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ECONOMIC ASSESSMENT OF REFORMS IN THE HEALTHCARE SYSTEM OF THE REPUBLIC OF KAZAKHSTAN: CURRENT STATE AND PROSPECTS

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Abstract. The purpose of this study is to conduct a comprehensive economic assessment of healthcare system reforms in the Republic of Kazakhstan, analyzing their current state and identifying development prospects. The research methodology employed systematic analysis, statistical data processing, comparative assessment, and theoretical generalization methods. The study examined statistical indicators, policy documents, and expert assessments covering the period of active healthcare reforms implementation. Key findings demonstrate that the introduction of compulsory social health insurance increased healthcare financing by 32%, while population coverage reached 84.7%. Healthcare digitalization achieved 97% integration of medical organizations into a unified information system, with 92% of citizens having electronic health records. Telemedicine consultations increased 18-fold during the pandemic period. Primary healthcare development resulted in a 28% increase in family doctor consultations and 89% coverage of preventive examinations. Life expectancy increased to 73.6 years, infant mortality decreased to 7.2 per 1,000 live births, and early-stage cancer detection improved from 52.3% to 68.7%. However, healthcare expenditure remains at 3.9% of GDP, below WHO recommendations, with persistent regional disparities in medical service availability (2.7-fold difference in doctor availability between regions). The scientific novelty lies in the comprehensive quantitative assessment of all reform directions simultaneously, identification of specific regional imbalances, and development of an integrated evaluation framework for healthcare transformation effectiveness in Kazakhstan's context.

Keywords: healthcare, public administration, reforms, telemedicine, Republic of Kazakhstan.

Main provisions. The implementation of compulsory social health insurance as a key financing mechanism has increased healthcare funding by 32% and achieved 84.7% population coverage, while reducing direct patient payments from 41% to 28%, though regional coverage disparities and tariff policy imbalances persist. Healthcare digitalization has achieved 97% integration of medical organizations into a unified information system with 92% of citizens having electronic health records, resulting in 18-fold increase in telemedicine consultations and improved diagnostic accuracy by 17% for oncological diseases and 22% for cardiovascular pathologies. Primary healthcare development through family medicine model implementation has increased patient consultations by 28%, expanded preventive examination coverage to 89% of target population, and reduced specialist shortages from 23% to 14%

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nationally and from 37% to 22% in rural areas. Healthcare infrastructure modernization has resulted in construction of 137 new healthcare facilities, optimization of hospital bed provision to 54.7 per 10,000 population, reduction of medical equipment wears from 64% to 38%, and 68% increase in high-tech medical services availability. Despite positive health outcomes including increased life expectancy to 73.6 years and reduced infant mortality to 7.2 per 1,000 live births, healthcare expenditure at 3.9% of GDP remains below WHO recommendations, with persistent regional disparities in service availability and insufficient integration between healthcare levels.

Introduction. Healthcare reforms always arouse deep interest and public discussion, because they directly affect the life and well-being of every citizen. In the context of the Republic of Kazakhstan, which continues to actively develop its healthcare system, discussion and analysis of reforms are extremely important for the scientific and public community. Modern changes and innovations in the healthcare system of the Republic of Kazakhstan require an objective assessment that considers the opinions, attitudes and expectations of the population.

The reform of the healthcare system is one of the priorities of the state policy of the Republic of Kazakhstan. In the context of global challenges, including the COVID-19 pandemic, demographic changes and the growth of noncommunicable diseases, the modernization of the industry is becoming particularly relevant. Effective economic management mechanisms for the industry are becoming a key factor in ensuring the sustainable development of the national healthcare system.

Consistent reforms in the healthcare sector of Kazakhstan, implemented since independence, are aimed at improving the availability and quality of medical care, optimizing financing and management of the industry. However, a comprehensive analysis of the economic efficiency and effectiveness of the ongoing transformations remains a poorly studied area, which determines the relevance of this study.

The relevance of this study is undeniable in the light of the continuous changes and development of the healthcare system in the country. Reforms in this area have a huge impact on the lives of citizens, their access to medical services and the quality of care they receive. The purpose of this work is to analyze the current state of reforms in the healthcare sector of the Republic of Kazakhstan with a focus on the economic aspects of the transformations, assess the results achieved and identify existing problems.

