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The Current State of Human Resources of Healthcare: Problems and Prospects of Development

Saule M. Akhtayeva^{a*}, Elvira B. Tlessova^a, Aigul Zh. Zeinullina^b

^a L.N. Gumilyov Eurasian National University, 2 Satpayev str., Z19A0K6, Astana, Kazakhstan;

^b Shakarim University, 1 Tanirbergenov str., F17H8A6 (071410), Semey, Kazakhstan

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ABSTRACT

One of the most important areas of state policy is to improve the quality of medical services. The issue of staffing becomes relevant. In recent years, there have been certain positive development trends in the dynamics of staffing of the healthcare system. But insufficient staffing of medical organizations remains a problem, which leads to a decrease in the effectiveness and effectiveness of measures aimed at improving the health of the population. The purpose of the work is to study the availability of human resources in healthcare, identify problems and develop measures for improvement. The main tasks - to study the theoretical aspects of the development of personnel policy, the analysis of personnel security, the development of recommendations for improving personnel policy. The object of the study is the healthcare personnel of the Republic of Kazakhstan. The subject of the study is the forecast of the need for medical personnel. Research methods. The following general scientific research methods are used in the work: generalization, statistical methods, comparative and regression analyses. The results. The study analyzed changes in the number of medical personnel, graduates of medical educational programs, the need for specialists was calculated using regression analysis, and the forecast of the need until 2025 was considered. The increase in the number of medical personnel needs is a significant obstacle to the provision of quality services. Conclusion. Based on the conducted research, it is necessary to increase the prestige of the doctor, develop various methods of motivating and stimulating the work of healthcare workers, implement measures to solve social problems, etc

KEYWORDS: Healthcare, Medical Personnel, Staffing, Labor Efficiency, Personnel Policy, Personnel Forecasting, Quality, Mechanism

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* **Corresponding author:** Akhtayeva S.M. - PhD candidate, L.N.Gumilyov Eurasian National University, 2 Satpayev Str., Z19A0K6, Astana, Kazakhstan, 87057984122, e-mail: sauleahtaeva@mail.ru

Денсаулық сақтаудың кадрлық ресурстарының қазіргі жағдайы: даму мәселелері мен перспективалары

Ахтаева С.М.^а, Тлесова Э.Б.^а, Зейнуллина А.Ж.^б

^а Л.Н. Гумилев атындағы Еуразия Ұлттық университеті, көш. Сәтпаев, 2, Z19A0K6, Астана, Қазақстан; ^б Семей қаласының Шәкәрім атындағы университеті, көш. Тәңірбергенов 1, F17H8A6 (071410), Семей, Қазақстан

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ТҮЙІН

Мемлекеттік саясаттың маңызды бағыттарының бірі медициналық қызмет көрсету сапасын жақсарту болып табылады. Кадрлармен қамтамасыз ету мәселесі өзекті болып отыр. Соңғы жылдары денсаулық сақтау жүйесін кадрлармен қамтамасыз ету серпінінде дамудың белгілі бір оң тенденциялары бар. Бірақ медициналық ұйымдардың штаттық құрамының жеткіліксіздігі проблема болып қала береді, бұл халықтың денсаулығын нығайтуға бағытталған іс-шаралардың тиімділігі мен нәтижелілігінің төмендеуіне әкеледі. Жұмыстың мақсаты денсаулық сақтаудағы кадрлық ресурстармен қамтамасыз етілуді зерделеу, мәселелерді анықтау және жақсарту жөніндегі іс-шараларды әзірлеу болып табылады. Зерттеу объектісі Қазақстан Республикасының денсаулық сақтау саласындағы кадрлары болып табылады. Зерттеу пәні медициналық кадрларға қажеттілікті болжау. Зерттеу әдістері. Жұмыста келесі жалпы ғылыми зерттеу әдістері қолданылады: жалпылау, статистикалық әдістер, салыстырмалы және регрессиялық талдау. Зерттеу нәтижелері. Зерттеу медициналық персоналдың, медициналық білім беру бағдарламаларының бітірушілерінің санына, өзгеру динамикасына, регрессиялық талдауды қолдана отырып мамандарға деген қажеттілікке талдау жүргізілді, сондай-ақ 2025 жылға дейінгі қажеттіліктің болжамы есептелді. Медициналық кадрларға қажеттілік санының артуы сапалы қызмет көрсетуге айтарлықтай кедергі болып табылады. Қорытынды. Жүргізілген зерттеу негізінде дәрігердің беделін арттыру, денсаулық сақтау қызметкерлерінің еңбегін ынталандырудың түрлі әдістерін әзірлеу, әлеуметтік мәселелерді шешу жөніндегі іс-шараларды іске асыру және т.б. іс шаралар қажет.

ТҮЙІН СӨЗДