulosalarni mavjud dalillar bilan chegaralash va statistik ma’lumotlarni sun’iy ravishda yaratmaslik imkonini beradi.

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Natijalar (Results)

Tahlil qilingan ilmiy manbalar simulyatsion o‘qitishning eng barqaror ijobiy natijasi klinik bilim va amaliy ko‘nikmalarni mustahkamlash ekanini ko‘rsatdi. 2024-yilda chop etilgan tizimli sharhda simulyatsion ta’lim hamshiralik talabalarining bilim va ko‘nikmalarini yaxshilashda samarali pedagogik yondashuv sifatida baholangan, shu bilan birga uzoq muddatli saqlanish masalasi qo‘shimcha tadqiqotni talab qilishi qayd etilgan [3]. 2023-yilgi meta-tahlil ham simulyatsiyaning tushunish, o‘ziga ishonch, amaliy ko‘nikma va o‘quv qoniqishiga ijobiy ta’sirini ko‘rsatgan [6].

Ssenariyga asoslangan simulyatsiya alohida ahamiyatga ega. Bunday mashg‘ulotda talaba faqat muolajani bajarib qolmay, vaziyatni baholaydi, ustuvor muammoni aniqlaydi, qaror qabul qiladi va natijani qayta baholaydi. 2024-yilgi tizimli sharh va meta-tahlilda ssenariyli simulyatsiya kasbiy bilim, klinik amaliyot ko‘nikmalari va o‘qishga bo‘lgan ishonchni sezilarli darajada yaxshilashi

ko‘rsatilgan [7]. Bu model texnikum ta’limida, masalan, arterial bosimning keskin oshishi, anafilaktik reaksiya, hushdan ketish, gipoglikemiya yoki infeksion xavf holatlarini o‘rgatishda qo‘llanishi mumkin.

Simulyatsiya klinik qaror qabul qilish kompetensiyasini ham rivojlantiradi. 2024-yilda e’lon qilingan meta-tahlil simulyatsion mashg‘ulotlar hamshiralik talabalarining klinik qaror qabul qilish ko‘rsatkichlariga ijobiy ta’sir qilishini aniqlagan [4]. Klinik fikrlashning rivojlanishi talabaning faqat algoritmni yod olishi emas, balki bemor holatidagi belgilarni bir-biri bilan bog‘lash, xavfni oldindan ko‘rish va xatolikning oldini olish qobiliyatini ham kuchaytiradi.

Virtual reallik va immersiv texnologiyalar simulyatsiyaning yangi shakllaridan biridir. 2024-yilgi tizimli sharhlar virtual reallik vositalari talabalarning klinik ko‘nikmalari, o‘quv faolligi, bilimni o‘zlashtirishi va ayrim hollarda klinik fikrlashiga ijobiy ta’sir ko‘rsatishini bildiradi [8; 9; 10]. VR texnologiyasining afzalligi shundaki, u kam uchraydigan yoki yuqori xavfli klinik holatni ko‘p marta takrorlash, har bir talaba uchun bir xil ssenariyni yaratish va o‘quv jarayonini standartlashtirish imkonini beradi.

Bemor xavfsizligi nuqtai nazaridan simulyatsiya amaliy xatolarni o‘quv muhitida aniqlash va tahlil qilish imkonini beradi. 2026-yilda e’lon qilingan tizimli sharh simulyatsion ta’limning dori yuborish aniqligi, xavfsiz muloqot, jamoaviy ish va noxush hodisalarni tanib olish kabi ko‘nikmalarni rivojlantirishda foydali ekanini ko‘rsatadi [11]. Bunday mashg‘ulotlarda “xato qilish mumkin, ammo xatoni tahlilsiz qoldirish mumkin emas” tamoyili ustuvor bo‘lishi kerak.

Natijalarni mustahkamlovchi asosiy bosqich — debrifingdir. Debrifing vaqtida talaba qanday qaror qabul qilgani, nima sababdan xato qilgani, nimalar yaxshi bajarilgani va keyingi safar qanday yo‘l tutishi kerakligini o‘qituvchi bilan birgalikda tahlil qiladi. Scoping-reviewlar debrifingning refleksiya, klinik tafakkur va o‘ziga ishonchni oshirishdagi rolini tasdiqlaydi [5; 12]. 2026-yilgi yangi sharhda ham debrifing sifati o‘qituvchining xulqi, sessiya tuzilishi, muloqot va psixologik xavfsizlikka bog‘liqligi ko‘rsatilgan [13].

Tibbiyot texnikumi uchun maqbul model uch bosqichdan iborat bo‘lishi mumkin: 1) bazaviy ko‘nikmalarni trenajyorlarda takrorlash; 2) kasbiy vaziyatlarni ssenariy asosida bajarish; 3) strukturalashtirilgan debrifing va kompetensiyani baholash. Bu ketma-ketlik texnik vosita bilan pedagogik maqsad o‘rtasidagi muvozanatni ta’minlaydi.

Muhokama (Discussion)

Simulyatsion ta’lim bo‘yicha mavjud dalillar umumiy jihatdan ijobiy bo‘lsa-da, barcha simulyatsiya turlari bir xil natija bermaydi. Yuqori aniqlikdagi maneken yoki virtual reallikning o‘zi ta’lim sifatini kafolatlamaydi. Natija ssenariyning

didaktik maqsadga mosligi, talabaning tayyorgarlik darajasi, murakkablikning bosqichma-bosqich oshirilishi va qayta aloqa sifatiga bog‘liq. Shuning uchun moddiy baza cheklangan ta’lim muassasasida ham oddiy trenajyor, standartlashtirilgan bemor, rolli o‘yin va vaziyatli topshiriqlar orqali samarali simulyatsion muhit yaratish mumkin.

Interprofessional simulyatsiya ham istiqbolli yo‘nalishdir. 2024-yilgi meta-tahlilda turli tibbiy kasb vakillarini birgalikda simulyatsion mashg‘ulotga jalb qilish ularning o‘zaro kasbiy bilimini yaxshilashi ko‘rsatilgan [14]. Tibbiyot texnikumlarida bu yondashuv hamshira, feldsher, akusherlik yoki laboratoriya yo‘nalishidagi talabalar o‘rtasida birgalikdagi favqulodda yordam ssenariylarini tashkil etishda qo‘l keladi.

Pedagogik nuqtai nazardan simulyatsiya o‘quvchini passiv tinglovchidan faol qaror qabul qiluvchi ishtirokchiga aylantiradi. Bu konstruktivistik va tajribaviy o‘qitish tamoyillariga mos keladi: talaba vaziyatga kiradi, harakat qiladi, oqibatni ko‘radi va refleksiya qiladi. Aynan shu aylanish nazariy bilimning amaliy kompetensiyaga o‘tishini tezlashtiradi.

Shu bilan birga, simulyatsion mashg‘ulotda psixologik xavfsizlik alohida ahamiyatga ega. Talabani masxara qilish, xatoni jazolashga yo‘naltirilgan tahlil yoki o‘qituvchining haddan tashqari hukmron pozitsiyasi debrifing samaradorligini pasaytiradi. O‘qituvchi xatoni shaxsga emas, harakat va klinik fikrlash jarayoniga bog‘lab muhokama qilishi kerak. Debrifing bo‘yicha yangi sharhlar ham sifatli refleksiyaning o‘qituvchi mahoratiga bevosita bog‘liqligini ko‘rsatadi [12; 13].

Tibbiyot texnikumida simulyatsion ta’limni joriy etishda birinchi navbatda barcha fanlarga bir xil qimmat uskunani xarid qilish emas, balki kompetensiyalar xaritasini tuzish maqsadga muvofiq. Har bir kompetensiya uchun “qaysi ko‘nikma — qaysi ssenariy — qaysi baholash mezoni” zanjiri ishlab chiqilishi zarur. Keyin jihozlash ehtiyoji ushbu xarita asosida belgilanadi.

Xulosa

Simulyatsion o‘qitish tibbiyot ta’limida nazariy bilimni amaliy klinik kompetensiyaga aylantirish, klinik fikrlash va qaror qabul qilishni rivojlantirish, jamoaviy muloqotni mustahkamlash hamda bemor xavfsizligi madaniyatini shakllantirishga xizmat qiladigan samarali pedagogik yondashuvdir. Zamonaviy tizimli sharhlar simulyatsiya, ssenariyli mashg‘ulotlar va virtual reallikning o‘quv natijalariga ijobiy ta’sirini ko‘rsatmoqda [3; 4; 7; 8].

Amaliy jihatdan tibbiyot texnikumlarida simulyatsion ta’limni quyidagi tamoyillarda tashkil etish tavsiya etiladi: kompetensiyaga yo‘naltirilgan ssenariylar yaratish; bazaviy ko‘nikmadan murakkab klinik vaziyatga bosqichma-bosqich o‘tish; har bir mashg‘ulotdan keyin strukturalashtirilgan debrifing o‘tkazish; talaba

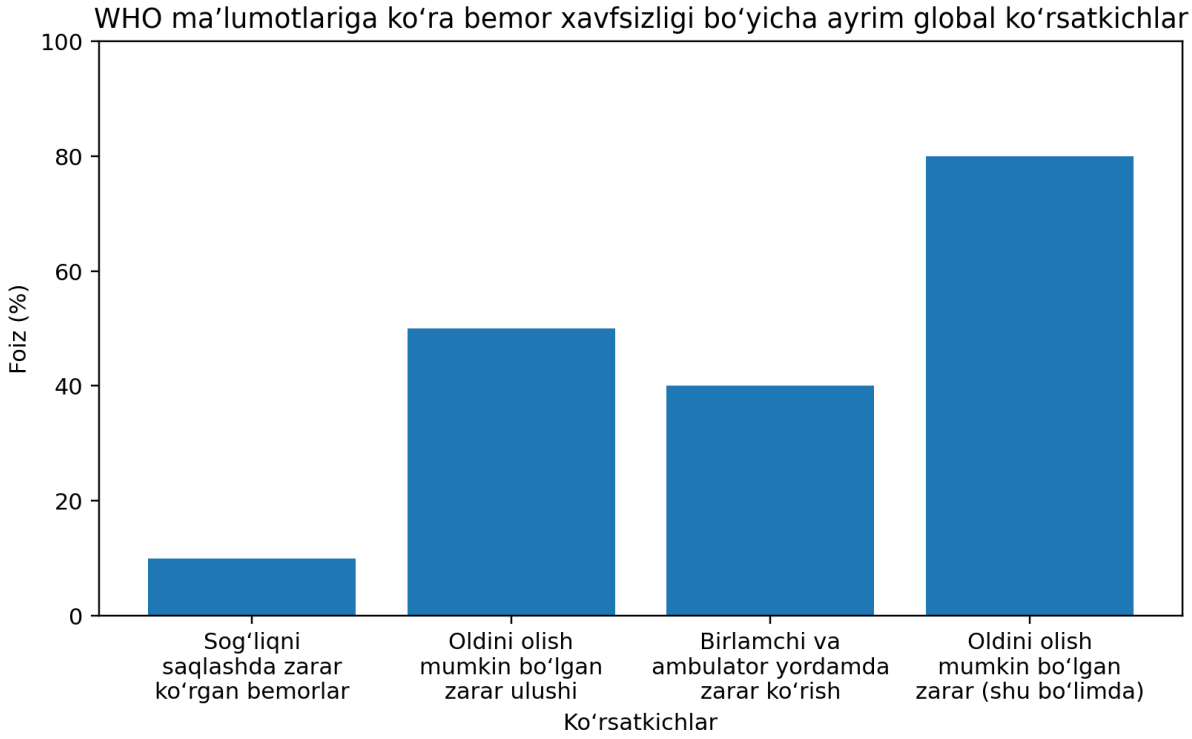
uchun psixologik xavfsiz muhit yaratish; baholash mezonlarini oldindan belgilash; o‘qituvchilarni simulyatsiya va debrifing metodikasiga maxsus tayyorlash. Shu yondashuv orqali simulyatsiya texnik vosita emas, balki bemor xavfsizligiga xizmat qiladigan to‘liq pedagogik tizimga aylanishi mumkin.

Maqolada nazariy tahlilni yanada aniqroq ko‘rsatish maqsadida quyida mavzuga bevosita daxldor jadval va rasmli materiallar keltirildi. Ular ilmiy adabiyotlar tahlili hamda Jahon sog‘liqni saqlash tashkiloti ma’lumotlari asosida tayyorlandi.

Jadval va rasmli materiallar

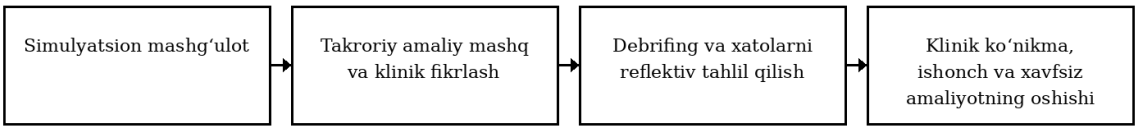
Muallif, yil	Tadqiqot turi	Yo‘nalish	Asosiy xulosa
Alharbi va boshq., 2024	Tizimli sharh	Bilim va klinik ko‘nikmalar	Simulyatsion ta’lim bilim va amaliy ko‘nikmalarni yaxshilashda samarali.
Görücü va boshq., 2024	Meta-tahlil	Klinik qaror qabul qilish	Simulyatsiya klinik qaror qabul qilish ko‘rsatkichlariga ijobiy ta’sir qiladi.
Huai va boshq., 2024	Tizimli sharh va meta-tahlil	Virtual reallik	VR texnologiyasi klinik ko‘nikma va o‘quv faolligini kuchaytiradi.
Fegran va boshq., 2023	Scoping-review	Debrifing	Strukturalashtirilgan debrifing refleksiya va o‘rganishni mustahkamlaydi.
JMIR, 2026	Tizimli sharh	Bemor xavfsizligi	Simulyatsion mashg‘ulotlar xavfsiz amaliyot va xatolarni kamaytirishga xizmat qiladi.

1-jadval. Simulyatsion ta’lim bo‘yicha tahlil qilingan asosiy manbalarning qisqacha tavsifi



1-rasm. WHO ma’lumotlariga ko‘ra bemor xavfsizligi bo‘yicha ayrim global ko‘rsatkichlar
Manba: WHO, Patient safety fact sheet, 2023.

Simulyatsion ta’limning klinik kompetensiya va bemor xavfsizligiga ta’sir mexanizmi



2-rasm. Simulyatsion ta’limning klinik kompetensiya va bemor xavfsizligiga ta’sir mexanizmi
Manba: muallif ishlanmasi.

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JAMOAT SALOMATLIGINI MUSTAHKAMLASHDA SOG‘LIQ SAVODXONLIGI VA PROFILAKTIK TA’LIMNING O‘RNI

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Annotatsiya. Maqolada sog‘liq savodxonligining jamoat salomatligini mustahkamlash, kasalliklarning birlamchi profilaktikasi va aholining sog‘lom xulq-atvorini shakllantirishdagi o‘rni tahlil qilinadi. Jahon sog‘liqni saqlash tashkiloti materiallari hamda 2023–2026-yillardagi zamonaviy ilmiy tadqiqotlar asosida sog‘liq haqidagi ma’lumotni topish, tushunish, baholash va amalda qo‘llash ko‘nikmalarining profilaktik salohiyati yoritilgan. Interaktiv va raqamli ta’lim, madaniy moslashtirish, “teach-back” va jamoaga yo‘naltirilgan ta’lim usullarining afzalliklari muhokama qilinadi. Tibbiyot texnikumlarida talabalarning sog‘liq savodxonligi va bemor bilan profilaktik muloqot kompetensiyasini rivojlantirish bo‘yicha tavsiyalar taklif etilgan.

Kalit so‘zlar: sog‘liq savodxonligi, jamoat salomatligi, profilaktika, sog‘lom turmush tarzi, tibbiy ta’lim, bemor ta’limi, birlamchi tibbiy yordam, raqamli sog‘liq

РОЛЬ ГРАМОТНОСТИ В ВОПРОСАХ ЗДОРОВЬЯ И ПРОФИЛАКТИЧЕСКОГО ОБУЧЕНИЯ В УКРЕПЛЕНИИ ОБЩЕСТВЕННОГО ЗДОРОВЬЯ

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Аннотация. В статье анализируется роль грамотности в вопросах здоровья в укреплении общественного здоровья, первичной профилактике заболеваний и формировании здорового поведения населения. На основе материалов Всемирной организации здравоохранения и современных исследований 2023–2026 годов рассматривается профилактический потенциал навыков поиска, понимания, оценки и практического использования медицинской информации. Обсуждаются преимущества интерактивного и цифрового обучения, культурной адаптации, метода teach-back и общественно ориентированных образовательных форм. Предложены рекомендации по развитию у студентов медицинских техникумов грамотности в вопросах здоровья и компетенций профилактического общения с пациентами.

Ключевые слова: грамотность в вопросах здоровья, общественное здоровье, профилактика, здоровый образ жизни, медицинское образование, обучение пациентов, первичная медико-санитарная помощь, цифровое здоровье

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THE ROLE OF HEALTH LITERACY AND PREVENTIVE EDUCATION IN STRENGTHENING PUBLIC HEALTH

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Abstract. The article analyses the role of health literacy in strengthening public health, primary disease prevention and the formation of healthy behaviour. Based on World Health Organization materials and recent research from 2023–2026, it examines the preventive potential of people's ability to access, understand, appraise and use health information. The benefits of interactive and digital education, cultural adaptation, teach-back and community-oriented learning approaches are discussed. Recommendations are proposed for developing health literacy and preventive communication competencies among students of public health technical schools.

Keywords: health literacy, public health, prevention, healthy lifestyle, medical education, patient education, primary health care, digital health

Kirish (Introduction)

Zamonaviy jamoat salomatligida kasallikni davolash bilan bir qatorda uning oldini olish, aholini sog‘lom xulq-atvorga yo‘naltirish va tibbiy ma’lumotdan ongli foydalanish qobiliyatini rivojlantirish ustuvor vazifalardan biri hisoblanadi. Jahon sog‘liqni saqlash tashkiloti sog‘liq savodxonligini insonning sog‘liq va farovonlikni saqlash uchun ma’lumot hamda xizmatlarni topish, tushunish, baholash va ulardan foydalanishga imkon beradigan bilim va kompetensiyalar majmui sifatida izohlaydi [1].

Sog‘liq savodxonligi faqat tibbiy atamalarni bilish yoki bukletni o‘qiy olish bilan cheklanmaydi. U insonning xavf omillarini tushunishi, ishonchli va ishonchsiz ma’lumotni ajratishi, profilaktik ko‘rikka o‘z vaqtida murojaat qilishi, dori vositalaridan to‘g‘ri foydalanishi, ovqatlanish va jismoniy faollik bo‘yicha qaror qabul qilishi bilan bog‘liq. Shu sababli sog‘liq savodxonligi jamoat salomatligining muhim determinanti sifatida qaralmoqda [1].

Birlamchi tibbiy yordam konsepsiyasi ham profilaktika va sog‘lomlashtirishni sog‘liqni saqlash tizimining markaziy elementi sifatida belgilaydi. WHO yondashuviga ko‘ra, birlamchi tibbiy yordam aholiga yaqin xizmat ko‘rsatish, kasalliklarning oldini olish, salomatlikni mustahkamlash va shaxs hamda jamoaning o‘z sog‘lig‘i uchun mas’uliyatli ishtirokini qo‘llab-quvvatlashni qamrab oladi [2; 3].

Tibbiyot texnikumi o‘qituvchisi uchun bu masala ikki tomonlama ahamiyatga ega. Birinchidan, bo‘lajak tibbiyot xodimining o‘z sog‘liq savodxonligi yuqori bo‘lishi kerak. Ikkinchidan, u kelgusida bemorga murakkab tibbiy ma’lumotni oddiy, aniq va amaliy shaklda tushuntira olishi lozim. Shuning uchun sog‘liq

savodxonligi tibbiyot ta’limining faqat jamoat salomatligi mavzusi emas, balki kasbiy kommunikativ kompetensiya sifatida ham o‘qitilishi zarur.

Maqolaning maqsadi — sog‘liq savodxonligi va profilaktik ta’limning jamoat salomatligiga ta’sirini zamonaviy manbalar asosida tahlil qilish hamda tibbiyot texnikumida sog‘liq savodxonligini rivojlantiruvchi pedagogik yondashuvlarni taklif etish.

Metodologiya (Methods)

Tadqiqot narrativ ilmiy sharh asosida bajarildi. 2023–2026-yillarda e’lon qilingan sog‘liq savodxonligi, profilaktik ta’lim, sog‘lom turmush tarzi, birlamchi tibbiy yordam va raqamli sog‘liq savodxonligiga oid tizimli sharhlar hamda Jahon sog‘liqni saqlash tashkilotining zamonaviy materiallari tahlil qilindi.

Manbalar mazmuni to‘rtta tematik blok bo‘yicha baholandi: sog‘liq savodxonligining mazmuni va jamoat salomatligidagi o‘rni; ta’limiy intervensiyalarning xulq-atvorga ta’siri; ijtimoiy va madaniy omillarning ahamiyati; tibbiyot ta’limida bemor bilan samarali profilaktik muloqot ko‘nikmalarini shakllantirish. Tizimli sharhlardagi asosiy xulosalar bir-biri bilan solishtirildi va umumlashtirildi.

Maqolada yangi klinik tajriba yoki respondentlardan olingan birlamchi statistika keltirilmaydi. Natijalar mavjud ilmiy dalillarni tematik sintez qilish orqali shakllantirilgan.

Natijalar (Results)

Tahlil sog‘liq savodxonligi profilaktik xulq-atvorning muhim shartlaridan biri ekanini ko‘rsatdi. WHO sog‘liq savodxonligini shaxsiy bilim va kompetensiyalar bilan birga sog‘liq tizimi tomonidan taqdim etiladigan resurslar va tashkiliy imkoniyatlar bilan bog‘liq tushuncha sifatida ko‘radi [1]. Demak, sog‘liq haqidagi ma’lumotni faqat aholiga yetkazish yetarli emas; u tushunarli, baholash mumkin bo‘lgan va amaliy qarorga aylantiriladigan shaklda berilishi zarur.

2025-yilda chop etilgan tizimli sharh sog‘lom turmush tarzini shakllantirishga qaratilgan ta’limiy intervensiyalar sog‘liq savodxonligi bilan birga ovqatlanish, jismoniy faollik va boshqa sog‘lom xulq-atvor ko‘rsatkichlariga ijobiy ta’sir qilishini ko‘rsatgan [4]. Ushbu natija profilaktik ta’limni faqat axborot berish emas, balki amaliy xulq-atvorni o‘zgartirishga yo‘naltirilgan interaktiv jarayon sifatida qurish zarurligini ko‘rsatadi.

Sog‘liq savodxonligining yurak-qon tomir kasalliklari profilaktikasidagi roli ham muhim. 2025-yilgi scoping-reviewda sog‘liq savodxonligi va yurak-qon tomir xavf omillari o‘rtasidagi bog‘liqlik tahlil qilinib, profilaktika uchun sog‘liq ma’lumotini tushunish va undan foydalanish muhimligi qayd etilgan [5]. Bu o‘qitish jarayonida arterial bosim, tana vazni, jismoniy faollik, chekish, tuz iste’moli va qandli diabet xavfi kabi tushunchalarni oddiy tilda izohlash ko‘nikmasini shakllantirish zarurligini anglatadi.

Ijtimoiy jihatdan zaif guruhlarda sog‘liq savodxonligini oshirish uchun standart ma’ruza shakli yetarli bo‘lmasligi mumkin. 2024-yilgi tizimli sharhda samaraliroq intervensiyalar ishtirokchilarning ehtiyojini oldindan o‘rganishi, madaniy va til jihatdan moslashtirilgan materiallardan foydalanishi, video va matnli vositalarni uyg‘unlashtirishi hamda rolli o‘yin va interaktiv guruh mashg‘ulotlarini qo‘llashi ko‘rsatilgan [6]. Bu natija tibbiyot xodimi profilaktik maslahatni “bir xil matn” tarzida emas, bemorning yoshi, ta’limi, tili va hayotiy sharoitiga mos ravishda berishi lozimligini ko‘rsatadi.

Raqamli sog‘liq savodxonligi ham tobora muhimlashmoqda. 2025-yilgi tizimli sharh va meta-tahlil raqamli sog‘liq savodxonligini rivojlantirishga qaratilgan ta’lim usullarining kattalar va surunkali kasalligi bo‘lgan shaxslarda ijobiy natijalar berishi mumkinligini ko‘rsatdi [7]. Internet va ijtimoiy tarmoqlardagi tibbiy axborot ko‘paygan sharoitda bemorni ishonchli manbani tanlash, reklama va ilmiy dalilni ajratish, tibbiy tavsiyani mutaxassis bilan tekshirishga o‘rgatish profilaktikaning yangi yo‘nalishiga aylanmoqda.

Surunkali kasalliklarda sog‘liq savodxonligiga yo‘naltirilgan intervensiyalar o‘zini o‘zi boshqarish kompetensiyalariga ham ta’sir ko‘rsatadi. 2025-yilgi tizimli sharhda bunday intervensiyalar dori vositalariga rioya qilish, kasallik haqidagi bilim va o‘ziga ishonch kabi ko‘rsatkichlarni yaxshilashi qayd etilgan [8]. Bu natija profilaktik ta’limni faqat kasallik paydo bo‘lishidan oldingi choralar bilan cheklamasdan, surunkali kasallik asoratlarining ikkilamchi profilaktikasi bilan ham bog‘lash zarurligini ko‘rsatadi.

Bo‘lajak hamshiralar va o‘rta tibbiyot xodimlarining o‘z sog‘liq savodxonligi bemorga ta’lim berish sifatiga ta’sir qiladi. 2024-yildagi tadqiqot hamshiralik talabalarining sog‘liq savodxonligi va bemor sog‘liq savodxonligini qo‘llab-quvvatlash strategiyalarini o‘rganib, bu kompetensiyalarni ta’lim jarayonida maxsus rivojlantirish zarurligini ko‘rsatgan [9]. Tibbiyot texnikumida “bemorga tushuntirish” alohida amaliy topshiriq sifatida baholanishi maqsadga muvofiq.

WHOning birlamchi tibbiy yordam bo‘yicha zamonaviy materiallari profilaktika, salomatlikni mustahkamlash va jamoaning faol ishtirokini yagona tizimda ko‘radi [2; 10]. Shunga ko‘ra, sog‘liq savodxonligini rivojlantirish tibbiy muassasa ichidagi qisqa maslahatdan tashqari maktab, mahalla, ish joyi, oila va raqamli makonda ham olib borilishi kerak.

Muhokama (Discussion)

Tahlil qilingan manbalar sog‘liq savodxonligini oshirish uchun eng samarali ta’lim modeli “axborot berish” modelidan “tushunishni tekshirish va harakatga undash” modeliga o‘tishni talab qilishini ko‘rsatadi. Masalan, bemorga tavsiya berilgach, undan tavsiyani o‘z so‘zlari bilan qayta tushuntirib berishni so‘rash — teach-back yondashuvi — bemorning haqiqiy tushunganini aniqlashga yordam beradi. Bu usul tibbiyot texnikumida rolli o‘yinlar orqali mashq qilinishi mumkin.

Profilaktik ta’limning samaradorligi ma’lumotning ilmiy to‘g‘riligiga ham, uning kommunikativ shakliga ham bog‘liq. Murakkab tibbiy terminologiya, katta hajmdagi matn yoki qo‘rqitishga asoslangan xabar ayrim auditoriyalarda aks ta’sir ko‘rsatishi mumkin. Aksincha, qisqa jumla, aniq tavsiya, vizual ko‘rsatma va bemorning kundalik hayotiga mos misol tavsiyaning amaliy bajarilishini yengillashtiradi.

Madaniy va tilga moslashtirilgan ta’limning ahamiyati 2024-yilgi tizimli sharhlarda ayniqsa ta’kidlangan [6]. O‘zbekiston sharoitida ham tibbiyot xodimi sog‘liq haqida ma’lumotni aholining til xususiyati, oilaviy qaror qabul qilish modeli, mahalliy ovqatlanish odatlari va mavjud resurslarini hisobga olgan holda tushuntirishi muhim. Bu tibbiy tavsiyaning mazmunini soddalashtirish emas, balki uni tushunarli va bajarilishi mumkin bo‘lgan shaklga keltirishdir.

Raqamli axborot muhiti sog‘liq savodxonligining yangi komponentini shakllantirdi. Talabalar va bemorlar internet orqali katta hajmdagi tibbiy ma’lumotga duch keladi, ammo manbaning ishonchliligini baholash har doim ham oson emas. Tibbiyot ta’limida rasmiy sog‘liq manbasini aniqlash, ilmiy dalil darajasini tushunish, manipulyativ reklama va noto‘g‘ri tibbiy da’volarni ajratish bo‘yicha mini-modullar joriy etilishi foydali.

Pedagogik jihatdan sog‘liq savodxonligini shakllantirish uchun muammoli vaziyatlar, bemor bilan suhbat ssenariylari, infografika yaratish, qisqa profilaktik nutq tayyorlash va turli yosh guruhlariga mos tushuntirish mashqlari samarali bo‘lishi mumkin. Bunday topshiriqlar talabaning bilimini qayta aytib berish qobiliyatidan amaliy kommunikativ kompetensiyaga olib o‘tadi.

Jamoat salomatligi uchun sog‘liq savodxonligi individual emas, tizimli masala hamdir. WHOning 2024-yildagi essential public health functions yondashuvida kasalliklarning oldini olish, salomatlikni mustahkamlash, jamoa ishtiroki va jamoat salomatligi kadrlarini rivojlantirish o‘zaro bog‘langan funksiyalar sifatida ko‘rsatiladi [11]. Demak, tibbiyot texnikumi talabasini faqat klinik ijrochi emas, balki sog‘liq bo‘yicha ma’lumot yetkazuvchi va profilaktik ta’lim tashkilotchisi sifatida ham tayyorlash zarur.

Xulosa

Sog‘liq savodxonligi jamoat salomatligini mustahkamlash, kasalliklarning oldini olish va aholining sog‘lom xulq-atvorini qo‘llab-quvvatlashning muhim omilidir. Zamonaviy dalillar interaktiv, madaniy moslashtirilgan va raqamli ta’lim yondashuvlari sog‘liq savodxonligi hamda sog‘lom turmush tarzi ko‘rsatkichlarini yaxshilash imkoniyatiga ega ekanini ko‘rsatadi [4; 6; 7].

Tibbiyot texnikumlari uchun quyidagi amaliy tavsiyalar maqsadga muvofiq: sog‘liq savodxonligini fanlararo kompetensiya sifatida o‘quv natijalariga kiritish; talabalarga bemor uchun sodda va aniq tushuntirish tuzishni o‘rgatish; teach-back, rolli o‘yin va vaziyatli topshiriqlardan foydalanish; raqamli sog‘liq ma’lumotini tanqidiy baholash ko‘nikmasini rivojlantirish; profilaktik materiallarni turli yosh va

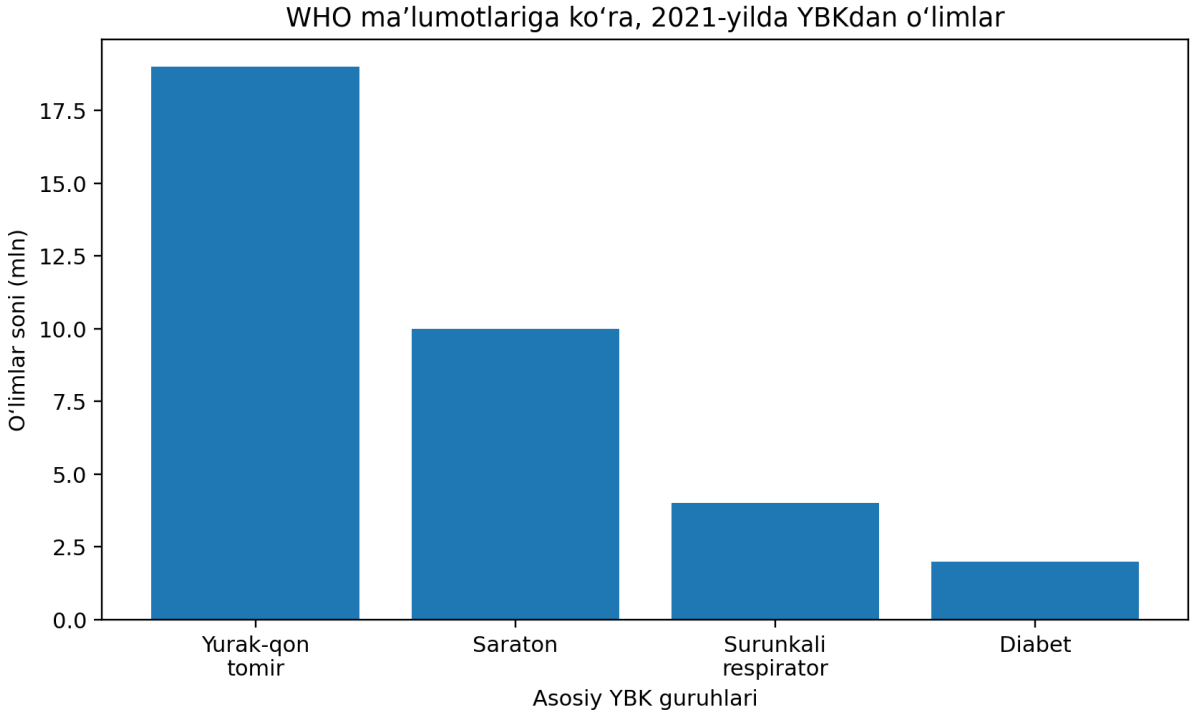
ijtimoiy guruhlarga moslashtirish; jamoa bilan ishlashga yo‘naltirilgan kichik loyihalarni tashkil etish. Natijada bo‘lajak tibbiyot xodimi davolash jarayonining ishtirokchisigina emas, balki aholi salomatligini himoya qiluvchi samarali sog‘liq kommunikatori sifatida shakllanadi.

Maqolaning mazmunini vizual jihatdan boyitish maqsadida quyida jamoat salomatligi va profilaktik ta’limga oid jadval hamda rasmli materiallar berildi. Statistik ko‘rsatkichlar Jahon sog‘liqni saqlash tashkilotining rasmiy ma’lumotlariga asoslandi.

Jadval va rasmli materiallar

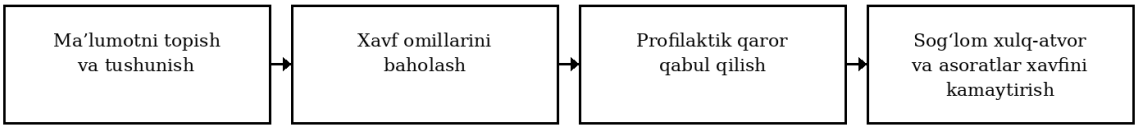
Muallif, yil	Tadqiqot turi	Yo‘nalish	Asosiy xulosa
WHO, 2025	Rasmiy ma’lumot	Sog‘liq savodxonligi	Sog‘liq savodxonligi ma’lumotni topish, tushunish, baholash va qo‘llash kompetensiyasidir.
Systematic review, 2025	Tizimli sharh	Sog‘lom turmush tarzi	Ta’limiy intervensiyalar sog‘lom xulq-atvorga ijobiy ta’sir ko‘rsatadi.
Scoping review, 2025	Scoping-review	Kardio-profilaktika	Sog‘liq savodxonligi profilaktik choralarni o‘z vaqtida qo‘llashga yordam beradi.
Kizilkilic va boshq., 2025	Tizimli sharh va meta-tahlil	Raqamli sog‘liq savodi	Raqamli ta’lim sog‘liq savodxonligi ko‘rsatkichlarini yaxshilashi mumkin.
Anselmann va boshq., 2024	Empirik tadqiqot	Hamshiralik talabalari	Talabalarda bemorga tushuntirish strategiyalarini rivojlantirish zarur.

1-jadval. Sog‘liq savodxonligi va profilaktik ta’lim bo‘yicha tahlil qilingan asosiy manbalar



1-rasm. WHO ma’lumotlariga ko‘ra, 2021-yilda yuqumli bo‘lmagan kasalliklardan o‘limlar
Manba: WHO, Noncommunicable diseases fact sheet, 2025.

Sog‘liq savodxonligining profilaktik ta’sir mexanizmi



2-rasm. Sog‘liq savodxonligining profilaktik ta’sir mexanizmi
Manba: muallif ishlanmasi.

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QANDLI DIABETNING OLDINI OLISHDA SOG‘LOM OVQATLANISH VA JISMONIY FAOLLIKNING AHAMIYATI

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Annotatsiya. Ushbu maqolada, avvalo, 2-tur qandli diabetning oldini olishda sog‘lom ovqatlanish va muntazam jismoniy faollikning o‘rni zamonaviy xalqaro tavsiyalar hamda epidemiologik ma’lumotlar asosida tahlil qilinadi. Sog‘lom tana vaznini saqlash, energiya muvozanatini nazorat qilish, sabzavot, meva, dukkakli mahsulotlar, butun donli mahsulotlar va tolaga boy oziq-ovqatlar ulushini oshirish, shakarli ichimliklar va yuqori darajada qayta ishlangan mahsulotlarni cheklashning profilaktik ahamiyati yoritiladi. Shuningdek, haftasiga kamida 150 daqiqa o‘rtacha intensivlikdagi jismoniy faollik, kuch mashqlari va uzoq vaqt o‘tirishni kamaytirishning insulin sezgirligi va tana vazniga ta’siri ko‘rib chiqiladi. Maqolada jahon va O‘zbekiston bo‘yicha mavjud statistik ko‘rsatkichlar, profilaktik dasturlarning samaradorligi va birlamchi tibbiy yordam hamda tibbiy ta’lim uchun amaliy tavsiyalar keltirilgan.

Kalit so‘zlar: qandli diabet, 2-tur diabet, sog‘lom ovqatlanish, jismoniy faollik, profilaktika, semizlik, insulin rezistentligi, turmush tarzi.

ЗНАЧЕНИЕ ЗДОРОВОГО ПИТАНИЯ И ФИЗИЧЕСКОЙ АКТИВНОСТИ В ПРОФИЛАКТИКЕ САХАРНОГО ДИАБЕТА

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Аннотация. В статье рассматривается роль здорового питания и регулярной физической активности в профилактике сахарного диабета 2 типа на основе современных международных рекомендаций и эпидемиологических данных. Особое внимание уделено поддержанию здоровой массы тела, энергетическому балансу, увеличению доли овощей, фруктов, бобовых, цельнозерновых продуктов и пищевых волокон, а также ограничению сладких напитков и ультрапереработанных продуктов. Анализируется значение не менее 150 минут умеренной физической активности в неделю, силовых упражнений и сокращения длительного сидения. Представлены глобальные данные и доступные показатели по Узбекистану, а также практические рекомендации для первичной медико-санитарной помощи и медицинского образования.

Ключевые слова: сахарный диабет, диабет 2 типа, здоровое питание, физическая активность, профилактика, ожирение, инсулинорезистентность, образ жизни.

THE IMPORTANCE OF HEALTHY NUTRITION AND PHYSICAL ACTIVITY IN THE PREVENTION OF DIABETES MELLITUS

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Abstract. This article examines the role of healthy nutrition and regular physical activity in preventing type 2 diabetes mellitus using current international recommendations and epidemiological evidence. Particular attention is given to maintaining a healthy body weight, balancing energy intake with expenditure, increasing consumption of vegetables, whole fruits, legumes, whole grains and other fibre-rich foods, and limiting sugar-sweetened beverages and highly processed foods. The article also analyses the importance of at least 150 minutes of moderate-intensity physical activity per week, resistance exercise and interruption of prolonged sedentary time. Global statistics, available Uzbekistan-specific indicators, evidence from diabetes prevention programmes and practical recommendations for primary health care and medical education are presented.

Keywords: diabetes mellitus, type 2 diabetes, healthy nutrition, physical activity, prevention, obesity, insulin resistance, lifestyle.

INTRODUCTION

Diabetes mellitus is one of the fastest-growing noncommunicable diseases worldwide. According to the World Health Organization (WHO), the number of people living with diabetes increased from about 200 million in 1990 to approximately 830 million in 2022, while the estimated prevalence among adults aged 18 years and older doubled from 7% to 14% over the same period [1]. The International Diabetes Federation (IDF) estimated that 589 million adults aged 20–79 were living with diabetes in 2024 and projects this number to reach about 852.5 million by 2050 [2]. These figures underline the importance of shifting health systems from a treatment-only model toward prevention, early risk identification and long-term support for healthy behaviour.

Type 2 diabetes accounts for around 90% of diabetes cases and is strongly associated with modifiable factors, including excess body weight, unhealthy dietary patterns, physical inactivity and prolonged sedentary behaviour [3]. Unlike type 1 diabetes, type 2 diabetes can often be prevented or delayed. WHO identifies healthy diet, regular physical activity, maintenance of a healthy body weight and avoidance of tobacco as core preventive measures [1,3]. Therefore, nutrition and movement are not merely general wellness recommendations; they are central components of evidence-based diabetes prevention.

The relevance of this topic is particularly high for public-health education. Teachers in medical and public-health technical schools can influence future health workers' understanding of disease prevention and, through them, community health behaviour. The aim of this article is to analyse current evidence on healthy nutrition and physical activity in the prevention of type 2 diabetes, present selected global and Uzbekistan-specific statistics, and formulate practical recommendations applicable to health education and primary care.

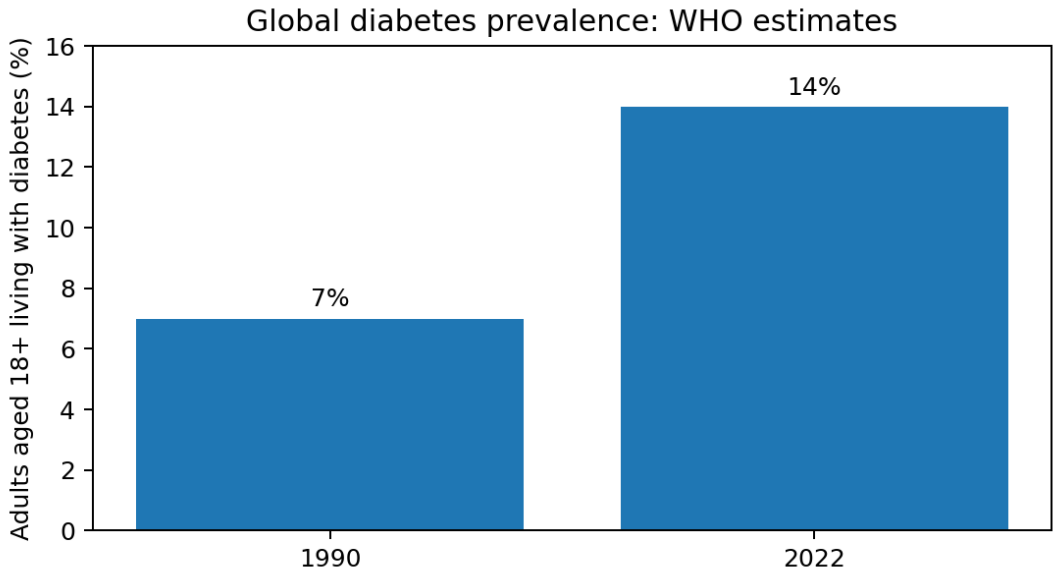


Figure 1. Global adult diabetes prevalence, 1990 and 2022. Source: WHO [1].

METHODOLOGY (METHODS)

A narrative review approach was used. Priority was given to high-authority and recent sources published mainly between 2020 and 2025, including WHO fact sheets and guidance, the IDF Diabetes Atlas, and the American Diabetes Association (ADA) Standards of Care in Diabetes. Older sources were included only when they provided foundational evidence, such as long-term diabetes prevention trial findings or country-profile data that remain useful for historical comparison. The review focused on four domains: (1) current diabetes burden; (2) dietary factors related to risk reduction; (3) the preventive effects of physical activity and weight management; and (4) practical strategies for primary care and health education.

Descriptive statistics from international organizations were summarized in tables and figures. Because available data are not always from the same year or age group, direct comparisons were avoided where inappropriate. In particular, the Uzbekistan-specific WHO diabetes profile was published in 2016 and reflects data available at that time; it is therefore presented as historical country-profile

information rather than a current 2026 estimate [4]. This distinction is important for scientific accuracy.

RESULTS

1. The growing burden of diabetes

WHO reports that 14% of adults aged 18 years and older were living with diabetes in 2022, compared with 7% in 1990 [1]. In addition, 59% of adults aged 30 years and older who had diabetes were not taking diabetes medication in 2022, with treatment coverage lowest in low- and middle-income countries [1]. Diabetes is associated with serious complications, including cardiovascular disease, kidney failure, loss of vision, nerve damage and lower-limb amputation. In 2021, diabetes was directly responsible for an estimated 1.6 million deaths worldwide, while kidney disease caused by diabetes accounted for an additional 530,000 deaths [1].

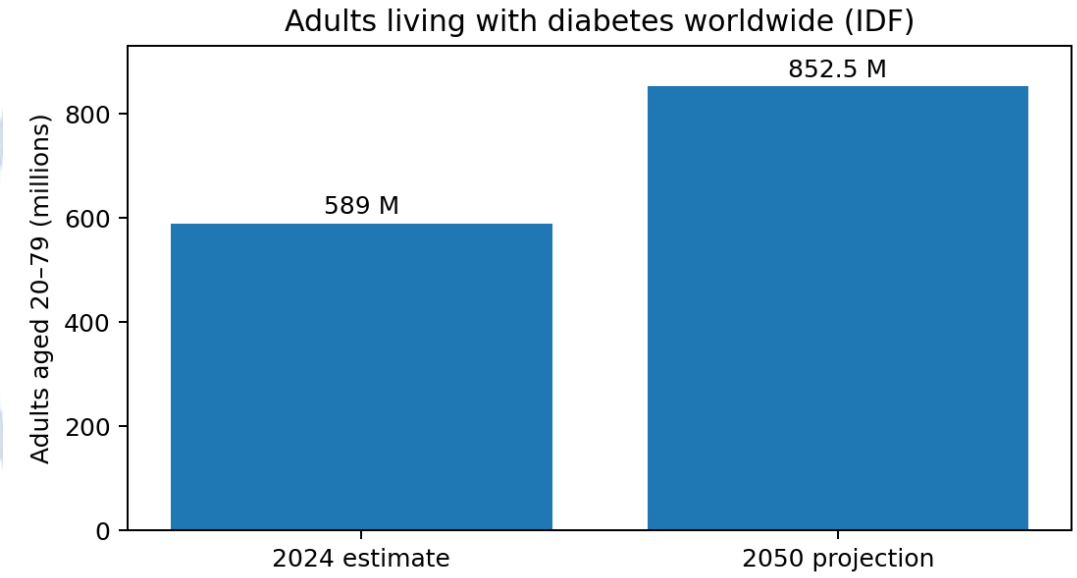


Figure 2. Estimated global number of adults aged 20–79 living with diabetes in 2024 and projection for 2050. Source: IDF Diabetes Atlas, 11th edition [2].

The 2025 IDF Diabetes Atlas estimates that 11.1% of adults aged 20–79 were living with diabetes in 2024. The projected rise from 589 million to approximately 852.5 million by 2050 represents an increase substantially greater than expected population growth, indicating that demographic change alone cannot explain the future burden [2]. Prevention strategies that address diet, physical inactivity, obesity and social environments are therefore essential.

2. Healthy nutrition as a preventive factor

Healthy nutrition reduces diabetes risk through several interconnected mechanisms: limiting excessive energy intake, supporting a healthy body weight, improving postprandial glucose responses, increasing dietary fibre intake and

reducing exposure to foods that promote excessive calorie consumption. WHO emphasizes that a healthy diet should be adequate, balanced, moderate and diverse. Modern diets in many settings contain increasing amounts of highly processed foods rich in unhealthy fats, free sugars and sodium, while intake of fruits, vegetables and fibre is often insufficient [5].

The ADA recommends individualized eating plans for people with prediabetes or at high risk of diabetes rather than a single universal macronutrient formula. Healthy patterns should emphasize non-starchy vegetables, whole fruits, legumes, lean protein sources, whole grains, nuts and seeds while minimizing sugar-sweetened beverages, sweets, refined grains, red and processed meats and highly processed foods [6]. High-fibre, minimally processed carbohydrates are particularly valuable because they generally produce a slower glucose rise and improve satiety. Replacing sugar-sweetened beverages with water is a simple, practical intervention for reducing excess sugar and energy intake [6].

For communities in Uzbekistan, prevention advice should be culturally realistic. Traditional meals do not need to be completely abandoned; instead, portion size, cooking method and meal composition can be modified. Practical examples include increasing vegetable portions, using legumes more frequently, choosing whole-grain or less-refined cereals when available, reducing repeated servings of bread or rice, limiting sugary tea and sweetened drinks, using less animal fat, and avoiding routine consumption of confectionery and fast foods. The goal is not a short-term restrictive diet but a sustainable eating pattern.

Table 1. Practical dietary priorities for type 2 diabetes prevention

Priority	Recommended approach	Public-health rationale
Vegetables and whole fruits	Include daily and vary by colour and type.	Increase fibre and micronutrient density while supporting satiety.
Whole grains and legumes	Replace part of refined grains with whole grains, beans, lentils or chickpeas.	Slower carbohydrate absorption and higher fibre intake.
Sugary drinks	Prefer water or unsweetened drinks.	Reduces rapidly absorbed sugar and unnecessary calories.
Processed foods	Limit sweets, refined snacks, fast foods and ultraprocessed products.	Helps reduce excess energy, added sugar, unhealthy fats and sodium.
Portion control	Match energy intake to activity level and weight goals.	Supports healthy weight and decreases insulin-resistance risk.

3. Physical activity and reduction of diabetes risk

Regular physical activity improves insulin sensitivity, increases glucose uptake by skeletal muscle, contributes to weight management, reduces visceral fat and improves cardiovascular fitness. WHO recommends at least 150 minutes of moderate-intensity physical activity each week as part of type 2 diabetes prevention

[1]. Globally, however, about 31% of adults do not meet recommended levels of physical activity, indicating a major preventable public-health gap [7].

The ADA similarly recommends a minimum of 150 minutes per week of moderate-intensity physical activity for adults at high risk of type 2 diabetes, with activity distributed across the week [8]. Brisk walking is one of the most accessible examples. Resistance exercise can be added because it helps maintain or increase muscle mass, which is metabolically important for glucose disposal. Long periods of sitting should also be interrupted regularly. For people who are initially inactive, small increases in walking, household activity, gardening, cycling or stair use can be a realistic starting point.

Evidence from the Diabetes Prevention Program (DPP) and subsequent analyses demonstrates the effectiveness of combined lifestyle change. Intensive lifestyle intervention targeting approximately 7% weight loss and at least 150 minutes of moderate physical activity per week reduced progression to type 2 diabetes by about 58% in high-risk adults. Importantly, achieving the physical-activity goal alone, even without reaching the full weight-loss target, was associated with an approximately 44% reduction in diabetes incidence [8,9]. These findings show that meaningful benefit is possible even when perfect weight-loss goals are not achieved.

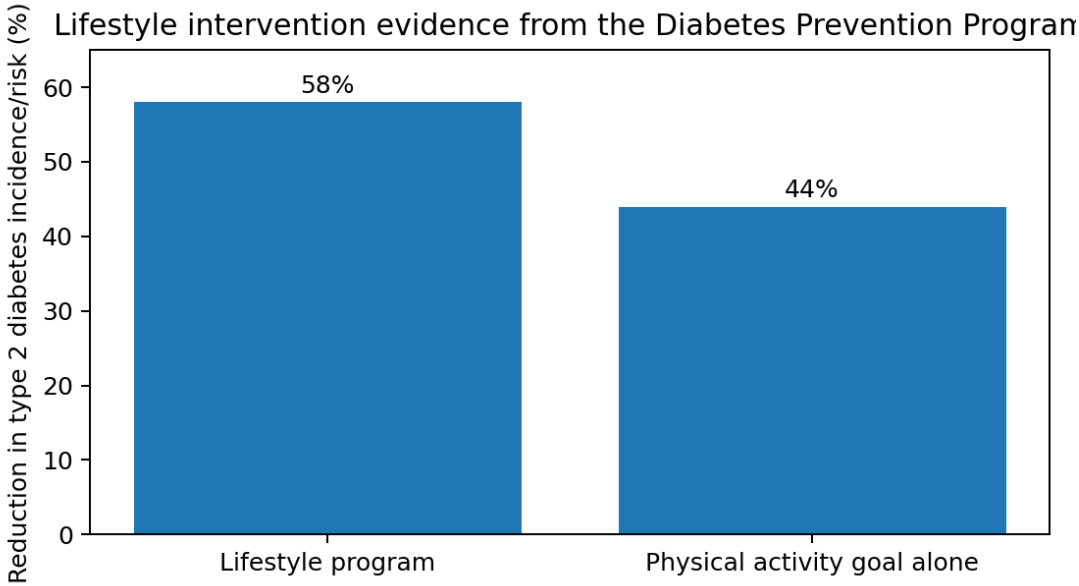


Figure 3. Effect of intensive lifestyle intervention and achievement of the physical-activity goal in high-risk adults. Sources: ADA Standards of Care and DPP evidence [8,9].

4. The role of body weight and sedentary behaviour

Excess weight is one of the strongest modifiable risk factors for type 2 diabetes because adipose tissue, particularly visceral fat, contributes to insulin resistance and chronic metabolic inflammation. ADA guidance for adults with overweight or

obesity and high diabetes risk supports intensive lifestyle programmes aiming for at least 7% initial body-weight reduction, while broader weight-management guidance recognizes clinically meaningful benefits from weight loss in the range of approximately 3–7% or more depending on the individual context [6,8,10]. Weight loss should be achieved through sustainable nutrition, activity and behavioural support rather than unverified supplements or extreme diets.

Sedentary time is an additional target. A person may complete a daily exercise session but still spend most waking hours seated. Current diabetes guidance therefore encourages interruption of prolonged sitting, alongside planned aerobic and resistance activity [6]. In educational settings, this can be translated into simple habits: standing or walking during breaks, short movement sessions between classes, walking meetings, use of stairs and limiting unnecessary screen time.

5. Available Uzbekistan-specific indicators

The WHO diabetes country profile for Uzbekistan, published in 2016, reported an estimated diabetes prevalence of 8.7%, overweight prevalence of 46.3%, obesity prevalence of 14.3% and physical inactivity prevalence of 18.1% in the data available at that time [4]. These figures should not be interpreted as current 2026 prevalence estimates, but they illustrate that diabetes risk factors were already significant and justify continued surveillance and prevention. Updated nationally representative measurements would be valuable for monitoring current trends and targeting interventions.

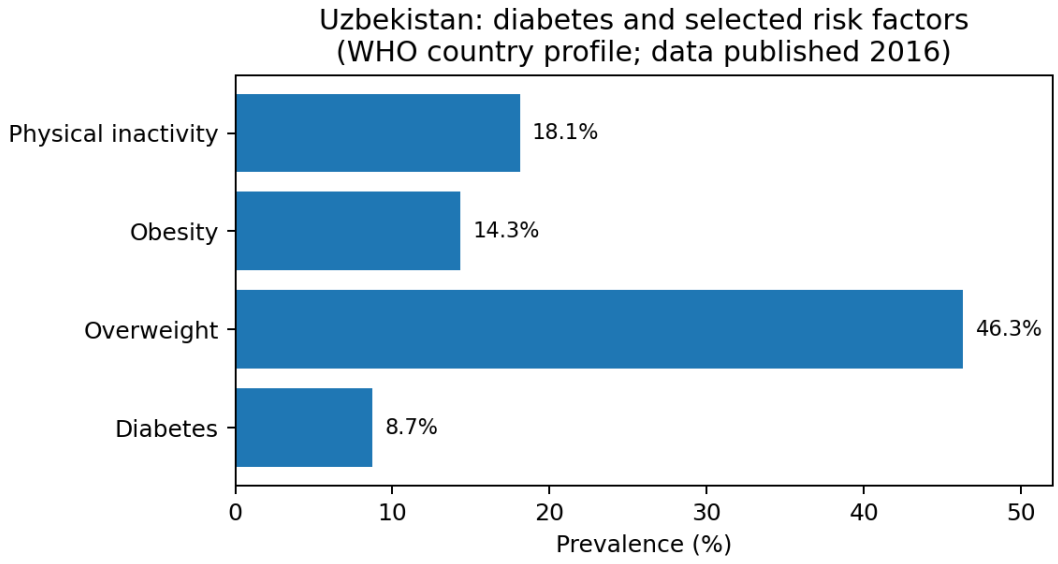


Figure 4. Diabetes and selected risk-factor prevalence in Uzbekistan from the WHO country profile published in 2016. These are historical profile data, not 2026 estimates [4].

DISCUSSION

The reviewed evidence consistently supports a combined approach rather than relying on one isolated behaviour. Healthy eating and physical activity act through overlapping biological and behavioural pathways. Improved diet helps control energy intake and diet quality; exercise improves insulin action and energy expenditure; together they support weight management. This explains why structured lifestyle programmes can achieve larger reductions in diabetes risk than single, low-intensity messages.

Current recommendations have also moved away from the idea that one "diabetes-prevention diet" fits everyone. Mediterranean-style, lower-carbohydrate and other evidence-based eating patterns may all be suitable when they emphasize nutrient quality, appropriate energy intake and sustainability [8]. This flexibility is especially important in culturally diverse populations because adherence is more likely when recommendations can be adapted to familiar foods, family routines and financial realities.

A second important finding is that prevention should not be limited to personal responsibility. Food availability, price, work schedules, safe places for exercise, health literacy, transportation and access to preventive health services influence people's ability to follow healthy recommendations [3,10]. Effective diabetes prevention therefore requires action at several levels: individual counselling, family support, educational programmes, primary health-care screening and environments that make healthy choices easier.

For medical technical schools, the topic has dual value. Students should understand both the biological basis of diabetes prevention and the communication skills required to explain prevention without stigma. People with overweight, obesity or prediabetes should not be blamed. Health workers should focus on achievable goals, shared decision-making and gradual behavioural change. Simple counselling such as "replace one sugary drink with water," "walk briskly for 30 minutes on five days each week," or "add vegetables to half of the plate" may be more actionable than broad instructions to "live healthily."

Practical recommendations for prevention programmes

Setting	Recommended action	Measurable indicator
Primary health care	Identify adults with overweight/obesity or other diabetes risk factors and provide structured lifestyle counselling.	Weight/BMI trend, activity minutes, glucose testing when indicated.
Medical education	Teach students to deliver brief, non-stigmatizing nutrition and activity counselling.	Observed counselling skills and case-based assessment.
Community	Promote walking groups, healthy canteen options and reduced sugary-drink availability.	Participation rate and healthier food/beverage uptake.

Individual/family	Set one or two realistic goals and review them regularly.	Weekly activity, beverage choices, portions, body-weight trend.

CONCLUSION

Type 2 diabetes is a major and increasing public-health problem, but a substantial proportion of risk is modifiable. The strongest practical message from current evidence is that healthy nutrition, regular physical activity and healthy weight management should be implemented together. A diet centred on vegetables, whole fruits, legumes, whole grains, nuts, seeds and other minimally processed foods, combined with reduced intake of sugar-sweetened drinks and highly processed foods, supports diabetes prevention. At the same time, adults should work toward at least 150 minutes of moderate-intensity physical activity per week and reduce prolonged sedentary time [1,6,8].

For Uzbekistan, diabetes prevention can be strengthened by integrating culturally appropriate nutrition education, accessible physical-activity promotion, risk-factor screening and behaviour-change support into primary care and medical education. Updated national surveillance data are also needed to accurately measure present-day prevalence and evaluate progress. The most effective prevention strategy is not a temporary diet or short exercise programme, but a sustainable lifestyle supported by families, health workers, educational institutions and healthy community environments.

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HAMSHIRALIK AMALIYOTIDA BEMOR XAVFSIZLIGINI TA'MINLASHNING USTUVOR YO'NALISHLARI

Eshonqulova E'zoza Rustam qizi

Buxoro Abu Ali ibn Sino nomidagi jamoat salomatligi texnikumi o'qituvchisi

Annotatsiya. Mazkur maqolada hamshiralik amaliyotida bemor xavfsizligini ta'minlashning nazariy va amaliy jihatlari yoritiladi. Infeksiyalar profilaktikasi, dori vositalarini xavfsiz qo'llash, bemor bilan samarali muloqot, kuzatuv va hujjatlashtirishning o'zaro bog'liqligi tahlil qilinadi. Jahon sog'liqni saqlash tashkiloti hamda zamonaviy ilmiy manbalar asosida hamshiraning profilaktik, klinik va ta'limiy roli asoslanadi. Maqola texnikum o'quvchilari va amaliyotchi hamshiralar uchun xavfsizlik madaniyatini shakllantirishga qaratilgan tavsiyalarni taklif etadi.

Kalit so'zlar: hamshiralik ishi, bemor xavfsizligi, infeksiya nazorati, qo'l gigiyenasi, dori xavfsizligi, muloqot, hujjatlashtirish, sifatli parvarish.

ПРИОРИТЕТНЫЕ НАПРАВЛЕНИЯ ОБЕСПЕЧЕНИЯ БЕЗОПАСНОСТИ ПАЦИЕНТА В СЕСТРИНСКОЙ ПРАКТИКЕ

Аннотация. В статье раскрываются теоретические и практические аспекты обеспечения безопасности пациента в сестринской практике. Анализируется взаимосвязь профилактики инфекций, безопасного применения лекарственных средств, эффективного общения с пациентом, наблюдения и документации. На основе рекомендаций Всемирной организации здравоохранения и современных научных источников обосновываются профилактическая, клиническая и образовательная роли медицинской сестры. Предлагаются рекомендации, направленные на формирование культуры безопасности у учащихся техникума и практикующих медицинских сестер.

Ключевые слова: сестринское дело, безопасность пациента, инфекционный контроль, гигиена рук, лекарственная безопасность, коммуникация, документация, качественный уход.

PRIORITY AREAS FOR ENSURING PATIENT SAFETY IN NURSING PRACTICE

Abstract. This article examines theoretical and practical aspects of ensuring patient safety in nursing practice. It analyses the relationship between infection prevention, safe medication administration, effective communication with patients, observation, and documentation. Drawing on World Health Organization recommendations and contemporary scientific sources, the article substantiates the

preventive, clinical, and educational roles of nurses. It offers recommendations aimed at building a safety culture among technical-school students and practicing nurses.

Keywords: nursing, patient safety, infection prevention and control, hand hygiene, medication safety, communication, documentation, quality care.

KIRISH

Sog‘liqni saqlash tizimida bemor xavfsizligi davolash natijasining ajralmas mezoni hisoblanadi. Bemor muassasaga murojaat qilganda nafaqat tashxis va davolashni, balki unga zarar yetkazmaydigan, hurmatli va uzluksiz parvarishni ham kutadi. Hamshira bemor bilan eng ko‘p muloqot qiladigan mutaxassis sifatida xavfni erta aniqlash, oldini olish va tegishli mutaxassisga o‘z vaqtida yetkazishda markaziy o‘ringa ega. Jahon sog‘liqni saqlash tashkiloti bemor xavfsizligini barcha sharoitda sifatli tibbiy yordamning asosi deb belgilaydi; oldini olish mumkin bo‘lgan noxush hodisalar va xatolar esa hanuz global muammo bo‘lib qolmoqda [1].

Hamshiralik ishi faqat shifokor tayinlovini bajarish bilan cheklanmaydi. U klinik kuzatuv, individual parvarish rejasini tuzish, bemor va uning yaqinlarini o‘qitish, infektsion xavflarni boshqarish hamda jamoa ichidagi axborot almashinuvini bir butun jarayonga birlashtiradi. Jahon hamshiraligi bo‘yicha 2025-yilgi hisobot hamshiralarni sog‘liqni saqlashdagi eng yirik kasbiy guruh, tenglik va universal qamrovga erishishning muhim kuchi sifatida ta’riflaydi [2]. Shu bois texnikumdagi hamshiralik ta’limida xavfsiz amaliyot ko‘nikmalarini nazariy bilim bilan birga shakllantirish dolzarbdir.

Mavzuning o‘rganilganlik darajasi xalqaro adabiyotlarda yetarlicha keng: qo‘l gigiyenasi, standart ehtiyot choralari, bemorni identifikatsiyalash, dori vositalari bilan bog‘liq xatolar va muloqotga oid tavsiyalar ishlab chiqilgan [3–6]. Biroq bu tavsiyalarni mahalliy ta’lim va amaliyot sharoitiga mos, hamshiraning kundalik faoliyatiga yaqin tilda tizimlashtirish zarur. Mazkur maqolaning maqsadi hamshiralik amaliyotida bemor xavfsizligining ustuvor yo‘nalishlarini tahlil qilish va amaliy tavsiyalarni asoslashdan iborat.

METODOLOGIYA

Tadqiqot tavsifiy-analitik adabiyotlar sharhi shaklida olib borildi. Qidiruv va tahlilda Jahon sog‘liqni saqlash tashkilotining bemor xavfsizligi, infeksiyalar profilaktikasi va hamshiralik bo‘yicha hujjatlari, Xalqaro hamshiralar kengashi materiallari, dori xavfsizligi bo‘yicha xalqaro tavsiyalar hamda 2019–2025-yillarda nashr etilgan ilmiy manbalar tanlandi. Manbalar hamshiraning bevosita vazifalariga aloqadorligi, dalilga asoslanganligi va amaliy qo‘llanish imkoniyati bo‘yicha saralandi.

Tahlilning asosiy birliklari quyidagilar bo‘ldi: infeksiya profilaktikasi; bemorni to‘g‘ri identifikatsiyalash va kuzatish; dori vositalarini xavfsiz qo‘llash; muloqot va topshiruv; hujjatlashtirish; bemor hamda yaqinlarini o‘qitish. Har bir yo‘nalish uchun xavf omillari, hamshiraning oldini oluvchi harakati va kutiladigan natija ajratib ko‘rsatildi. Ushbu ish klinik sinov emas; natijalar mavjud dalillarning mazmuniy sintezi bo‘lib, ular ta’lim va amaliyotda foydalanishga mo‘ljallangan.

NATIJALAR

1. Infeksiyalar profilaktikasi xavfsiz parvarishning birinchi bo‘g‘ini

Tahlil shuni ko‘rsatdiki, qo‘l gigiyenasi hamshiralik amaliyotidagi eng sodda, lekin eng yuqori ta’sirli xavfsizlik choralaridan biridir. Qo‘llar tibbiy yordam jarayonida mikroorganizmlarning asosiy o‘tish yo‘li bo‘lishi mumkin; shu sababli qo‘l gigiyenasi tibbiy yordam bilan bog‘liq infeksiyalarni kamaytirishning tayanch usuli sifatida e’tirof etiladi [3]. U bemorga tegishdan oldin, aseptik muolajadan oldin, biologik suyuqlik ta’siri xavfi tug‘ilgandan so‘ng, bemorga tegilgandan so‘ng va bemor atrofiga tegilgandan so‘ng bajarilishi kerak [4].

Amaliyotda faqat hamshiraning shaxsiy intizomi emas, balki muassasa sharoiti ham muhim. Suv, sovun, bir martalik sochiq, spirtli antiseptik va chiqindi yig‘ish vositalari mavjud bo‘lmasa, tavsiyaga amal qilish qiyinlashadi. WHOning multimodal yondashuvi tizimni o‘zgartirish, xodimlarni o‘qitish, kuzatuv va qayta aloqa, eslatmalar hamda xavfsizlik iqlimini o‘zaro bog‘liq komponentlar sifatida tavsiya qiladi [5]. Demak, qo‘l gigiyenasi bo‘yicha natijani faqat nazorat bilan emas, qulay infratuzilma va muntazam o‘qitish bilan mustahkamlash lozim.

Standart ehtiyot choralariga qo‘l gigiyenasidan tashqari shaxsiy himoya vositalarini xavfga qarab tanlash, igna va o‘tkir buyumlar bilan xavfsiz ishlash, tibbiy chiqindilarni ajratish, nafas yo‘llari gigiyenasi hamda atrof-muhit tozaligi kiradi [6]. Hamshira muolajadan avval xavfni baholashi, keyin qo‘lqop, niqob, xalat yoki ko‘z himoyasini asossiz ortiqcha ham, yetarli bo‘lmagan darajada ham qo‘llamasligi kerak. Qo‘lqop qo‘l gigiyenasi o‘rnini bosa olmaydi; u yechilgandan keyin ham qo‘lga ishlov berish shart.

Talabalar amaliyotida aseptika va antiseptika qoidalarining ma’nosini anglash alohida ahamiyatga ega. Muolaja algoritmini yodlashning o‘zi yetarli emas: o‘quvchi har bir qadamning bemor uchun qanday xavfni kamaytirishini tushunishi kerak. Masalan, venoz kirish joyini baholashda qizarish, og‘riq, shish, infiltrat yoki ajralmani erta payqash keyingi asoratning oldini oladi. Bunday kuzatuv natijasi aniq qayd etilib, navbatchilik topshirig‘ida aytilishi lozim.

2. Bemorni identifikatsiyalash va klinik kuzatuv

Xavfsiz parvarish bemorning shaxsini aniq tasdiqlashdan boshlanadi. Ism-familiyani faqat palata raqami yoki tashqi ko‘rinishga qarab qabul qilish noto‘g‘ri. Dori berish, qon olish, namuna yuborish, muolaja o‘tkazish va transportirovka qilishdan oldin kamida ikki identifikator - masalan, F.I.Sh. va tug‘ilgan sana yoki tibbiy karta raqami - bo‘yicha tekshiruv o‘tkazish xavfni kamaytiradi [1]. Hushyorligi pasaygan, bolalar, keksalar va bir xil familiyali bemorlarda ushbu qoida ayniqsa muhimdir.

Hamshiraning klinik kuzatuvi nafas soni, puls, arterial bosim, tana harorati, og‘riq, ong holati, diurez, teri rangi va harakat faolligini baholashdan iborat. Ko‘rsatkichlar bir martalik raqam sifatida emas, avvalgi holat bilan taqqoslab talqin qilinishi kerak. Bemorning odatiy holatidan og‘ish, yangi chalkashlik, nafas qisilishi, to‘satdan og‘riq yoki qon ketish belgisi o‘z vaqtida aniqlansa, shifokorni chaqirish va tezkor yordam ko‘rsatish imkoniyati oshadi. Kuzatuv chastotasi bemorning holati va muolajaga qarab belgilanadi.

Yiqilish va yotoq yarasining oldini olish ham bevosita hamshiralik parvarishi bilan bog‘liq. Yiqilish xavfi yuqori bemorda yotoq balandligini moslashtirish, chaqiruv tugmasini qo‘l yetadigan joyga qo‘yish, harakatda yordam berish, polning quruqligini tekshirish va qarindoshga tushuntirish zarur. Yotoq yarasining oldini olish uchun terini muntazam ko‘rish, tana holatini o‘zgartirish, namlikni nazorat qilish, yetarli ovqatlanish va mos parvarish vositalaridan foydalanish talab qilinadi. Bunda baholash, rejalash, bajarish va qayta baholash uzluksiz aylanma jarayondir.

Bemorning o‘zi ham xavfsizlik hamkori bo‘lishi mumkin. Hamshira bemorga dori nomini so‘rash, allergiyasi haqida eslatish, qo‘l gigiyenasi zaruratini so‘rash va g‘ayrioddiy belgi paydo bo‘lsa darhol xabar berish huquqini tushuntirganda, parvarishning shaffofligi oshadi. WHO bemorga hurmatli va xavfsiz yordamni har bir sharoitda ta’minlash kerakligini ta’kidlaydi [1].

3. Dori vositalarini xavfsiz qo‘llash

Dori bilan bog‘liq xatolar bemor xavfsizligiga zarar yetkazishi mumkin bo‘lgan, ko‘p hollarda oldini olsa bo‘ladigan hodisalardir. Ular buyurish, tarqatish, saqlash, tayyorlash, yuborish yoki monitoring bosqichida yuz berishi mumkin. WHO dori xavfsizligi bo‘yicha global chaqirig‘ida xatolar va ularning oldini olish mumkin bo‘lgan zarari jiddiy e’tibor talab qilishini ko‘rsatadi [7]. Hamshira ushbu zanjirning oxirgi va ayni paytda muhim xavfsizlik bo‘g‘inlaridan biridir.

Dori yuborishdan oldin “to‘g‘ri bemor, to‘g‘ri dori, to‘g‘ri doza, to‘g‘ri yo‘l, to‘g‘ri vaqt, to‘g‘ri hujjatlashtirish, to‘g‘ri sabab va to‘g‘ri baholash” tamoyiliga amal qilish tavsiya etiladi. Ayniqsa o‘xshash nomli yoki o‘xshash qadoqli

preparatlar, yuqori xavfli dorilar, bolalar va buyrak-jigar faoliyati buzilgan bemorlarda ikki martalik tekshiruv foydalidir. Dozani hisoblashda bemor vazni, buyurilgan birlik va preparat konsentratsiyasi alohida tekshiriladi; shubhali yozuv yoki buyruq aniqlashtirilmasdan bajarilmaydi.

Allergologik anamnezni tekshirish, preparatning yaroqlilik muddati va saqlash sharoitini nazorat qilish ham dori xavfsizligining odatiy qismidir. Hamshira bemorga preparat nima uchun berilayotgani, kutiladigan ta'siri va e'tibor beriladigan nojo'ya belgilari haqida sodda tilda tushuntirishi lozim. Preparat yuborilgandan keyin klinik samarani va nojo'ya reaksiyalarni kuzatish, anafilaksiya belgilarida esa shoshilinch algoritmga muvofiq harakat qilish talab etiladi.

Xatoni yashirish emas, undan o'rganish xavfsizlik madaniyatining mezonidir. Dori bilan bog'liq noxush hodisa yoki unga yaqin holat qayd etilishi, bemorning joriy holati ta'minlanishi va ichki tartibga muvofiq xabar berilishi kerak. Jazolashga asoslangan muhit xabar berishni kamaytiradi; tizimli tahlil esa sabablarni - ish yuklamasi, chalg'ituvchi omillar, noaniq yorliq, yomon tashkil etilgan saqlash yoki bilim yetishmasligini - aniqlashga yordam beradi [8].

4. Muloqot, topshiruv va hujjatlashtirish

Hamshiralikdagi axborot uzilishi bemor xavfsizligi uchun sezilarli xavf tug'diradi. Navbatchilikni topshirishda tashxis, allergiya, joriy muammolar, muhim ko'rsatkichlar, bajarilgan muolajalar, kutilayotgan tekshiruv va alohida xavflar aniq bayon qilinishi zarur. Tuzilmali muloqot usullari, xususan SBAR (vaziyat, fon, baholash, tavsiya) ma'lumotni tartibli va qisqa yetkazishga yordam beradi [9]. Biroq qisqalik muhim klinik ma'lumotni tashlab ketishga sabab bo'lmasligi kerak.

Bemor bilan muloqotda faol tinglash, oddiy va tushunarli til, ko'z bilan aloqa, shaxsiy hayotga hurmat hamda madaniy xususiyatlarni hisobga olish muhim. Tibbiy terminni bemorning tushunishiga mos izohlash, so'ng "o'z so'zingiz bilan takrorlab bering" usulidan foydalanish tushunilganlikni tekshiradi. Bu usul ayniqsa uyga chiqarish bo'yicha tavsiyalar, dori qabul qilish tartibi, parhez va yara parvarishida foydalidir [10].

Hujjatlashtirish parvarishning huquqiy va klinik davomiyligini ta'minlaydi. Qaydlar o'z vaqtida, xolis, o'qiladigan va aniq bo'lishi kerak. Unda kuzatilgan holat, bajarilgan muolaja, bemorning javobi, berilgan maslahat va kimga xabar qilingani aks etadi. "Bemor yaxshi" kabi umumiy jumla o'rniga o'lchanadigan ma'lumot yozish maqsadga muvofiq: masalan, "soat 10:00 da og'riq 8/10 dan 3/10 gacha kamaydi, nafas 20/min, teri quruq".

Elektron yoki qog‘oz hujjatlarda maxfiylikni saqlash ham kasbiy mas’uliyatdir. Bemor ma’lumotini ruxsatsiz muhokama qilish, ochiq ekran qoldirish yoki begona shaxsga kartani berish ishonchga putur yetkazadi. Etik hamshiralik amaliyoti bemorning qadr-qimmati, tanlovi va maxfiyligini klinik samaradorlik bilan bir qatorda himoya qiladi [11].

5. Ta’lim, rahbarlik va xavfsizlik madaniyati

Adabiyotlar sharhi xavfsizlik faqat individual ko‘nikma emasligini ko‘rsatadi. U rahbarlik, adolatli ish yuklamasi, xodimlar soni, uskunalar mavjudligi, ochiq muloqot va doimiy ta’lim bilan shakllanadigan muassasa madaniyatidir. WHOning infeksiyalarning oldini olish va nazorat qilish bo‘yicha minimal talablari muassasa hamda milliy darajada dastur, yo‘riqnoma, o‘qitish, kuzatuv va qayta aloqaning zarurligini ko‘rsatadi [12].

Hamshiralik ta’limida simulyatsion mashg‘ulotlar, klinik holat tahlili, chek-listlar va refleksiya samarali usullardir. Talaba muolajani xavfsiz muhitda bajarib, xato oqibatini muhokama qilsa, klinik amaliyotda ancha ishonchli harakat qiladi. O‘qituvchi baholashda faqat muolajaning texnik ketma-ketligini emas, bemorni tanishtirish, rozilikni aniqlash, qo‘l gigiyenasi, identifikatsiya, tushuntirish va qaydni ham mezon sifatida ko‘rishi zarur.

Rahbar va katta hamshira xodimlarning savol berishi hamda noxush holat haqida xabar berishini qo‘llab-quvvatlashi lozim. Xavf yuzasidan bildirilgan fikr ayb qidirish uchun emas, bemorni himoya qilish uchun qabul qilinsa, jamoa o‘rganadi. Muntazam ichki audit, qisqa o‘quv suhbatlari, bo‘limdagi ko‘rsatkichlar tahlili va amaliy qayta aloqa xavfsizlik jarayonini barqarorlashtiradi.

6. Og‘riqni boshqarish va bemor markazidagi parvarish

Og‘riq bemorning jismoniy va ruhiy holatiga, uyqusi, harakat faolligi va davolashga munosabatiga bevosita ta’sir qiladi. Hamshira og‘riqni bemorning so‘zlari va kuzatiladigan belgilariga tayangan holda muntazam baholashi kerak. Raqamli shkala (0 dan 10 gacha), yuz ifodasi shkalasi yoki bemor uchun mos boshqa vosita baholashni standartlashtiradi. Og‘riqning joyi, davomiyligi, kuchi, keltirib chiqaruvchi va kamaytiruvchi omillari aniq so‘raladi; natija qayd qilinadi va avvalgi baholash bilan solishtiriladi.

Og‘riqni kamaytirishda dori vositalari bilan bir qatorda to‘g‘ri tana holati, tinch muhit, nafasni boshqarish, sovuq yoki iliq muolaja kabi dori bo‘lmagan choralar ham qo‘llanishi mumkin. Biroq bunday usul bemorning tashxisi va umumiy holatini hisobga olgan holda tanlanadi. Analgetik yuborilgach, hamshira faqat og‘riq kamayganini emas, uyquchanlik, nafasning sekinlashuvi, arterial bosim o‘zgarishi,

ko‘ngil aynishi kabi nojo‘ya ta’sirlarni ham baholaydi. Shu tariqa og‘riqni boshqarish ham dori xavfsizligi, kuzatuv va muloqot bilan bog‘lanadi.

Bemor markazidagi parvarish uning qadriyatlari, diniy va madaniy qarashlari, til imkoniyati hamda qaror qabul qilishdagi ishtirokini e’tiborga olishni anglatadi. Muolajadan oldin nima qilinishi va nima uchun qilinishi tushuntirilsa, bemorning bezovtaligi kamayadi va hamkorlik kuchayadi. Shaxsiy hayot himoyasi - pardadan foydalanish, tananing keraksiz qismini ochmaslik, suhbatni begonalarsiz olib borish - ham xavfsiz va hurmatli yordamning amaliy ifodasidir [11].

Uyga chiqarish arafasida bemor va qarindosh bilan o‘tkazilgan o‘qitish qayta yotqizilish va uy sharoitidagi asoratlar xavfini kamaytirishga xizmat qiladi. Hamshira dori qabul qilish vaqti, yara parvarishi, parhez, jismoniy faollik, nazorat ko‘rigi hamda zudlik bilan murojaat qilish kerak bo‘ladigan belgilarni yozma yoki og‘zaki tushuntiradi. Teach-back, ya’ni bemorning ko‘rsatmani o‘z so‘zi bilan qayta aytishi, u ma’lumotni to‘g‘ri tushunganini tekshirishning qulay usulidir [10].

7. Xavfsizlikni baholash ko‘rsatkichlari

Xavfsizlikni yaxshilash uchun muassasa o‘z faoliyatini muntazam o‘lchashi zarur. Qo‘l gigiyenasiga rioya qilish ulushi, yiqilishlar soni, yotoq yaralari, dori bilan bog‘liq xabarlar, kateter bilan bog‘liq infeksiya belgilari, to‘liq topshiruvlar ulushi kabi ko‘rsatkichlar bo‘limdagi muammolarni ko‘rsatadi. Ko‘rsatkichdan maqsad xodimni jazolash emas, qayerda tizimni yaxshilash kerakligini ko‘rishdir. Ma’lumotlar davriy tahlil qilinib, jamoaga sodda va tushunarli shaklda qaytarilishi lozim.

Audit natijasiga javob aniq bo‘lishi kerak: masalan, qo‘l gigiyenasi kuzatuvida past natija aniqlansa, antiseptik joylashuvi, sarf materiallari, ish oqimi va xodimlar bilimini birgalikda ko‘rib chiqish zarur. Dori xatosiga yaqin holatlar ko‘paysa, dorilarni markalash va saqlash, chalg‘ituvchi omillar hamda ikki martalik tekshiruv tartibi baholanadi. Shunday sikl - o‘lchash, tahlil qilish, yaxshilash va qayta o‘lchash - xavfsizlikni faqat shior emas, boshqariladigan sifat jarayoniga aylantiradi [12, 13].

MUHOKAMA

Natijalar xalqaro tavsiyalar bilan mos keladi: bemor xavfsizligi alohida bir amaliyot emas, balki bir-birini to‘ldiruvchi klinik jarayonlar tizimidir. Qo‘l gigiyenasi, standart ehtiyot choralari va xavfsiz inyeksiya infektsion xavfni kamaytirsa, identifikatsiya va dori tekshiruvlari noto‘g‘ri muolajani oldini oladi. Muloqot, topshiruv va hujjatlashtirish esa ushbu amallar orasidagi uzilishlarni

qisqartiradi. Shuning uchun har bir yo‘nalishni alohida o‘qitish zarur bo‘lsa-da, klinik holatda ular yagona parvarish algoritmi sifatida bajarilishi kerak.

WHOning bemor xavfsizligi bo‘yicha harakat rejasida xavfsiz va hurmatli yordamni har safar hamda hamma joyda ko‘rsatish maqsadi belgilangan [1]. Ushbu maqsad hamshira uchun kundalik mayda qarorlar darajasida namoyon bo‘ladi: bemorning familiyasini so‘rash, aseptik muolaja oldidan qo‘lga ishlov berish, dori dozasini qayta hisoblash, g‘ayrioddiy belgini qayd etish yoki navbatchiga muhim ma’lumotni to‘liq berish. Aynan shu takrorlanuvchi xatti-harakatlar katta xavflarning oldini oladi.

Biroq xalqaro standartni joriy etishda resurs, vaqt va xodimlar bilan ta’minlanganlik muammolari bo‘lishi mumkin. Bunday vaziyatda ustuvor xavflarni aniqlash, minimal zarur vositalarni ta’minlash va aniq chek-listlardan foydalanish foydali. Masalan, dori berish va invaziv muolajalar uchun qisqa xavfsizlik tekshiruvi, navbatchilik topshirig‘i uchun standart shakl hamda qo‘l antiseptigini bemor yotog‘i yaqinida joylashtirish katta mablag‘siz ham amaliy intizomni yaxshilaydi.

Maqolaning cheklovi shundaki, u bir muassasada o‘tkazilgan empirik kuzatuvga emas, adabiyotlar tahliliga asoslangan. Keyingi tadqiqotlarda texnikum talabalarining qo‘l gigiyenasi, dori hisoblash va topshiruv ko‘nikmalarini simulyatsiyadan oldin va keyin baholash, shuningdek, klinik bazalardagi xavfsizlik madaniyatini so‘rovnoma bilan o‘rganish maqsadga muvofiqdir.

XULOSA

Hamshiralik amaliyotida bemor xavfsizligi qo‘l gigiyenasi va infeksiya nazoratidan boshlanib, ishonchli identifikatsiya, doimiy klinik kuzatuv, dori vositalarini tekshirib yuborish, sifatli muloqot va aniq hujjatlashtirish orqali ta’minlanadi. Hamshira bu jarayonlarning ijrochisi bilan birga xavfni ko‘radigan, uni baholaydigan va jamoani ogohlantiradigan mutaxassisdir.

Amaliy tavsiya sifatida hamshiralik bo‘limlari va ta’lim muassasalarida quyidagilarni yo‘lga qo‘yish tavsiya etiladi: qo‘l gigiyenasi va standart ehtiyot choralari bo‘yicha davriy mashg‘ulotlar; dori yuborishdan oldingi tekshiruv ro‘yxati; bemorni ikki identifikator bilan tasdiqlash; navbatchilik topshiruvida tuzilmali muloqotdan foydalanish; noxush hodisa va unga yaqin holatlarni ayblovsiz tahlil qilish; hujjatlashtirish bo‘yicha amaliy nazorat. Ushbu choralar birgalikda bemor uchun xavfsizroq, hamshira uchun esa mas’uliyatli va ishonchli ish muhitini yaratadi.

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TIBBIYOT XODIMLARIDA KASBIY STRESS VA EMOTSIONAL ZO‘RIQISHNING OLDINI OLISH

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Annotatsiya: Mazkur maqolada tibbiyot xodimlari faoliyatida yuzaga keladigan kasbiy stress va emotsional zo‘riqishning asosiy sabablari, ularning xodim salomatligi hamda tibbiy xizmat sifatiga ta’siri va oldini olishning zamonaviy yondashuvlari tahlil qilinadi. Tibbiyot xodimlarining kasbiy faoliyati yuqori darajadagi mas’uliyat, vaqt tanqisligi, katta ish yuklamasi, bemorlar va ularning yaqinlari bilan doimiy muloqot, og‘ir klinik holatlar, smenali va tungi mehnat hamda emotsional jihatdan murakkab vaziyatlar bilan tavsiflanadi. Mazkur omillarning uzoq vaqt davomida ta’sir etishi emotsional holdan toyish, ishga nisbatan salbiy munosabat, kasbiy samaradorlikning pasayishi va professional kuyish xavfining ortishiga olib kelishi mumkin. Tadqiqotda tibbiyot xodimlarida kasbiy stressni kamaytirishning individual, jamoaviy va tashkiliy usullari ilmiy adabiyotlar asosida o‘rganildi. Stressni boshqarish ko‘nikmalarini rivojlantirish, psixologik qo‘llab-quvvatlash, ish va dam olish tartibini takomillashtirish, sog‘lom jamoaviy muhitni shakllantirish, ish yuklamasini oqilona taqsimlash hamda rahbariyat tomonidan xodimlarning ruhiy farovonligini qo‘llab-quvvatlash muhim profilaktik choralar sifatida belgilandi.

Kalit so‘zlar: kasbiy stress, emotsional zo‘riqish, professional kuyish, tibbiyot xodimlari, ruhiy salomatlik, stress profilaktikasi, psixologik qo‘llab-quvvatlash, ish muhiti, tibbiy xizmat sifati.

ПРОФЕССИОНАЛЬНЫЙ СТРЕСС И ЭМОЦИОНАЛЬНОЕ НАПРЯЖЕНИЕ У МЕДИЦИНСКИХ РАБОТНИКОВ И ИХ ПРОФИЛАКТИКА

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Аннотация. В статье рассматриваются основные причины профессионального стресса и эмоционального напряжения среди медицинских работников, их влияние на состояние здоровья персонала и качество медицинской помощи, а также современные подходы к профилактике данных состояний. Профессиональная деятельность медицинских работников характеризуется высокой ответственностью, дефицитом времени, значительной рабочей нагрузкой, постоянным взаимодействием с пациентами и их родственниками, работой с тяжелыми

клиническими случаями, сменным графиком и эмоционально сложными ситуациями. Длительное воздействие указанных факторов может приводить к эмоциональному истощению, снижению удовлетворенности профессиональной деятельностью, негативному отношению к работе и повышению риска профессионального выгорания. В работе на основе анализа научной литературы рассматриваются индивидуальные, коллективные и организационные методы профилактики профессионального стресса.

Ключевые слова: профессиональный стресс, эмоциональное напряжение, профессиональное выгорание, медицинские работники, психическое здоровье, профилактика стресса, психологическая поддержка, рабочая среда, качество медицинской помощи.

PROFESSIONAL STRESS AND EMOTIONAL STRAIN AMONG HEALTHCARE WORKERS AND THEIR PREVENTION

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Abstract. This article examines the main causes of occupational stress and emotional strain among healthcare workers, their effects on staff well-being and healthcare quality, and contemporary approaches to prevention. Healthcare professionals work under conditions characterized by high responsibility, time pressure, substantial workload, continuous interaction with patients and their relatives, exposure to severe clinical situations, shift work and emotionally demanding circumstances. Prolonged exposure to these factors may contribute to emotional exhaustion, reduced job satisfaction, negative attitudes toward work and an increased risk of professional burnout. Based on an analysis of scientific literature, the study examines individual, team-based and organizational approaches to preventing occupational stress among healthcare workers.

Keywords: occupational stress, emotional strain, professional burnout, healthcare workers, mental health, stress prevention, psychological support, workplace environment, healthcare quality.

KIRISH

Tibbiyot sohasi inson salomatligi va hayotini muhofaza qilishga qaratilgan eng mas’uliyatli professional faoliyat yo‘nalishlaridan biri hisoblanadi. Tibbiyot xodimi o‘z kasbiy faoliyati davomida turli kasalliklarga chalingan bemorlar bilan muloqot qiladi, klinik vaziyatlarni baholaydi, tezkor qarorlar qabul qiladi va ko‘pincha inson hayoti bilan bog‘liq mas’uliyatni o‘z zimmasiga oladi. Shu sababli tibbiyot xodimlarining mehnat faoliyati yuqori darajadagi jismoniy, intellektual va emotsional yuklama bilan tavsiflanadi.

Kasbiy stress zamonaviy tibbiyot tizimida muhim psixosotsial muammolardan biri hisoblanadi. Jahon sog‘liqni saqlash tashkiloti ma’lumotlariga ko‘ra, sog‘liqni saqlash va parvarish xodimlari yuqori ish yuklamasi, uzoq ish vaqti, smenali ish, ish jarayonini nazorat qilish imkoniyatining cheklanganligi, xodimlar yetishmasligi, qo‘llab-quvvatlashning kamligi va boshqa psixosotsial xavf omillariga duch kelishi mumkin [1].

Kasbiy stress qisqa muddat davom etganda insonning faoliyatga moslashish mexanizmlarini faollashtirishi mumkin. Biroq stress omillarining uzoq vaqt davomida saqlanib qolishi va xodimning yetarli darajada tiklanish imkoniyatiga ega bo‘lmasligi salomatlik uchun noxush oqibatlarni yuzaga keltirishi mumkin. Ayniqsa tibbiyot sohasida doimiy stress emotsional holdan toyish va professional kuyish xavfini oshiradi.

Jahon sog‘liqni saqlash tashkiloti professional kuyishni kasallik emas, balki ish joyidagi surunkali stressni muvaffaqiyatli boshqarishning imkoni bo‘lmagan holatda yuzaga keladigan kasbiy fenomen sifatida belgilaydi. U energiyaning tugashi yoki kuchli charchoq, ishga nisbatan ruhiy masofaning ortishi yoki ishga nisbatan salbiy munosabat va kasbiy samaradorlikning pasayishi bilan tavsiflanadi [2].

Tibbiyot xodimlarida kasbiy stressning dolzarbligi ayniqsa global sog‘liqni saqlash inqirozlari davrida yaqqol namoyon bo‘ldi. COVID-19 pandemiyasi davrida tibbiyot xodimlari uzoq ish soatlari, infeksiya xavfi, bemorlar sonining ortishi, himoya vositalaridan foydalanish zarurati, bemorlarning og‘ir holati va o‘lim holatlari bilan bog‘liq yuqori emotsional yuklamaga duch kelgan [3].

Biroq kasbiy stress muammosi faqat favqulodda vaziyatlar bilan bog‘liq emas. Kundalik tibbiy faoliyatning o‘zi ham muntazam ravishda stress omillarini yuzaga keltiradi. Bemorlar oqimining ko‘pligi, hujjatlarni yuritish, navbatchilik, vaqt tanqisligi, murakkab klinik qarorlar, bemorlarning noroziligi va jamoa ichidagi kommunikatsiya muammolari uzoq muddat davomida xodimning psixologik resurslariga ta’sir qilishi mumkin.

Shu sababli tibbiyot xodimlarida kasbiy stress va emotsional zo‘riqishning oldini olish nafaqat individual salomatlik masalasi, balki tibbiyot muassasasining samarali faoliyatini ta’minlash bilan bog‘liq muhim tashkiliy vazifa hisoblanadi. Mazkur tadqiqotning maqsadi tibbiyot xodimlarida kasbiy stress va emotsional zo‘riqishning asosiy sabablarini ilmiy manbalar asosida tahlil qilish hamda ushbu holatlarning oldini olish bo‘yicha zamonaviy individual va tashkiliy yondashuvlarni aniqlashdan iborat.

METODOLOGIYA

Tadqiqot nazariy-tahliliy xarakterga ega bo‘lib, tibbiyot xodimlarida kasbiy stress, emotsional zo‘riqish va professional kuyish masalalariga bag‘ishlangan ilmiy adabiyotlarni tahlil qilish asosida olib borildi.

Tadqiqot uchun Jahon sog‘liqni saqlash tashkiloti materiallari, PubMed ma’lumotlar bazasida e’lon qilingan ilmiy maqolalar, sistematik sharhlar va meta-tahlillardan foydalanildi. Asosiy e’tibor so‘nggi yillarda chop etilgan ilmiy manbalarga qaratildi.

Adabiyotlarni tahlil qilish jarayonida “occupational stress”, “healthcare workers”, “emotional exhaustion”, “burnout”, “mental health”, “stress prevention” va “healthcare professionals” kabi asosiy ilmiy tushunchalardan foydalanilgan tadqiqotlar ko‘rib chiqildi.

Tadqiqotda ilmiy adabiyotlarni tahlil qilish, taqqoslash, umumlashtirish va tizimlashtirish usullaridan foydalanildi. Manbalardan olingan ma’lumotlar kasbiy stressning sabab va oqibatlari, individual profilaktika, jamoaviy qo‘llab-quvvatlash hamda tashkiliy intervensiyalar yo‘nalishlari bo‘yicha guruhlandi.

Kasbiy stressni baholashda uning individual psixologik omillar bilan bir qatorda mehnat sharoitlari va tashkilotdagi psixosotsial muhit bilan bog‘liqligiga alohida e’tibor qaratildi.

NATIJALAR

Adabiyotlar tahlili tibbiyot xodimlarida kasbiy stressning rivojlanishiga bir nechta o‘zaro bog‘liq omillar ta’sir qilishini ko‘rsatdi. Mazkur omillarni mehnat yuklamasi, vaqt bosimi, smenali ish, emotsional jihatdan murakkab vaziyatlar, kasbiy mas’uliyat, jamoaviy munosabatlar va tashkilotdagi boshqaruv bilan bog‘liq omillarga ajratish mumkin.

Tibbiyot xodimlari ko‘pincha bir vaqtning o‘zida bir nechta vazifani bajarishga majbur bo‘ladi. Bemorni kuzatish, tibbiy hujjatlarni yuritish, diagnostika va davolash jarayonlarida ishtirok etish hamda boshqa xodimlar bilan hamkorlik qilish katta vaqt va e’tibor talab qiladi. Ish hajmi xodimning mavjud resurslaridan oshib ketgan hollarda psixologik zo‘riqish kuchayishi mumkin [1].

Smenali va tungi ish ham tibbiyot xodimlarining emotsional holatiga ta’sir qiluvchi muhim omillardan biridir. Tungi navbatchilik uyqu rejimining o‘zgarishiga sabab bo‘lishi mumkin. Yetarli darajada dam olish imkoniyatining mavjud emasligi esa to‘plangan charchoqni kuchaytiradi.

Tibbiyot xodimlarining faoliyatida emotsional jihatdan og‘ir vaziyatlar ham muhim o‘rin tutadi. Og‘ir bemorlar bilan ishlash, surunkali kasalliklarning kechishi, bemorning azoblanishini kuzatish va o‘lim holatlari xodimdan yuqori darajadagi psixologik barqarorlikni talab qiladi.

Bemorlar va ularning qarindoshlari bilan muloqot ham ayrim hollarda qo‘shimcha stress manbai bo‘lishi mumkin. Bemorning kasalligi bilan bog‘liq xavotiri, qarindoshlarning yuqori talab va kutishlari, tibbiy xizmat natijasidan norozilik kabi vaziyatlar xodimga emotsional bosim o‘tkazishi mumkin.

Kasbiy stressning yana bir muhim manbai tibbiyot xodimining yuqori mas’uliyatidir. Tibbiy qarorlarning bemor salomatligiga ta’sir qilishi xodimdan

doimiy e’tibor va aniqlikni talab qiladi. Xatoga yo‘l qo‘yishdan qo‘rqish ham ayrim holatlarda stressni kuchaytirishi mumkin.

Tadqiqotlar professional kuyishning asosiy belgilarini uchta yo‘nalishda ifodalash mumkinligini ko‘rsatadi. Birinchi yo‘nalish emotsional holdan toyish bo‘lib, bunda xodim o‘zini doimiy ravishda charchagan va energiyasi tugagan holatda his qilishi mumkin. Ikkinchi yo‘nalish ishga nisbatan ruhiy masofaning ortishi yoki negativ munosabat shakllanishidir. Uchinchi yo‘nalish esa kasbiy samaradorlikning pasayishi bilan bog‘liq [2].

Kasbiy stressning uzoq vaqt davom etishi xodimning ishga bo‘lgan qiziqishi va motivatsiyasini pasaytirishi mumkin. Ayrim hollarda xodim o‘z mehnatining natijasidan qoniqmaslikni boshlaydi va o‘zining kasbiy imkoniyatlariga nisbatan ishonchi kamayadi.

Shu bilan birga, professional kuyishning shakllanishi barcha tibbiyot xodimlarida bir xil kechmaydi. Shaxsning psixologik xususiyatlari, ish tajribasi, ijtimoiy qo‘llab-quvvatlash darajasi, jamoa bilan munosabatlari va ish sharoitlari individual farqlarni yuzaga keltiradi.

Kasbiy stressning oldini olishda individual yondashuv muhim hisoblanadi. Xodimning stressni anglash, o‘z emotsional holatini kuzatish va dastlabki belgilarni vaqtida aniqlash qobiliyati profilaktikaning muhim qismi hisoblanadi.

Stressni boshqarish bo‘yicha treninglar, nafas olish va relaksatsiya mashqlari, jismoniy faollik, yetarli dam olish hamda sog‘lom kundalik tartib ayrim xodimlarda stressni boshqarishga yordam berishi mumkin [4].

Biroq individual choralar tashkiliy muammolarni to‘liq bartaraf eta olmaydi. Masalan, xodimga stressni boshqarish texnikasini o‘rgatish ish yuklamasining haddan tashqari yuqoriligi yoki xodimlar yetishmasligi muammosini mustaqil ravishda hal qilmaydi.

Shu sababli tashkiliy profilaktika alohida ahamiyatga ega. Tibbiyot muassasasida xodimlarning ish yuklamasini oqilona taqsimlash, dam olish imkoniyatlarini ta’minlash, samarali kommunikatsiyani shakllantirish va rahbariyat tomonidan xodimlarni qo‘llab-quvvatlash kasbiy stressni kamaytirishga xizmat qilishi mumkin.

Jahon sog‘liqni saqlash tashkiloti ish joyidagi ruhiy salomatlikni yaxshilash uchun tashkiliy intervensiyalar, rahbarlarni tayyorlash va individual yordam choralarini birgalikda qo‘llashni tavsiya qiladi [5].