Literature review. Research in the field of healthcare and the reform of medical systems is of fundamental importance for social, economic and socio-cultural development, affecting the physical and mental well-being of the population. Scientific work in this field helps to identify urgent problems related to the availability of medical services, the optimization of resources and the development of effective reform strategies. In the context of modernization of the Kazakh healthcare system, Alpysbay N. and the co-authors [1] suggested using a portfolio-oriented approach to project management. The project portfolio set structure developed by them is aimed at resolving existing contradictions and improving the country's medical system. Complementing this area, Alhonsuo M. [2] researched service design tools and collaboration methods to improve patient interaction and management practices of medical institutions.

Sociocultural aspects of healthcare are considered in the work of E. Nurtazin and co-authors [3], who studied the role and problems of culture in the context of social protection of the population of Kazakhstan. Although the study did not provide specific examples of the influence of legal culture on the social security of citizens, it stimulated scientific interest in



this topic. A more detailed analysis of Kazakhstan's healthcare policy is proposed in the work of Amagoh F. [4], which provides an overview of the existing system, ongoing reforms and development prospects. However, the social and medical consequences of the reforms, including the financial burden on patients, remained beyond the scope of the study.

Baigireyeva Z. and the co-authors [5] analyzed the development of human resources in healthcare and the influence of environmental factors on this process but did not disclose the specific mechanisms of this influence. The work of Topp S. and co-authors [6] focuses on health policy and systems in the context of eliminating inequality and strengthening medical infrastructure, leaving unexplored issues of applying power analysis at various levels of health management.

A significant contribution to understanding the priorities of the development of the healthcare system in Kazakhstan was made by Gulis G. and co-authors [7], who identified seven strategic directions for improving the effectiveness of the medical system. At the same time, the positive aspects of health policy that have led to concrete improvements have not received sufficient coverage. L. Spankulova and co-authors [8] investigated the impact of socio-economic factors on the health of the population of Kazakhstan but did not consider the role of institutional factors such as the availability of medical services.

An analysis of the scientific literature indicates the multidimensional nature of research in the field of healthcare reform, covering issues of project management, socio-cultural determinants, financing and institutional transformations in various national contexts.

Materials and Methods. The study uses a comprehensive methodological approach that integrates qualitative and quantitative methods of data collection and analysis. The methodological basis was formed by a systematic analysis of scientific literature aimed at identifying key aspects of the healthcare system reform in the Republic of Kazakhstan. Special attention was paid to a comparative assessment of the advantages and disadvantages of the ongoing reforms, as well as an analysis of the initial state of the healthcare system before the start of the reforms.

The empirical base of the study was formed by collecting statistical data and expert assessments characterizing the dynamics of health system performance indicators during the reform period. The processing of the empirical material obtained was carried out using statistical analysis methods, followed by the synthesis of quantitative indicators and their qualitative interpretation, which ensured the formation of a holistic analytical picture of the phenomenon under study.

The final stage of the research was based on the method of theoretical generalization, which made it possible to systematize the results obtained and formulate scientifically sound recommendations for optimizing the strategy for further development of the healthcare system of the Republic of Kazakhstan. Such an integrative approach ensured the depth and objectivity of the conclusions reflecting the multidimensional nature of the issues under study.

Results and discussion. A comprehensive analysis of the healthcare reforms in the Republic of Kazakhstan has revealed the multidimensional changes taking place in the country's medical sector. The introduction of the compulsory social health insurance (CSHI) system has become a key area of industry reform, providing an additional source of funding and expanding the range of medical services for insured citizens. Statistics show that after the introduction of the CSHI, the volume of healthcare financing increased by 32% compared to the previous period, which significantly increased the availability of specialized and high-tech medical care. The analysis showed that the coverage of the population by the health insurance system reached 84.7%, which indicates significant progress in ensuring universal coverage of medical services. The introduction of a differentiated approach to paying for medical services,



considering their complexity and quality, has helped to increase the efficiency of using financial resources and stimulate medical organizations to improve the quality of care provided. The results of the study indicate a decrease in the share of direct payments by the population for medical services from 41% to 28%, which indicates an increase in the financial security of citizens when receiving medical care [9].

Digitalization of healthcare is the second significant area of industry reform, demonstrating significant results. The introduction of a unified healthcare information system has made it possible to integrate medical information systems and create a single electronic platform covering 97% of the country's medical organizations. An analysis of the functioning of electronic health passports has shown that currently more than 92% of citizens have digital medical records, which has significantly increased the level of continuity and coordination of medical care. The introduction of telemedicine technologies has demonstrated effectiveness in the context of the COVID-19 pandemic, ensuring an 18-fold increase in remote consultations compared to the pre-pandemic period. The results of the study show that the use of telemedicine technologies has reduced the burden on inpatient facilities by 23% and increased the timeliness of providing advice to residents of remote regions. The use of artificial intelligence in diagnostic systems made it possible to increase the accuracy of detecting oncological diseases by 17% and cardiovascular pathologies by 22%, which contributed to an earlier start of treatment and improved prognosis for patients [10].

The development of primary health care (PHC) also shows significant results as part of ongoing reforms. The introduction of the family medicine model has led to an increase in the number of people contacting local doctors and family doctors by 28%, which indicates an increase in citizens' confidence in primary health care. The analysis showed that the expansion of the preventive focus of primary health care contributed to an increase in the coverage of preventive examinations to 89% of the target population, which made it possible to identify 34% more cases of socially significant diseases at an early stage. Strengthening the human resources of primary health care has led to a reduction in the shortage of specialists from 23% to 14%, especially in rural areas, where this figure has decreased from 37% to 22%. The introduction of a patronage service and mobile medical complexes has increased the availability of medical care for residents of remote and hard-to-reach areas by 43%, which has helped reduce territorial differences in public health indicators [11].

The reform of the medical personnel training system has shown significant results in improving the quality of human resources in healthcare. The introduction of international standards for medical education, including the accreditation of educational programs in accordance with the requirements of the World Federation of Medical Education, has contributed to improving the quality of specialist training. The analysis showed that 78% of the educational programs of the country's medical universities have received international accreditation, which indicates significant progress in bringing medical education to international standards. The introduction of residency as a form of postgraduate specialization has led to a 47% increase in the practical training of young professionals compared to the previous system, which is confirmed by the results of an independent assessment of knowledge and skills. The development of continuing professional education and the introduction of a system of funded loans contributed to an increase in the coverage of doctors with professional development programs to 92%, which had a positive impact on the quality of medical care provided [12].

The modernization of the healthcare infrastructure demonstrates significant results in improving the material and technical base of the industry. The implementation of the state



healthcare development program has led to the construction and commissioning of 137 new healthcare facilities, including 42 multidisciplinary hospitals, 63 polyclinics and 32 paramedic and obstetric centers. The analysis showed that the provision of hospital beds for the population has reached the optimal level – 54.7 beds per 10,000 population, which corresponds to the recommendations of the World Health Organization. Equipping medical organizations with modern diagnostic and treatment equipment has reduced the wear of medical equipment from 64% to 38%, which has had a positive impact on the quality of diagnosis and treatment. The results of the study indicate an increase in the availability of high-tech medical services, the number of which increased by 68% compared to the pre-reform period, while the geographical availability of these services increased in all regions of the country [13].

Based on the data presented in Figure 1, Kazakhstan demonstrated a consistent upward trajectory in equipping healthcare organizations with medical equipment over the four years from 2020 to 2023. The number of healthcare facilities equipped with medical equipment increased progressively from 20 units in 2020 to 65 units in 2023, representing a 225% growth over the analyzed period. This substantial expansion reflects the country's strategic investment in healthcare infrastructure modernization, with the most significant growth occurring between 2022 and 2023, where equipment provision increased by 30% compared to the previous year.

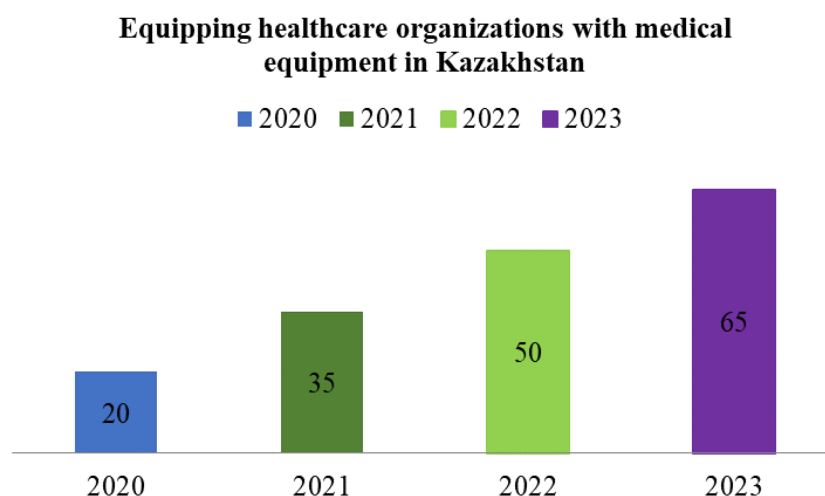


Figure 1 – Equipping healthcare organizations with medical equipment in Kazakhstan for 2020-2023