Tibbiyot muassasalarida psixologik qo‘llab-quvvatlash xizmatlarining mavjudligi ham muhim ahamiyatga ega. Xodim o‘zidagi emotsional qiyinchiliklar haqida mutaxassis bilan xavfsiz va maxfiy sharoitda suhbatlasha olishi kerak.

Jamoaviy qo‘llab-quvvatlash ham stressni boshqarishda muhim himoya omili hisoblanadi. Hamkasblar o‘rtasidagi o‘zaro hurmat, murakkab vaziyatlarda yordam berish, tajriba almashish va samarali muloqot xodimning ish muhitini yaxshilashi mumkin.

Tashkiliy darajada mentorlik tizimini joriy etish, ayniqsa yangi ish boshlagan tibbiyot xodimlari uchun foydali bo‘lishi mumkin. Tajribali mutaxassis tomonidan

kasbiy va psixologik qo‘llab-quvvatlash yangi xodimning ish jarayoniga moslashishini yengillashtirishi mumkin.

MUHOKAMA

O‘rganilgan ilmiy manbalar tibbiyot xodimlarida kasbiy stress va professional kuyishning ko‘p omilli xarakterga ega ekanligini ko‘rsatadi. Mazkur muammoni faqat individual psixologik xususiyatlar bilan izohlash to‘g‘ri emas. Ish joyining tashkiliy sharoitlari ham muhim ahamiyatga ega.

So‘nggi yillarda o‘tkazilgan sistematik sharhlar tibbiyot xodimlarining professional kuyishini kamaytirish uchun turli xil individual va tashkiliy intervensiyalar qo‘llanilayotganini ko‘rsatmoqda [6].

Individual yondashuvlarga stressni boshqarish, mindfulness, psixologik maslahat, coaching va boshqa psixologik usullar kiradi. Ushbu usullar ayrim tadqiqotlarda emotsional holdan toyish va stress darajasini kamaytirish bilan bog‘langan [7].

Biroq individual intervensiyalarning samarasi har doim ham bir xil emas. Buning asosiy sabablaridan biri kasbiy stressning faqat shaxsiy emas, balki tashkiliy omillar bilan ham bog‘liq ekanligidir.

Agar tibbiyot xodimi doimiy ravishda haddan tashqari ko‘p ishlasa, yetarlicha dam olmasa yoki ish joyida psixologik qo‘llab-quvvatlash mavjud bo‘lmasa, individual stressni boshqarish texnikalari muammoning faqat bir qismini hal qilishi mumkin.

Shu sababli zamonaviy yondashuvlarda individual va tashkiliy choralarni birlashtirishga katta e’tibor berilmoqda. Tashkiliy choralar ish yuklamasini qayta ko‘rib chiqish, ish jadvalini optimallashtirish, xodimlar o‘rtasida vazifalarni adolatli taqsimlash, rahbarlik sifatini oshirish va jamoaviy kommunikatsiyani rivojlantirishni o‘z ichiga oladi.

Tibbiyot xodimlarining ruhiy salomatligini muhofaza qilishning yana bir muhim jihati kasbiy stigma muammosidir. Ayrim xodimlar psixologik yordamga murojaat qilishni kasbiy zaiflik belgisi sifatida qabul qilishi mumkin. Shu sababli tibbiyot muassasalarida psixologik yordam olishni oddiy va tabiiy jarayon sifatida shakllantirish zarur.

Tibbiyot xodimlarining ruhiy salomatligi va bemor xavfsizligi o‘rtasida bevosita bog‘liqlik mavjud. Charchoq va emotsional zo‘riqish kuchaygan sharoitda diqqatni jamlash va murakkab vaziyatlarda qaror qabul qilish qiyinlashishi mumkin. Shu sababli xodimlarning farovonligini ta’minlash bemor xavfsizligi strategiyasining bir qismi sifatida qaralishi lozim.

WHO va ILO tomonidan ishlab chiqilgan tavsiyalarda sog‘liqni saqlash xodimlarining mehnat xavfsizligi va ruhiy salomatligini himoya qilishda tizimli yondashuv zarurligi ta’kidlanadi [8].

O‘zbekiston sharoitida ham ushbu yondashuvni tibbiyot muassasalarining faoliyatiga moslashtirish muhim. Tibbiyot xodimlari uchun muntazam psixologik

treninglar tashkil etish, ish yuklamasini tahlil qilish, rahbarlar va xodimlar o‘rtasidagi kommunikatsiyani yaxshilash hamda sog‘lom psixologik muhitni shakllantirish kasbiy stress profilaktikasining istiqbolli yo‘nalishlari hisoblanadi.

XULOSA

Tibbiyot xodimlarida kasbiy stress va emotsional zo‘riqish zamonaviy sog‘liqni saqlash tizimining muhim psixosotsial muammolaridan biridir. Tibbiy faoliyatning yuqori mas’uliyatli xususiyati, katta ish yuklamasi, vaqt tanqisligi, smenali mehnat, og‘ir klinik holatlar va bemorlar bilan emotsional muloqot kasbiy stress xavfini oshiruvchi omillar qatoriga kiradi.

Uzoq vaqt davom etuvchi stress emotsional holdan toyish, ishga nisbatan salbiy munosabat va kasbiy samaradorlikning pasayishi bilan namoyon bo‘luvchi professional kuyish xavfini oshirishi mumkin.

Kasbiy stress profilaktikasi kompleks xarakterga ega bo‘lishi lozim. Individual darajada stressni boshqarish ko‘nikmalarini rivojlantirish, sog‘lom turmush tarziga rioya qilish, yetarli dam olish va zarur hollarda psixologik yordam olish muhimdir.

Tashkiliy darajada esa ish yuklamasini oqilona taqsimlash, ish va dam olish tartibini takomillashtirish, xodimlarni qo‘llab-quvvatlash, jamoaviy kommunikatsiyani rivojlantirish va rahbarlarning psixologik salomatlik masalalaridagi kompetensiyasini oshirish zarur.

Tibbiyot xodimlarining ruhiy salomatligini himoya qilishga qaratilgan choralar xodimlarning kasbiy faoliyatdan qoniqishini oshirish bilan bir qatorda tibbiy xizmat sifati va bemor xavfsizligini ta’minlashga ham xizmat qiladi.

Shu sababli tibbiyot muassasalarida kasbiy stressni muntazam baholash, uning xavf omillarini aniqlash va individual hamda tashkiliy profilaktika dasturlarini joriy etish maqsadga muvofiqdir.

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ISAJON SULTONNING “BOQIY DARBADAR” ROMANIDA MAKON POETIKASI VA INSONNING MA’NAVIY DARBADARLIGI

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Xorijiy til fani o’qituvchisi

Annotatsiya. *Mazkur maqolada zamonaviy o‘zbek adabiyotining o‘ziga xos namoyandalaridan biri Isajon Sultonning “Boqiy darbadar” romanida makon poetikasi va insonning ma’naviy darbadarligi masalasi tadqiq etiladi. Asarning kompozitsion tuzilishi, turli zamon va makonlarning o‘zaro munosabati, shuningdek, sahro, shahar, yo‘l va ilmiy laboratoriya kabi makoniy obrazlarning semantik hamda poetik vazifalari izchil tahlil qilinadi. Tadqiqotda “darbadarlik” tushunchasi faqat jismoniy ko‘chish yoki muayyan makonsiz qolish holati sifatida emas, balki insonning ma’naviy markazdan uzoqlashishi, o‘z mohiyati va hayotiy maqsadini yo‘qotishi bilan bog‘liq ekzistensial holat sifatida talqin qilinadi. Roman tarkibidagi tarixiy, mifologik va zamonaviy ilmiy-texnologik qatlamlarning bir-biri bilan tutashishi insoniyat taraqqiyoti, ilm-fanning imkoniyatlari va uning ma’naviy mas’uliyati haqidagi falsafiy savollarni yuzaga chiqarishi asoslanadi. Shuningdek, sahro va laboratoriya makonlari o‘rtasidagi qarama-qarshilik orqali “yaratish” va “yaratilganlik”, “cheksizlikka intilish” va “taqdirni anglash”, “nazorat” va “erkinlik” kabi tushunchalarning badiiy munosabati ochib beriladi. Tadqiqot natijasida roman makoni oddiy voqealar sodir bo‘ladigan geografik fon emas, balki asarning falsafiy mazmunini shakllantiruvchi faol badiiy-semantik tizim ekanligi ko‘rsatiladi.*

Kalit so‘zlar: *Isajon Sulton, “Boqiy darbadar”, roman, makon poetikasi, xronotop, darbadarlik, sahro, shahar, yo‘l, ma’naviy izlanish, identitet, mifologik obraz, inson va olam.*

Аннотация. *В данной статье исследуется поэтика пространства и проблема духовного странничества человека в романе современного узбекского писателя Исажона Султона «Вечный скиталец» («Boqiy darbadar»). Последовательно анализируются композиционная структура произведения, взаимодействие различных временных и пространственных пластов, а также семантические и художественные функции таких пространственных образов, как пустыня, город, дорога и научная лаборатория. Понятие «странничество» рассматривается не только как физическое перемещение человека или отсутствие постоянного места, но и как экзистенциальное состояние, связанное с удалением от духовного центра, утратой внутренней опоры и жизненной цели. Обосновывается мысль о том, что соединение исторического, мифологического и современного научно-технологического пластов произведения формирует философское*

пространство, в котором осмысливаются проблемы человеческого прогресса, возможностей науки и нравственной ответственности человека. Особое внимание уделяется противопоставлению пустыни и лаборатории, посредством которого раскрываются художественные отношения между понятиями «созидание» и «сотворённость», «стремление к бесконечности» и «осознание судьбы», «контроль» и «свобода». В результате исследования доказывается, что пространство в романе выполняет не только функцию географического фона, но и становится активной художественно-семантической системой, непосредственно участвующей в формировании философского содержания произведения.

Ключевые слова: *Исажон Султон, «Boqiy darbadar», роман, поэтика пространства, хронотоп, странничество, пустыня, город, дорога, духовный поиск, идентичность, мифологический образ, человек и мир.*

Abstract. *This article examines the poetics of space and the problem of human spiritual wandering in Isajon Sultan's novel "Boqiy darbadar". Particular attention is paid to the compositional structure of the novel, the interaction of different temporal and spatial layers, and the semantic and artistic functions of such spatial images as the desert, the city, the road, and the scientific laboratory. The concept of wandering is interpreted not merely as physical movement or the absence of a permanent place, but as an existential condition associated with the loss of a spiritual centre, inner stability, and a meaningful direction in life. The article argues that the interaction of historical, mythological, and contemporary scientific-technological layers creates a philosophical framework through which the novel explores human progress, the possibilities of science, and the moral responsibility of human beings. Particular emphasis is placed on the contrast between the desert and the laboratory, which reveals the artistic relationship between creation and createdness, the desire for infinity and the acceptance of destiny, and control and freedom. The study demonstrates that space in the novel does not function merely as a geographical background for events; rather, it constitutes an active artistic and semantic system that contributes directly to the formation of the philosophical meaning of the work.*

Keywords: *Isajon Sultan, "Boqiy darbadar", novel, spatial poetics, chronotope, wandering, desert, city, road, spiritual search, identity, mythological image, human and world.*

KIRISH.

Zamonaviy o‘zbek nasrida insonning ichki dunyosi, uning mavjudlik mohiyati, vaqt va makon bilan munosabati, ma’naviy izlanishlari hamda texnologik taraqqiyotning insoniyat taqdiriga ta’siri kabi masalalar tobora kengroq badiiy talqin qilinmoqda. Ana shunday falsafiy muammolarni o‘ziga xos poetik shaklda ifodalagan asarlardan biri Isajon Sultonning “Boqiy darbadar” romanidir.

Roman hajman ixcham bo‘lishiga qaramay, mazmunan ko‘p qatlamli asar sifatida namoyon bo‘ladi, chunki unda tarix, mif, din, ilm-fan, texnologiya, inson tabiati, abadiylik va o‘lim kabi yirik masalalar bir-biri bilan uzviy bog‘lanadi. Asarning muhim xususiyatlaridan biri shundaki, undagi voqealar yagona tarixiy davr yoki bitta geografik hudud bilan chegaralanmaydi. Qadimiy muhit, sahro va shahar tasvirlari zamonaviy ilmiy laboratoriya, tajribalar va insonning mavjudlik chegaralarini kengaytirishga qaratilgan ilmiy izlanishlar bilan tutashadi.

Shu sababli roman makoni oddiy geografik maydon sifatida emas, balki turli davrlar, tajribalar va ma’no qatlamlarini birlashtiruvchi murakkab badiiy tizim sifatida namoyon bo‘ladi. Makon asarda faqat “voqea qayerda sodir bo‘ldi?” degan savolga javob berib qolmaydi, balki qahramonlarning ruhiy holatini, ularning mavjudlikka munosabatini va muallifning falsafiy qarashlarini shakllantirishda ham faol ishtirok etadi.

Mazkur maqolada asosiy e’tibor makon poetikasi va darbadarlik fenomenining o‘zaro bog‘liqligini tahlil qilishga qaratiladi. Bunda shahar, sahro, yo‘l, laboratoriya va uy kabi makoniy tushunchalarning badiiy-semantik vazifalari ochib berilib, ularning insonning ma’naviy holati bilan munosabati izohlanadi.

ADABIYOTLAR TAHLILI.

“Boqiy darbadar” romani yaratilganidan keyin adabiyotshunoslar tomonidan turli yo‘nalishlarda tadqiq etila boshladi. Tadqiqotlarning bir qismida asarning badiiy xususiyatlari, syujet qurilishi va kompozitsion tuzilishiga e’tibor qaratilgan bo‘lsa, boshqa bir qismida uning mifopoetik, falsafiy va ma’naviy jihatlari o‘rganilgan.

Dilmurod Quronovning roman haqidagi mulohazalarida turli makon va zamonlarda kechadigan, dastlab bir-biridan uzilgan kabi ko‘rinuvchi voqealarning yagona falsafiy markaz atrofida birlashishi muhim xususiyat sifatida ko‘rsatiladi. Mazkur qarash roman makonini faqat voqea sodir bo‘ladigan joy emas, balki turli semantik qatlamlarni birlashtiruvchi vosita sifatida o‘rganish uchun muhim nazariy asos bo‘la oladi.

So‘nggi tadqiqotlarda ham “Boqiy darbadar”ning ko‘pqatlamliligi, mifopoetik tabiati, darbadarlik obrazi, ma’naviyat masalasi va badiiy tili alohida tadqiq etilgan. Ushbu ilmiy ishlar romanning turli jihatlarini yoritishga xizmat qilsa-da, makon kategoriyasining darbadarlik fenomenini shakllantirishdagi roli alohida, tizimli tadqiqot obyekti sifatida hali ham kengroq tahlilni talab qiladi.

Shu nuqtayi nazardan, mazkur maqolada mavjud tadqiqotlarning umumiy ilmiy xulosalaridan foydalanilgan holda, roman makoni va darbadarlik konsepti o‘zaro bog‘liq poetik tizim sifatida tahlil qilinadi.

TADQIQOT METODOLOGIYASI.

Tadqiqotda bir nechta metodologik yondashuvlardan kompleks ravishda foydalanildi. Birinchi navbatda, strukturaviy-poetik metod asosida romanning kompozitsiyasi, makonlar almashinuvi va ularning o‘zaro munosabati o‘rganildi.

Shuningdek, germenevtik yondashuv yordamida sahro, shahar, yo‘l, laboratoriya va boshqa makoniy obrazlarning bevosita hamda ramziy ma’nolari talqin qilindi.

Qiyosiy-tipologik metod orqali asardagi boqiy darbadar konseptining jahon adabiyotida uchraydigan mangu sayyoh yoki abadiy musofir obrazlari bilan umumiy va farqli jihatlari nazariy jihatdan ko‘rib chiqildi. Semantik tahlil yordamida esa “darbadar”, “yo‘l”, “manzil”, “abadiylik”, “sahro” kabi tushunchalar o‘rtasidagi ma’no aloqalari aniqlashtirildi.

Tadqiqotning asosiy materiali Isajon Sultonning “Boqiy darbadar” romani bo‘lib, unga oid ilmiy maqolalar va elektron manbalardagi bibliografik ma’lumotlardan yordamchi manba sifatida foydalanildi.

“Darbadarlik” konseptining badiiy-falsafiy mohiyati. “Boqiy darbadar” nomining o‘zi asarning markaziy falsafiy muammosini anglatadi. “Darbadar” tushunchasi oddiy ma’noda doimiy ravishda bir joydan ikkinchi joyga yuruvchi va muayyan manzilga ega bo‘lmagan kishini ifodalashi mumkin bo‘lsa-da, roman kontekstida ushbu tushuncha ancha keng semantik mazmun kasb etadi.

Roman doirasida darbadarlikning ikki asosiy ko‘rinishini ajratish mumkin: birinchisi jismoniy darbadarlik bo‘lib, u insonning muayyan makonda doimiy yashash imkonidan mahrum bo‘lishini bildiradi; ikkinchisi esa ma’naviy darbadarlik bo‘lib, u insonning o‘z maqsadi, ichki tayanchi va hayotining mazmunini yo‘qotishi bilan bog‘liq.

Shu sababli roman nomidagi “boqiy” komponenti alohida ahamiyatga ega. Oddiy darbadarlik muayyan vaqt davom etishi mumkin, ammo “boqiy darbadar” holati vaqt bilan chegaralanmaydi va geografik muammodan ekzistensial muammoga aylanadi.

Asarda etikdo‘zning Muborak zotga munosabati uning keyingi taqdirini belgilovchi voqeaga aylanadi va unga nisbatan qiyomatga qadar davom etadigan daydish hukmi qo‘yiladi. Mazkur hukm orqali jazo tushunchasi vaqt va makon bilan birlashadi, chunki qahramon faqat biror joyda yurishga emas, balki tugamas vaqt ichida yurishga mahkum qilinadi.

Bu holat roman falsafasining muhim paradoksini yuzaga chiqaradi: inson ko‘pincha boqiylikni orzu qiladi, biroq ma’nosiz va maqsadsiz davomiylik inson uchun mukofot emas, balki jazoga aylanishi mumkin. Shunday qilib, roman boqiylikning o‘zidan ko‘ra, boqiy hayotning qanday ma’no bilan to‘ldirilishi masalasini muhimroq deb ko‘rsatadi.

Shahar makoni: olomon, hokimiyat va begonalashuv. Roman boshidagi shahar makoni tasodifiy tanlangan geografik muhit emas, balki ijtimoiy bosim, olomon va jamoaviy hukmning badiiy timsoli sifatida namoyon bo‘ladi. Shaharning ko‘chalarida to‘plangan olomon tasviri individual shaxsning ovozi umumiy shovqin va ijtimoiy hukm orasida yo‘qolib borishini ko‘rsatadi.

Shahar makoni, bir tomondan, odamlarning bir joyga jamlanishini bildirsa, ikkinchi tomondan, aynan shu zichlik ichida insonning begonalashuvini

kuchaytiradi. Insonlar bir makonda yashashi mumkin, biroq ular o‘rtasida ma’naviy yaqinlik mavjud bo‘lmasligi mumkinligi roman voqealari orqali sezdiriladi.

Shu jihatdan shahar uch xil ma’noni birlashtiradi: u jamoatchilik makoni, ijtimoiy nazorat makoni va begonalashuv makonidir. Mazkur uchlik romanning dastlabki falsafiy muhitini shakllantiradi.

Sahro — chegarasizlik va ichki yolg‘izlik Makoni. Roman poetikasida sahro eng muhim makoniy obrazlardan biri hisoblanadi, chunki u geografik chegarasizlik bilan birga insonning ichki yolg‘izligini ham ifodalaydi. Sahroda aniq yo‘nalish, belgi va manzilni topish qiyin bo‘lgani sababli u darbadarlik konseptining tabiiy metaforik makoniga aylanadi.

Asarning boshlanishida osmon, bulut va uzoq masofalar bilan bog‘liq tasvirlarning berilishi ham makonning chegarasizligini kuchaytiradi. Tabiat hodisasi bu yerda oddiy peyzaj vazifasini bajarmaydi, balki insonning keyingi harakati va doimiy ko‘chishi bilan parallel semantik qatlam hosil qiladi.