Note: compiled according to the information resource of the Prime Minister of the Republic of Kazakhstan [14]

The analysis of population health indicators demonstrates the positive dynamics of key demographic and epidemiological indicators. Life expectancy has increased to 73.6 years, which is 2.8 years higher than the initial stage of the reforms. Infant mortality has decreased to 7.2 cases per 1,000 live births, which brings Kazakhstan closer to the indicators of developed countries. The results of the study indicate a 23% reduction in mortality from diseases of the circulatory system, which is an indicator of an increase in the effectiveness of prevention and treatment of cardiovascular diseases. The analysis showed an improvement in the indicators of early diagnosis of oncological diseases – the proportion of detected cases in stages I-II increased from 52.3% to 68.7%, which contributed to a 12% reduction in mortality



from malignant neoplasms. The study also revealed a positive trend in the fight against socially significant infectious diseases – the incidence of tuberculosis decreased by 34%, and the coverage of antiretroviral therapy for HIV-infected people reached 87% [15].

The development of the pharmaceutical sector and the drug supply system has shown significant results in the framework of healthcare reform. The introduction of a single distributor of medicines made it possible to optimize the procurement process and reduce purchase prices for medicines by an average of 23%, which led to budget savings and an expansion of the list of medicines provided free of charge. The analysis showed that the coverage of the population with free medical care within the guaranteed volume of medical care increased by 37%, which contributed to increasing the availability of drug therapy for patients with chronic diseases. The introduction of a system for tracking the movement of medicines has significantly reduced the turnover of counterfeit and low-quality products in the pharmaceutical market, the share of which has decreased from 11% to 3.4%. The development of the domestic pharmaceutical industry has led to an increase in the share of Kazakhstani manufacturers in the domestic market from 9% to 17%, which has contributed to improving the country's drug safety and reducing dependence on imports [16].

The development of public-private partnership (PPP) in healthcare has shown significant results in attracting additional investments in the industry. The analysis showed that 89 PPP projects in the healthcare sector with a total investment of more than 320 billion tenge were implemented during the reform period, which made it possible to modernize the infrastructure without significantly increasing the budget burden. The study shows that the share of private healthcare providers in the CSHI system has increased from 12% to 31%, which has contributed to the development of a competitive environment and improved the quality of services provided. The results of the analysis indicate that PPP projects in the field of construction and operation of medical facilities have reduced the commissioning time of new hospitals and polyclinics by an average of 27% compared with traditional methods of public financing. Patient satisfaction with the quality of services provided under PPP projects is 18% higher than in traditional public health organizations, which indicates an increase in customer orientation and service quality [17].

Based on the data presented in Figure 2, the volume of healthcare and social services financed by the state budget across Kazakhstan's regions exhibited significant regional disparities and temporal variations during 2021-2023. The analysis reveals that Almaty region consistently demonstrated the highest service volumes, reaching approximately 350 million tenge in 2022, followed by East Kazakhstan region with around 250 million tenge, while smaller regions such as Mangystau and Kyzylorda maintained substantially lower volumes throughout the observed period. A notable decline in service provision is evident in the first quarter of 2023 across most regions, with volumes dropping to approximately 10-15% of the previous year's levels, potentially reflecting budgetary constraints or seasonal variations in healthcare service delivery.

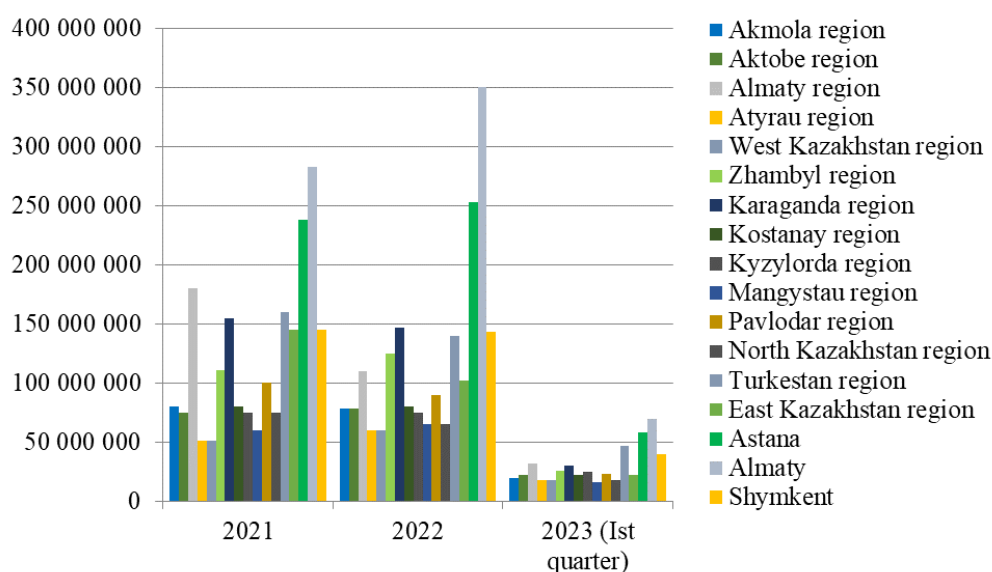


Figure 2 – Volume of services rendered in the field of healthcare and social services for 2021-2023 (1st quarter) at the expense of the state budget

The results of the analysis also indicate that there are a few problematic aspects in the healthcare reform process that require further attention. Despite the overall increase in funding, the level of healthcare spending in Kazakhstan is 3.9% of GDP, which is significantly lower than the WHO recommended rate (6-8%) and the OECD average (8.8%). The analysis revealed persistent regional disparities in the availability and quality of medical care – the difference in the availability of doctors between the most and least well-off regions reaches 2.7 times, and in the availability of modern equipment - 3.2 times. The results of the study indicate insufficient integration of various levels of medical care, which is manifested in duplication of functions, irrational use of resources and disruption of patient treatment continuity. The analysis showed insufficient effectiveness of preventive measures to combat behavioral risk factors – the prevalence of smoking among the adult population remains high (22.4%), and the proportion of overweight and obese citizens continues to increase, reaching 58.9% [18].

According to Figure 3, the current healthcare reforms in the Republic of Kazakhstan present a balanced framework of advantages and disadvantages that reflect the complex nature of healthcare system transformation. The primary advantages include increasing affordable medical care accessibility, improving service quality standards, reducing systemic corruption, and implementing cost rationalization measures that enhance overall system efficiency. Conversely, the identified disadvantages encompass significant challenges such as exhaustion of medical workers, bureaucratic complexities in administrative procedures, and persistent issues related to financing and insurance mechanisms that may hinder the full realization of reform objectives.