Roman xotimasida sahro makonining yana paydo bo‘lishi kompozitsion jihatdan muhim ahamiyatga ega. Yolg‘iz insonning sahro bo‘ylab ketishi va uning keyinchalik “Boqiy darbadar” deb atalishi asar boshidagi va oxiridagi makonlarni bir-biriga bog‘laydi.

Shunday qilib, sahro romanda faqat yo‘lsizlik makoni emas, balki inson o‘z hayotining mazmunini izlaydigan va o‘z mavjudligi bilan yuzma-yuz keladigan falsafiy makon sifatida ham namoyon bo‘ladi.

Yo‘l va manzil: roman poetikasining asosiy oppozitsiyasi. “Boqiy darbadar” romanida yo‘l tushunchasi alohida poetik ahamiyat kasb etadi. An’anaviy badiiy asarlarda yo‘l ko‘pincha qahramonning muayyan maqsad sari harakatini bildiradi, chunki qahramon yo‘lga chiqadi va oxir-oqibat muayyan manzilga yetadi.

Mazkur romanda esa yo‘l va manzil o‘rtasidagi munosabat murakkabroq ko‘rinishga ega. Qahramonda harakat mavjud bo‘lsa-da, uning manzili aniq emas; vaqt davom etayotgan bo‘lsa-da, yakun ko‘rinmaydi; yo‘l mavjud bo‘lsa-da, maqsad mavhumligicha qoladi.

Shu sababli yo‘l tushunchasi romanda inson hayotining ekzistensial metaforasiga aylanadi. Inson tug‘ilishdan o‘limga qadar harakat qiladi, ammo uning hayotiy yo‘li faqat geografik harakat emas, balki ma’no izlash jarayoni hamdir.

Demak, romanda manzilni faqat geografik nuqta sifatida emas, balki insonning ma’naviy maqsadi sifatida tushunish mumkin. Manzilini bilmagan inson jismonan harakat qilayotgan bo‘lsa ham, ma’naviy jihatdan darbadar holatida qolishi mumkin.

Ilmiy laboratoriya: zamonaviylikning yopiq makoni. Roman makonlari orasida ilmiy laboratoriya alohida kontrast hosil qiladi. Sahro ochiq, chegarasiz va inson nazoratidan tashqaridagi tabiiy makon sifatida namoyon bo‘lsa, laboratoriya yopiq, nazorat qilinadigan va inson tomonidan tashkil etilgan sun’iy makon sifatida tasvirlanadi.

Laboratoriya inson aqlining imkoniyatlari, ilmiy izlanish, texnologik taraqqiyot va mavjudlik chegaralarini kengaytirishga intilish kabi tushunchalarning

makoniy timsoliga aylanadi. Biroq roman ilm-fanni inkor qilmaydi; aksincha, ilm-fan bilan birga ma'naviy mas'uliyat ham mavjud bo'lishi kerakligini o'rtaga qo'yadi.

Laboratoriya bilan sahro o'rtasidagi qarama-qarshilik orqali inson yaratgan nazorat qilinadigan olam bilan inson to'liq boshqara olmaydigan tabiiy va metafizik olam o'rtasidagi farq ochiladi. Shu jihatdan laboratoriya "inson nimaga qodir?" degan savolni, sahro esa "inson o'z imkoniyatlaridan foydalanishda qanday chegarani bilishi kerak?" degan savolni kuchaytiradi.

Sun'iy inson obrazi va makondan chiqish. Roman markazidagi muhim g'oyalardan biri sun'iy inson yaratish tajribasi bilan bog'liq. Mazkur obraz orqali yozuvchi insonning o'z tabiatini o'zgartirish, umrini uzaytirish va mavjudlik chegaralarini kengaytirish istagini badiiy shaklda ifodalaydi.

Sun'iy insonning laboratoriyadan tashqariga chiqishi oddiy makon almashinuvi emas, balki nazorat qilinadigan mavjudlikdan erkin, biroq ma'nosi noaniq mavjudlikka o'tish jarayonini bildiradi. Laboratoriya yaratilish va nazorat makoni bo'lsa, undan tashqaridagi ochiq makon mavjudlikning yangi bosqichini anglatadi.

Shu nuqtayi nazardan, roman biologik mukammallik bilan ma'naviy mukammallik bir xil tushuncha emasligini ko'rsatadi. Insonning uzoq yashashi yoki texnologik jihatdan mukammallashishi uning hayotiga avtomatik ravishda ma'no bermaydi, chunki ma'no insonning o'z mavjudligini anglash darajasi bilan bog'liq.

Vaqt va makonning birlashuvi. Roman poetikasining muhim xususiyatlaridan biri vaqt va makonning o'zaro birlashib ketishidir. Voqealar yagona tarixiy davr bilan chegaralanmaydi, balki qadimgi muhit, tarixiy xotira, zamonaviy ilmiy makon va kelajak haqidagi tasavvurlar bir badiiy tizimga birlashtiriladi.

Shu sababli romandagi vaqt chiziqli harakat sifatida emas, balki turli qatlamlarning o'zaro tutashuvi sifatida namoyon bo'ladi. O'tmish, hozirgi zamon va kelajak o'rtasidagi chegaralar nisbatan shartli tus oladi va ular insoniyatning umumiy taqdirini anglashga xizmat qiladi.

Bunday vaqt modeli "boqiylik" tushunchasiga ham mos keladi. Oddiy tarixiy vaqt boshlanish, rivojlanish va yakun ketma-ketligiga asoslangan bo'lsa, romandagi vaqt harakat, qaytish va yana harakat kabi takrorlanuvchi jarayonni eslatadi.

Inson va olam munosabati. Asarda insonning o'zini olam markazi deb tasavvur qilishi bilan bog'liq muammo muhim o'rin tutadi. Ilm-fan rivoji insoniyatga katta imkoniyatlar yaratadi, biroq imkoniyatga ega bo'lish bilan o'sha imkoniyatlardan cheksiz foydalanish huquqiga ega bo'lish bir xil narsa emas.

Roman insonning tabiat qonunlarini anglash va ularni o'zgartirishga intilishini ko'rsatish bilan birga, bunday intilishning ma'naviy mas'uliyatini ham savol ostiga qo'yadi. Shu sababli ilm-fan asarda inkor etilmaydi, balki uning imkoniyatlari insoniy qadriyatlar bilan uyg'unlashishi kerakligi ta'kidlanadi.

Bu jihat asarning zamonaviy ahamiyatini kuchaytiradi, chunki texnologik taraqqiyot inson imkoniyatlarini kengaytirgan sari "nima qilish mumkin?" degan

savol bilan bir qatorda “nima qilish kerak?” degan savol ham muhimlashib bormoqda.

Darbadarlikning individualdan umuminsoniy darajaga ko‘tarilishi

Roman nomidagi “darbadar” tushunchasi dastlab alohida bir shaxsning taqdiriga tegishli bo‘lib ko‘rinadi, biroq asar rivojlangan sari bu obraz individual chegaradan chiqib, umumlashma ma’no kasb etadi.

Shu nuqtada darbadarlik shaxsiy taqdirdan insoniyatning umumiy holatiga ko‘tariladi. Individual jazodan boshlangan motiv keyinchalik insonning o‘z yo‘lini, o‘zligini va ma’naviy tayanchini izlash muammosiga aylanadi.

Demak, Boqiy darbadar obrazi faqat bir kishining taqdirini ifodalovchi obraz emas, balki ma’naviy yo‘lini yo‘qotishi mumkin bo‘lgan insoniyatning umumlashtirilgan timsoli sifatida ham talqin qilinishi mumkin.

Makonning ramziy tizimi. Roman makonlarini o‘zaro bog‘liq ramziy tizim sifatida ko‘rish mumkin. Shahar ijtimoiy bosim va begonalashuvni, sahro chegarasizlik va yolg‘izlikni, yo‘l izlanish va harakatni, laboratoriya esa ilm-fan, nazorat va yaratish g‘oyalarini ifodalaydi.

Mazkur makonlar bir-biridan mustaqil holda emas, balki o‘zaro qarama-qarshilik va parallelizm orqali ma’no hosil qiladi. Masalan, laboratoriya va sahro, shahar va yolg‘izlik, yo‘l va manzil, abadiylik va o‘lim, ilm va ma’naviyat kabi oppozitsiyalar roman falsafiy asosining shakllanishiga xizmat qiladi.

Shunday qilib, makonlar tizimi romanning ichki kompozitsion tuzilishini ham, uning falsafiy mazmunini ham belgilovchi muhim poetik vositaga aylanadi.

Roman poetikasida “uy” va “manzil” tushunchalari. Darbadarlik tushunchasini to‘liq anglash uchun “uy” va “manzil” kategoriyalarining badiiy ma’nosini ham hisobga olish zarur. Uy insonning makondagi eng asosiy identitet nuqtalaridan biri bo‘lib, u kishiga o‘zining qayerga tegishli ekanini his qilish imkonini beradi.

Darbadarlik esa ana shu makoniy tayanchning buzilishi bilan bog‘liq. Biroq romanda muammo faqat jismoniy uyning yo‘qligida emas, balki insonning ichki “uyi” buzilishida ham namoyon bo‘ladi.

Shu ma’noda e’tiqod, xotira, vatan, maqsad va o‘zlik insonning ichki makonini tashkil etuvchi unsurlar sifatida talqin qilinishi mumkin. Ularning yo‘qolishi natijasida inson tashqi jihatdan muayyan joyda yashayotgan bo‘lsa ham, ma’naviy jihatdan darbadar holatiga tushib qolishi mumkin.

Roman va postmodern poetika. “Boqiy darbadar”ning kompozitsiyasi an’anaviy izchil syujetga to‘liq mos kelmaydi, chunki unda turli makon va zamonlarda kechadigan voqealar o‘quvchi tomonidan faol ravishda birlashtirilishi talab etiladi. Dastlab bir-biridan uzilgan kabi ko‘ringan epizodlar asta-sekin yagona falsafiy g‘oya atrofida tutashadi.

Bunday kompozitsion tuzilma o‘quvchini passiv qabul qiluvchi emas, balki matn ma’nosini shakllantirish jarayonida faol ishtirok etuvchi talqinchi sifatida namoyon qiladi. O‘quvchi voqealar orasidagi aloqalarni aniqlaydi, ramzlarning

ma’nosini izlaydi, turli vaqt qatlamlarini birlashtiradi va qahramonlar taqdiridagi umumiylikni anglashga harakat qiladi.

Shu jihatdan roman poetikasi zamonaviy adabiyotga xos bo‘lgan ko‘pqatlamlilik va ma’no ochiqligini namoyon etadi.

Asar tilidagi qisqa iqtiboslarning poetik vazifasi. Roman matnida ayrim qisqa jumlalar asarning falsafiy mazmunini ixcham va kuchli tarzda ifodalashga xizmat qiladi. Masalan, etikdo‘zning taqdiriga oid qismda uning “qiyomatga qadar” daydishga mahkum etilishi darbadarlikning vaqt jihatidan cheksizligini ko‘rsatadi. Ushbu iqtibos roman matnining nashriga qarab sahifasi turlicha bo‘lishi mumkinligi sababli, ilmiy ishning yakuniy variantida foydalanilgan aniq nashr sahifasi ko‘rsatilishi lozim.

Shuningdek, matnda “hech narsa” iborasining takroriy qo‘llanishi mazmuniy bo‘shliqni kuchaytiradi va ma’nosiz davomiylik holatini ifodalashga xizmat qiladi. Takror orqali muallif nafaqat so‘zning lug‘aviy ma’nosini, balki qahramonning mavjudlik holatini ham kuchaytiradi.

Roman xotimasida “Boqiy darbadar” nomining umumlashma timsolga aylanishi esa individual qahramon taqdirining insoniyat taqdiri bilan bog‘lanishini ta’minlaydi. Shu sababli asarning boshlanishida hukmga mahkum etilgan shaxs xotimaga kelib ramziy obraz darajasiga ko‘tariladi.

“Boqiy darbadar” va zamonaviy inson. Roman yaratilgan davrdan keyingi yillarda texnologiyalar jadal rivojlangan bo‘lsa-da, asarda ko‘tarilgan falsafiy savollar o‘z dolzarbligini yo‘qotgani yo‘q. Aksincha, zamonaviy texnologiyalar, sun’iy intellekt, biotexnologiya va inson umrini uzaytirishga qaratilgan ilmiy izlanishlar fonida roman ilgari surgan savollar yanada muhim ko‘rinadi.

Asar insonning o‘z imkoniyatlarini kengaytirishi bilan birga, o‘zining ma’naviy chegaralarini anglash zarurligini ham ko‘rsatadi. Uzoq yashash inson hayotini avtomatik ravishda mazmunli qilmaydi, chunki hayotning mazmuni uning davomiyligi bilan emas, balki insonning o‘z mavjudligini qanday anglashiga bog‘liq.

Shu sababli romanning asosiy kuchi tayyor javob berishida emas, balki o‘quvchini murakkab savollar ustida mustaqil fikrlashga undashidadir.

ILMIY YANGILIK.

Mazkur tadqiqotning ilmiy yangiligi bir necha jihatda namoyon bo‘ladi. Birinchidan, romandagi makonlar alohida geografik birliklar sifatida emas, balki yagona semantik makon tizimi sifatida ko‘rib chiqiladi. Ikkinchidan, “darbadarlik” tushunchasi jismoniy ko‘chishdan kengroq bo‘lgan ma’naviy markazni yo‘qotish hodisasi sifatida talqin qilinadi.

Uchinchidan, sahro va laboratoriya makonlari o‘rtasidagi qarama-qarshilik asosida tabiiy va sun’iy olamning poetik munosabati ochib beriladi. To‘rtinchidan, roman kompozitsiyasidagi vaqt va makon almashinuvi “boqiylik” konseptini shakllantiruvchi badiiy vosita sifatida tahlil qilinadi. Beshinchidan, Boqiy darbadar

obrazi individual qahramondan umuminsoniy timsolga aylanish jarayoni nuqtayi nazaridan talqin qilinadi.

NATIJALAR.

“Boqiy darbadar” romanida makon faol poetik kategoriya sifatida ishtirok etadi va u asarning falsafiy mazmunini shakllantirishda bevosita qatnashadi.

Shahar makoni ijtimoiy bosim, olomon va begonalashuv bilan bog‘lanib, individual shaxsning jamoaviy muhitdagi holatini ko‘rsatadi.

Sahro makoni chegarasizlik va yolg‘izlikni ifodalash bilan birga, insonning o‘z mavjudligi va hayot ma’nosi haqida fikrlashi uchun falsafiy makonga aylanadi.

Yo‘l tushunchasi romanda inson hayotining metaforik modeli sifatida namoyon bo‘lib, uning harakatini maqsad va manzil muammosi bilan bog‘laydi.

Laboratoriya insonning ilm-fan va texnologiya yordamida mavjudlik chegaralarini kengaytirishga intilishining ramziy makoni sifatida talqin qilinadi.

Asar qahramonlaridagi tashqi darbadarlik va ichki darbadarlik bir-birini to‘ldirib, jismoniy ko‘chishning ma’naviy yo‘nalish bilan bog‘liqligini ko‘rsatadi.

“Boqiylik” romanda faqat ijobiy va orzu qilinadigan holat sifatida emas, balki mazmunsiz davomiylik sharoitida inson uchun jazoga aylanishi mumkin bo‘lgan holat sifatida ham talqin qilinadi.

Turli makon va zamonlarning bir badiiy tizimda birlashishi roman kompozitsiyasining ko‘pqatlamli xususiyatini belgilaydi.

Makonlar o‘rtasidagi qarama-qarshiliklar inson va olam, ilm va ma’naviyat, erkinlik va nazorat kabi falsafiy masalalarni ochishga xizmat qiladi.

Boqiy darbadar obrazi yakunda individual shaxs doirasidan chiqib, ma’naviy yo‘lini yo‘qotishi mumkin bo‘lgan insoniyatning umumlashma timsoliga aylanadi.

XULOSA.

Isajon Sultonning “Boqiy darbadar” romani hajman ixcham bo‘lishiga qaramay, mazmunan ko‘pqatlamli falsafiy-badiiy asarlardan biridir. Roman insonning mavjudligi, umrning qiymati, ilm-fanning imkoniyatlari va chegaralari, ma’naviyat, taqdir va abadiylik kabi masalalar haqida mushohada yuritishga undaydi.

Asarning o‘ziga xosligi, avvalo, makonning badiiy funksiyasida ko‘rinadi. Shahar, sahro, yo‘l, laboratoriya va boshqa makonlar oddiy dekoratsiya vazifasini bajarmaydi, balki asarning g‘oyaviy mazmunini yaratishda faol qatnashadi.

Shahar ijtimoiy bosim va begonalashuvni, sahro chegarasizlik va yolg‘izlikni, yo‘l izlanishni, laboratoriya esa insonning ilm-fan va texnologiya yordamida mavjudlik ustidan nazorat o‘rnatishga intilishini ifodalaydi. Ushbu makonlar o‘rtasidagi harakat orqali qahramonlarning tashqi yo‘li bilan ichki yo‘li o‘zaro bog‘lanadi.

Romandagi eng muhim tushunchalardan biri bo‘lgan “darbadarlik” ham aynan shu makoniy tizim orqali chuqurlashadi. Darbadar faqat bir joydan ikkinchi

joyga yuruvchi shaxs emas, balki o‘z maqsadi, ma’nosi va ma’naviy tayanchini yo‘qotgan inson sifatida ham talqin qilinadi.

Shu sababli “boqiy darbadar” tushunchasini zamonaviy insonning ekzistensial holati sifatida ko‘rish mumkin. Inson texnologik jihatdan rivojlanishi va bilim doirasini kengaytirishi mumkin, ammo bunday rivojlanish avtomatik ravishda ma’naviy mukammallikka olib kelmaydi.

Roman o‘quvchini insonning qanchalik uzoqqa borishi mumkinligi bilan birga, u qayerga borayotganini va nima uchun borayotganini anglash zarurligi haqida ham o‘ylashga undaydi. Shu nuqtayi nazardan, asardagi eng katta muammo yo‘lning mavjudligi emas, balki manzilning yo‘qolishidir.

Asar xotimasida sahro bo‘ylab yolg‘iz ketayotgan insonning “Boqiy darbadar” deb atalishi roman mazmunini umumlashtiradi. U endi faqat bir shaxs emas, balki ma’naviy yo‘lini yo‘qotishi mumkin bo‘lgan insoniyatning timsoliga aylanadi.

Shunday qilib, Isajon Sultonning “Boqiy darbadar” romani o‘zbek adabiyotida inson va makon munosabatini falsafiy darajada ifodalagan hamda makonni insonning ichki dunyosi bilan bog‘lagan murakkab badiiy hodisa sifatida talqin qilinishi mumkin. Asarning asosiy poetik xulosasi shundan iboratki, inson uchun haqiqiy manzil faqat geografik nuqta emas, balki ma’naviy yo‘nalishdir; inson o‘zining ma’naviy manzilini yo‘qotganida esa tashqi yo‘l qanchalik uzoq bo‘lmasin, u “boqiy darbadar”lik holatiga tushib qolishi mumkin.

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AC FEEDBACK ON EFL STUDENTS' ACADEMIC WRITING: OPPORTUNITIES AND LIMITATIONS

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Abstract: Academic writing is one of the challenging skills for students learning English as a Foreign Language (EFL), as it requires grammatical accuracy, appropriate vocabulary, logical organization, coherence, cohesion, and clear expression of ideas. Feedback plays an important role in helping learners identify weaknesses and revise their written work. This article examines the opportunities and limitations of AI-generated feedback, particularly feedback provided by ChatGPT, in EFL academic writing. A literature-based review was conducted using recent empirical and review studies on AI-assisted writing feedback. The reviewed studies indicate that ChatGPT-generated feedback can contribute to improvements in several aspects of writing, including grammar, conciseness, organization, vocabulary, cohesion, and revision. At the same time, the studies identify limitations related to feedback quality, contextual appropriateness, accuracy, and students' dependence on AI.

Keywords: Artificial Intelligence (AI), ChatGPT, AI-generated feedback, EFL learners, academic writing, writing skills, corrective feedback, learner autonomy, generative AI.