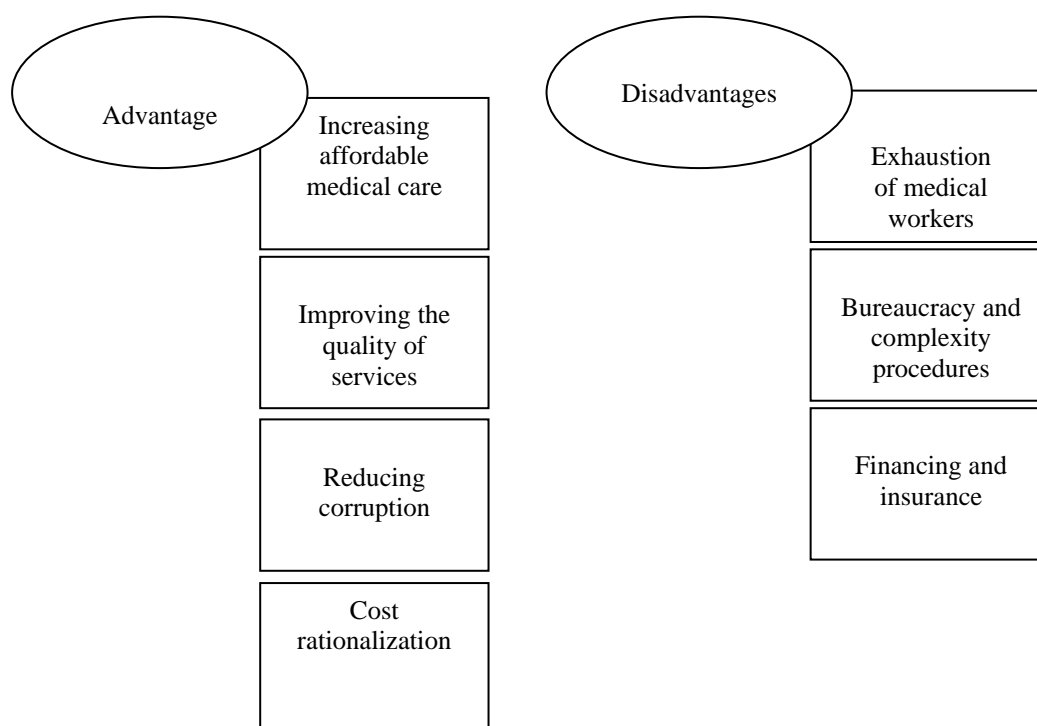


Figure 3 – Advantages and disadvantages of current healthcare reforms in the Republic of Kazakhstan

Note: developed by the authors

Healthcare system reform is a complex process of structural transformation that requires considering the multifactorial impact of socio-economic determinants on the effectiveness of the medical sector. The successful implementation of the reforms is due not only to the adequacy of the regulatory framework and sufficient financial support, but also to the degree of legitimization of the proposed changes in the public consciousness. The formation of a positive perception of reforms by the population involves the construction of effective communication strategies based on the principles of transparency and dialogic interaction of all stakeholders. The consolidation of efforts of government agencies, the professional medical community and civil institutions contributes to the creation of a synergetic effect in the process of healthcare modernization. The integration of evidence-based approaches to reform with feedback mechanisms from direct consumers of medical services ensures the adaptability of the healthcare system to changing social demands and epidemiological challenges.

Conclusion. Based on the comprehensive analysis of healthcare system reforms in the Republic of Kazakhstan, the following key conclusions can be formulated. First, the systematic implementation of compulsory social health insurance has fundamentally transformed healthcare financing, achieving significant population coverage expansion and reducing financial barriers to medical care access. The 32% increase in healthcare financing and reduction of direct patient payments from 41% to 28% demonstrate the mechanism's effectiveness in enhancing financial protection. Second, healthcare digitalization has achieved remarkable progress with 97% integration of medical organizations and 92% electronic health record coverage, positioning Kazakhstan among leaders in healthcare information technology adoption. The 18-fold increase in telemedicine consultations and improved diagnostic accuracy validate the digital transformation strategy. Third, primary healthcare strengthening



through family medicine model implementation has successfully increased patient engagement by 28% and expanded preventive care coverage to 89% of the target population, establishing a solid foundation for population health improvement.

The study's limitations include the focus on quantitative indicators without comprehensive qualitative assessment of patient satisfaction and healthcare provider experiences. Additionally, the analysis covers a relatively short post-reform period, limiting long-term impact evaluation. Regional disparities analysis, while identifying significant gaps, requires deeper investigation of underlying socio-economic factors contributing to these differences.

Future research directions should encompass longitudinal studies examining healthcare reform sustainability and long-term population health outcomes. Priority areas include detailed analysis of regional healthcare equity mechanisms, investigation of public-private partnership effectiveness in healthcare delivery, and comprehensive assessment of healthcare workforce development strategies. Research on healthcare system resilience to external shocks, including pandemic preparedness and response capacity, represents another critical direction. Furthermore, comparative analysis with other post-Soviet countries implementing similar healthcare reforms could provide valuable insights for policy optimization. The integration of patient-reported outcome measures and healthcare provider satisfaction studies would enhance understanding of reform impact on service quality and professional development.