ВЛИЯНИЕ ОБРАТНОЙ СВЯЗИ, ГЕНЕРИРУЕМОЙ ИСКУССТВЕННЫМ ИНТЕЛЛЕКТОМ, НА АКАДЕМИЧЕСКОЕ ПИСЬМО СТУДЕНТОВ, ИЗУЧАЮЩИХ АНГЛИЙСКИЙ ЯЗЫК КАК ИНОСТРАННЫЙ: ВОЗМОЖНОСТИ И ОГРАНИЧЕНИЯ

Аннотация: Академическое письмо является одним из наиболее сложных навыков для студентов, изучающих английский язык как иностранный, поскольку требует грамматической точности, использования соответствующей лексики, логической организации, последовательности, связности и ясного выражения мыслей. Обратная связь играет важную роль, помогая обучающимся выявлять недостатки и совершенствовать письменные работы. В данной статье рассматриваются возможности и ограничения обратной связи, генерируемой искусственным интеллектом, в частности обратной связи, предоставляемой ChatGPT, в процессе обучения академическому письму на английском языке как иностранном. На основе современных эмпирических и обзорных исследований, посвящённых

применению искусственного интеллекта для предоставления обратной связи по письменным работам, был проведён обзор научной литературы. Проанализированные исследования показывают, что обратная связь, генерируемая ChatGPT, может способствовать совершенствованию различных аспектов письменной речи, включая грамматическую точность, лаконичность, организацию текста, словарный запас, связность и редактирование. В то же время исследования выявляют ограничения, связанные с качеством обратной связи, её контекстуальной уместностью и точностью, а также с риском формирования у студентов чрезмерной зависимости от искусственного интеллекта.

Ключевые слова: искусственный интеллект (ИИ), ChatGPT, обратная связь, генерируемая искусственным интеллектом, студенты, изучающие английский язык как иностранный, академическое письмо, навыки письма, корректирующая обратная связь, автономия обучающихся, генеративный искусственный интеллект.

SUN’IY INTELLEKT YORDAMIDA YARATILGAN QAYTA ALOQANING INGLIZ TILINI XORIJIY TIL SIFATIDA O‘RGANUVCHI TALABALARNING AKADEMIK YOZUVIGA TA’SIRI: IMKONIYATLAR VA CHEKLOVLAR

Annotatsiya: Akademik yozuv ingliz tilini xorijiy til sifatida o‘rganayotgan talabalar uchun murakkab ko‘nikmalardan biri hisoblanadi. Chunki u grammatik aniqlik, tegishli lug‘at boyligidan foydalanish, fikrlarni mantiqiy tashkil etish, izchillik, matn qismlari o‘rtasidagi bog‘liqlik hamda g‘oyalarni aniq ifodalashni talab qiladi. Qayta aloqa o‘rganuvchilarga yozma ishlaridagi kamchiliklarni aniqlash va ularni qayta ko‘rib chiqishda muhim o‘rin tutadi. Ushbu maqolada sun’iy intellekt yordamida yaratilgan, xususan, ChatGPT tomonidan taqdim etiladigan qayta aloqaning ingliz tilini xorijiy til sifatida o‘rganish jarayonidagi akademik yozuv uchun imkoniyatlari va cheklovlari tahlil qilinadi. Tadqiqotda sun’iy intellekt yordamidagi yozma qayta aloqaga bag‘ishlangan so‘nggi empirik tadqiqotlar va sharh maqolalari asosida adabiyotlar tahlili amalga oshirildi. Ko‘rib chiqilgan tadqiqotlar ChatGPT tomonidan yaratilgan qayta aloqa yozuvning grammatik aniqligi, ixchamligi, tashkil etilishi, lug‘at boyligi, matn qismlarining o‘zaro bog‘liqligi va yozma ishni qayta ko‘rib chiqish kabi jihatlarini yaxshilashga yordam berishi mumkinligini ko‘rsatadi. Shu bilan birga, tadqiqotlarda qayta aloqa sifati, uning muayyan kontekstga muvofiqligi, aniqligi hamda talabalarning sun’iy intellektga haddan tashqari qaram bo‘lib qolishi bilan bog‘liq cheklovlar ham aniqlangan.

Kalit so‘zlar: sun’iy intellekt (SI), ChatGPT, sun’iy intellekt yordamida yaratilgan qayta aloqa, ingliz tilini xorijiy til sifatida o‘rganuvchilar, akademik yozuv, yozuv ko‘nikmalari, tuzatuvchi qayta aloqa, o‘rganuvchi mustaqilligi, generativ sun’iy intellekt.

INTRODUCTION

Academic writing is an important component of foreign language education because learners need to communicate ideas accurately and coherently in written form. For EFL students, academic writing can be particularly challenging because they must simultaneously manage grammar, vocabulary, sentence structure, organization, coherence, cohesion, and academic style.Generative AI tools such as ChatGPT can analyze written texts and provide suggestions concerning grammar, vocabulary, organization, clarity, and style [1]. Recent empirical research has investigated the effectiveness of ChatGPT-generated feedback in foreign-language writing. Mahapatra examined ChatGPT as a formative feedback tool among undergraduate ESL students and reported a significant positive impact on academic writing skills [1]. Polakova and Ivenz also investigated ChatGPT feedback with 110 university EFL students and reported improvements in several aspects of writing, including conciseness, grammar, inclusion of key information, and passive voice [2]. However, AI-generated feedback should not automatically be considered equivalent to teacher feedback. Banihashem et al. compared ChatGPT-generated and peer-generated feedback and found differences in the types of feedback produced by the two sources [3]. Similarly, Alsofyani and Barzanji compared ChatGPT-generated feedback with teacher-generated feedback among 102 Saudi EFL university students and found no statistically significant difference between the groups in post-test writing scores [4].

METHODS

This article employed a literature-based review approach. Recent peer-reviewed studies focusing on AI-generated feedback, ChatGPT, EFL/ESL writing, and academic writing were examined. The analysis focused on four main aspects:

1. the effect of AI-generated feedback on students’ writing performance;
2. improvements in specific writing dimensions;
3. students’ perceptions and engagement with AI feedback;
4. limitations and differences between AI-generated and human feedback.

The purpose of this approach was not to conduct a new experiment but to synthesize findings reported in existing research. Therefore, the Results section presents findings reported by the selected studies rather than newly collected data.

The reviewed studies indicate several important findings concerning the use of AI-generated feedback in academic writing.

Improvement in Writing Performance. The reviewed research generally reports positive effects of ChatGPT-generated feedback on students' writing. Mahapatra's mixed-methods intervention study found a significant positive impact of ChatGPT on undergraduate ESL students' academic writing skills [1]. The study also reported generally positive student perceptions of ChatGPT as a feedback tool. Polakova and Ivenz similarly found significant improvements in different aspects of writing after students received ChatGPT feedback. Their study involved 110 university EFL students and used pre-tests, post-tests, questionnaires, and focus-group interviews [2].

RESULTS

The reviewed studies identify several particular areas in which AI-generated feedback may be useful. Polakova and Ivenz reported improvements in conciseness, grammar, inclusion of key information, and passive voice following ChatGPT feedback [2]. A systematic review by Urzúa et al., which analyzed 12 studies selected from Scopus, ERIC, and Web of Science, found positive effects of generative-chat feedback on academic writing. The review identified improvements mainly in text structure and organization, grammatical conventions, sentence fluency and cohesion, and precision of ideas and vocabulary [5]. Differences Between AI and Human Feedback. The reviewed literature also demonstrates that AI-generated feedback and human feedback are not identical. Banihashem et al. investigated 74 graduate students and compared peer-generated feedback with ChatGPT-generated feedback on argumentative essays [3]. ChatGPT tended to provide more extensive descriptive feedback, whereas peers were better at identifying specific problems in the essays [3]. Alsofyani and Barzanji compared ChatGPT-generated feedback with teacher-generated feedback among 102 Saudi EFL university students [4]. Their results showed no statistically significant difference in post-test writing scores between the experimental group receiving ChatGPT feedback and the control group receiving teacher feedback [4]. These findings suggest that AI-generated feedback can be effective, but its role should be understood in relation to other feedback sources.

DISCUSSION

The findings demonstrate that AI-generated feedback has considerable potential in EFL academic writing. The positive results reported by Mahapatra [1] and Polakova and Ivenz [2] suggest that ChatGPT can support learners in identifying and revising different types of writing problems. One important advantage of AI-generated feedback is immediacy. Students can receive feedback without waiting for a teacher to review their work. This can facilitate repeated drafting and revision. Furthermore, students can ask follow-up questions and request explanations of particular corrections. Another potential benefit is individualized support. AI can

respond to the specific text submitted by a learner and can focus on areas requested by the student. This may be particularly valuable in large classes where teachers cannot always provide detailed individual comments. The systematic review by Urzúa et al. provides further evidence of the potential of generative-chat feedback. The review identified improvements not only in grammatical conventions but also in organization, cohesion, vocabulary, self-regulation, motivation, and reflection on writing [5]. This suggests that AI feedback may influence both the linguistic and cognitive dimensions of writing development. Nevertheless, the findings also demonstrate that AI-generated feedback has limitations. Banihashem et al. [3] found that ChatGPT and peers provided different types of feedback. ChatGPT produced more descriptive feedback, while peers were more successful in identifying specific problems. Context is another important issue. An AI system may suggest a grammatically acceptable sentence that does not fully express the learner's intended meaning. Students therefore need to evaluate suggestions critically rather than accepting them automatically. The comparison conducted by Alsofyani and Barzanji [4] is particularly relevant. Their study found no statistically significant difference between ChatGPT-generated and teacher-generated feedback groups. This indicates that ChatGPT can potentially serve as an alternative or supplementary feedback source in certain contexts. Students, meanwhile, should remain responsible for evaluating feedback and making final decisions about their writing.

CONCLUSION

AI-generated feedback is becoming an increasingly relevant tool in EFL academic writing. The reviewed studies indicate that ChatGPT can contribute to improvements in grammar, conciseness, organization, vocabulary, cohesion, and other aspects of written production [1][2][5]. AI feedback can also provide immediate and accessible support, which may facilitate revision and learner autonomy. At the same time, the reviewed research demonstrates that AI-generated feedback has limitations. Its feedback may differ from human feedback in quality and focus, and students still need to evaluate whether individual suggestions are accurate and appropriate [3]. Research comparing ChatGPT and teacher feedback also suggests that AI can perform comparably to teacher feedback in particular contexts, but this should not be interpreted as evidence that teachers are unnecessary [4]. Therefore, AI-generated feedback should be used as a supplementary resource rather than a replacement for teachers. Effective integration requires students to develop critical AI literacy and teachers to establish clear principles for responsible use. When AI technology, teacher expertise, and active student revision are combined, AI-generated feedback can provide additional opportunities for developing EFL students' academic writing skills.

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CHIZIQLI OPERATORNING XOS SON VA XOS VEKTORLARI.

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Annotatsiya: Ushbu maqolada chiziqli operatorlarning xos sonlari va xos vektorlari tushunchasi nazariy va amaliy jihatdan ko‘rib chiqilgan. Chiziqli operatorlar va ularning matritsa ko‘rinishidagi ifodalanishi bayon etilgan. Shuningdek, xos son va xos vektor tushunchalari keltirilib, ularni aniqlash usullari misollar orqali bayon etilgan.

Kalit so‘zlar: chiziqli, operator, xos son, xos vektor.

СОБСТВЕННЫЕ ЗНАЧЕНИЯ И СОБСТВЕННЫЕ ВЕКТОРЫ ЛИНЕЙНОГО ОПЕРАТОРА

Аннотация: В данной статье рассматривается понятие собственных значений и собственных векторов линейных операторов с теоретической и практической точки зрения. Описываются линейные операторы и их представление в матричной форме. Также вводятся понятия собственного значения и собственного вектора, а также на примерах объясняются методы их определения.

Ключевые слова: линейный оператор, собственное значение, собственный вектор.

EIGENVALUES AND EIGENVECTORS OF A LINEAR OPERATOR

Abstract: This article examines the concept of eigenvalues and eigenvectors of linear operators from a theoretical and practical point of view. Linear operators and their representation in matrix form are described. The concepts of eigenvalue and eigenvector are also introduced, and methods for determining them are explained using examples.

Keywords: linear operator, eigenvalue, eigenvector.

Aytaylik, $A=\lfloor a_{ij} \rfloor_{m\times n}$ matritsa berilgan bo‘lsin. Agar X – n o‘lchovli vektor (ustun-vektor) bo‘lsa, $A\cdot X$ ko‘paytma mavjud bo‘lib, u m o‘lchovli Y vektordan iborat bo‘ladi va

$$A\cdot X=Y \tag{1}$$

chiziqli almashtirishga ega bo‘lamiz [1,2]. (1) da A – chiziqli almashtirish matritsasi deb ataladi. Agar chiziqli almashtirish matritsasi kvadrat matritsadan iborat bo‘lsa, ($m=n$), u holda X va Y lar bir xil n o‘lchovli vektorlardan iborat bo‘lib, ular kollinear bo‘lishi ham, bo‘lmasligi ham mumkin. Bu vektorlarning kollinear bo‘lib, qolgan holi alohida ahamiyatga ega bo‘lib, bu hol ko‘p masalalarni hal qilishda uchraydi.

Agar A kvadrat matritsaga ega bo‘lgan (1) chiziqli almashtirish biror noldan farqli X vektorni o‘ziga kollinear bo‘lgan Y vektorga akslantirsa (o‘tkazsa), X vektor A kvadrat matritsaning (chiziqli almashtirishning) *xos vektori*, Y ning X ga proporsionallik koeffitsiyentidan iborat bo‘lgan λ son esa uning *xos soni* deyiladi [4].

Demak, agar X berilgan A kvadrat matritsaning xos vektori bo‘lsa, yuqoridagi ta’rif bo‘yicha

$$AX=\lambda X \tag{2}$$

tenglik o‘rinli bo‘lib, bu yerda λ matritsaning xos sonidan iboratdir.

(2) ni oddiy shakl o‘zgartirishlar yordamida

$$(A-\lambda E)X=0 \tag{3}$$

ko‘rinishga keltirish qiyin emas. Bu X ga nisbatan bir jinsli matritsaviy tenglamadir. Agar

$$X=\begin{pmatrix} x_1 \\ x_2 \\ . \\ x_n \end{pmatrix}$$

deb, $A=\lfloor a_{ij} \rfloor_n$ - kvadrat matritsa ekanligini hisobga olsak, (3) dan

$$\sum_{j=1}^{n}(a_{ij}-\lambda\delta_{ij})x_j=0,\ \ i=\overline{1;n} \tag{4}$$

n noma'lumli *n* ta chiziqli algebraik tenglamalarning bir jinsli sistemasini olamiz, bu yerda δ_{ij} - Kroneker belgisidir. Bu bir jinsli sistema noldan farqli yechimga ega bo'lishi uchun uning determinanti nolga teng bo'lishi zarur va yetarli ekanligi bizga ma'lum [1-3]:

$$\begin{vmatrix} a_{11}-\lambda & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22}-\lambda & \dots & a_{2n} \\ \dots & \dots & \dots & \dots \\ a_{n1} & a_{n2} & \dots & a_{nn}-\lambda \end{vmatrix} = 0. \qquad (5)$$

Bu (5) λ ga nisbatan tenglama bo'lib, undan *A* matritsaning xos soni aniqlanadi. Umumiy holda, (5) dan ko'rinadiki, λ ga nisbatan *n*- darajali algebraik tenglamaga egamiz. Algebraning asosiy teoremasiga ko'ra bu tenglama *n* ta kompleks ildizga ega bo'lib [4], ular oddiy yoki karrali bo'lishi mumkin.

Demak, (5) tenglamani yechib, λ xos sonning qiymati aniqlangach, uni (4) ga qo'yish natijasida determinanti nolga teng bo'lgan bir jinsli sistemani olamiz va uning noldan farqli yechimini topib, *A* matritsaning xos vektorini aniqlaymiz.

1-misol.

$$A = \begin{bmatrix} 1 & 4 \\ 3 & 5 \end{bmatrix}$$

matritsaning xos soni va xos vektori topilsin.

Yechish. (5) tenglamani yozamiz va uni echamiz:

$$\begin{vmatrix} 1-\lambda & 4 \\ 3 & 5-\lambda \end{vmatrix} = 0 \Rightarrow$$

$$\lambda^2 - 6\lambda - 7 = 0 \Rightarrow \lambda_{-1} = -1, \quad \lambda_2 = 7$$

Demak, *A* matritsa ikkita haqiqiy xos sonlarga ega. Endi, bu xos sonlarning har biriga mos keladigan xos vektorlarni aniqlaymiz. Buning uchun topilgan λ xos son qiymatini (4) ga qo'yib, undan noldan farqli yechimni aniqlaymiz.

1) λ =-1 xos son uchun:

$$\begin{cases} (1-(-1))x_1 + 4x_2 = 0, \\ 3x_1 + (5-(-1))x_2 = 0; \end{cases} \Leftrightarrow \begin{cases} 2x_1 + 4x_2 = 0, \\ 3x_1 + 6x_2 = 0; \end{cases} \Leftrightarrow$$

$$x_1 + 2x_2 = 0 \Leftrightarrow x_1 = -2x_2.$$

Xos vektor: $\begin{pmatrix} -2x_2 \\ x_2 \end{pmatrix} = x_2 \begin{pmatrix} -2 \\ 1 \end{pmatrix}, \ x_2 \neq 0.$

Agar $x_2=1$ desak,

$$X_1 = \begin{pmatrix} -2 \\ 1 \end{pmatrix}.$$

xos vektorni olamiz.

2) $\lambda = 7$ xos son uchun:

$$\begin{cases} -6x_1 + 4x_2 = 0, \\ 3x_1 - 2x_2 = 0; \end{cases} \Leftrightarrow 3x_1 - 2x_2 = 0 \Leftrightarrow$$

$$x_2 = \frac{3}{2}x_1.$$

Xos vektor: $X_2 = \begin{pmatrix} x_1 \\ \frac{3}{2}x_1 \end{pmatrix}$

Agar $x_1=2$ desak,

$$X_2 = \begin{pmatrix} 2 \\ 3 \end{pmatrix}.$$

xos vektorni olamiz.

2-misol.

$$A = \begin{pmatrix} 3 & -1 \\ 17 & 1 \end{pmatrix}$$

matritsaning xos vektorlari aniqlansin.

Yechish.

$$\begin{vmatrix} 3-\lambda & -1 \\ 17 & 1-\lambda \end{vmatrix} = 0 \Leftrightarrow \lambda^2 - 4\lambda + 20 = 0;$$

$$\lambda_1 = 2 + 4i, \quad \lambda_2 = 2 - 4i.$$

Demak, matritsaning xos sonlari mavhum.

1) $\lambda = \lambda_1 = 2 + 4i$:

$$\begin{cases}(3-(2+4i))x_1-x_2=0,\\ 17x_1+(1-(2+4i))x_2=0;\end{cases}\Leftrightarrow\begin{cases}(1-4i)x_1-x_2=0,\\ 17x_1-(1+4i)x_2=0;\end{cases}$$
$$\Leftrightarrow x_2=(1-4i)x_1;$$

Xos vektor:

$$X_1=\begin{pmatrix}x_1\\(1-4i)x_1\end{pmatrix}=x_1\begin{pmatrix}1\\1-4i\end{pmatrix}.$$

$x_1=1$ deb olsak,

$$X_1=\begin{pmatrix}1\\1-4i\end{pmatrix}$$

xos vektor kelib chiqadi.

2) $\lambda=\lambda_2=2-4i$:

$$\begin{cases}(3-(2-4i))x_1-x_2=0,\\ 17x_1+(1-(2-4i))x_2=0;\end{cases}\Leftrightarrow\begin{cases}(1+4i)x_1-x_2=0,\\ 17x_1-(1-4i)x_2=0;\end{cases}$$
$$\Leftrightarrow x_2=(1+4i)x_1;$$

Xos vektor:

$$X_2=\begin{pmatrix}x_1\\(1+4i)x_1\end{pmatrix}=x_1\begin{pmatrix}1\\1+4i\end{pmatrix}.$$

$x_1=1$ deb olsak,

$$X_2=\begin{pmatrix}1\\1+4i\end{pmatrix}.$$

xos vektorni olamiz.

Matritsaning (chiziqli almashtirishning) turli xos sonlariga mos keluvchi xos vektorlarining sistemasi chiziqli erkli bo‘lishi isbotlangan [4,5].

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