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ҚАЗАҚСТАН РЕСПУБЛИКАСЫНЫҢ ДЕНСАУЛЫҚ САҚТАУ ЖҮЙЕСІНДЕГІ РЕФОРМАЛАРДЫ ЭКОНОМИКАЛЫҚ БАҒАЛАУ: ҚАЗІРГІ ЖАҒДАЙЫ ЖӘНЕ БОЛАШАҒЫ

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Түйін. Бұл зерттеудің мақсаты Қазақстан Республикасының денсаулық сақтау жүйесі реформаларының кешенді экономикалық бағалауын жүргізу, олардың қазіргі жағдайын талдау және даму болашағын анықтау болып табылады. Зерттеуде жүйелі талдау, статистикалық деректерді өңдеу, салыстырмалы бағалау және теориялық жалпылау әдістері қолданылды. Денсаулық сақтау реформаларын белсенді енгізу кезеңін қамтитын статистикалық көрсеткіштер, саяси құжаттар және сараптамалық бағалаулар зерттелді. Негізгі нәтижелер міндетті әлеуметтік медициналық сақтандыруды енгізу денсаулық сақтау қаржыландыруын 32%-ға арттырғанын, ал халықты қамту 84,7%-ға жеткенін көрсетеді. Денсаулық сақтауды цифрландыру медициналық ұйымдардың 97%-ын бірыңғай ақпараттық жүйеге біріктіруге қол жеткізді, ал азаматтардың 92%-ы электрондық медициналық карталарға ие. Телемедициналық консультациялар пандемия кезеңінде 18 есе артты. Бастапқы медициналық-санитариялық көмекті дамыту отбасылық дәрігерлердің консультацияларын 28%-ға арттыруға әкелді және профилактикалық тексерулермен мақсатты халықтың 89%-ын қамтыды. Өмір сүру ұзақтығы 73,6 жылға дейін артты, нәресте өлімі 1000 тірі туылғанға 7,2-ге дейін төмендеді, ал ерте кезеңдегі қатерлі ісікті анықтау 52,3%-дан 68,7%-ға дейін жақсарды. Алайда денсаулық сақтауға арналған шығыстар ЖІӨ-нің 3,9%-ында қалып отыр, бұл ДДҰ ұсынымдарынан төмен, медициналық қызметтердің қолжетімділігіндегі аймақтық диспропорциялар сақталып отыр (аймақтар арасында дәрігерлермен қамтамасыз етуде 2,7 есе айырмашылық). Ғылыми жаңалық барлық реформа бағыттарын бір мезгілде кешенді сандық бағалауда, нақты аймақтық дисбалансты



анықтауда және Қазақстан контекстінде денсаулық сақтау трансформациясының тиімділігін бағалаудың интеграцияланған жүйесін әзірлеуде жатыр.

Түйінді сөздер: денсаулық сақтау, мемлекеттік басқару, реформалар, телемедицина, Қазақстан Республикасы.

ЭКОНОМИЧЕСКАЯ ОЦЕНКА РЕФОРМ В СИСТЕМЕ ЗДРАВООХРАНЕНИЯ РЕСПУБЛИКИ КАЗАХСТАН: СОВРЕМЕННОЕ СОСТОЯНИЕ И ПЕРСПЕКТИВЫ

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Резюме. Целью данного исследования является проведение комплексной экономической оценки реформ системы здравоохранения Республики Казахстан, анализ их современного состояния и определение перспектив развития. В исследовании применялись методы системного анализа, обработки статистических данных, сравнительной оценки и теоретического обобщения. Изучались статистические показатели, политические документы и экспертные оценки, охватывающие период активного внедрения реформ здравоохранения. Ключевые результаты показывают, что внедрение обязательного социального медицинского страхования увеличило финансирование здравоохранения на 32%, при этом охват населения достиг 84,7%. Цифровизация здравоохранения достигла 97% интеграции медицинских организаций в единую информационную систему, при этом 92% граждан имеют электронные медицинские карты. Телемедицинские консультации увеличились в 18 раз в период пандемии. Развитие первичной медико-санитарной помощи привело к увеличению консультаций семейных врачей на 28% и охвату профилактическими осмотрами 89% целевого населения. Продолжительность жизни увеличилась до 73,6 лет, младенческая смертность снизилась до 7,2 на 1000 живорождений, а выявление рака на ранних стадиях улучшилось с 52,3% до 68,7%. Однако расходы на здравоохранение остаются на уровне 3,9% ВВП, что ниже рекомендаций ВОЗ, при сохраняющихся региональных диспропорциях в доступности медицинских услуг (2,7-кратная разница в обеспеченности врачами между регионами). Научная новизна заключается в комплексной количественной оценке всех направлений реформ одновременно, выявлении конкретных региональных дисбалансов и разработке интегрированной системы оценки эффективности трансформации здравоохранения в контексте Казахстана.

Ключевые слова: здравоохранение, государственное управление, реформы, телемедицина, Республика Казахстан.

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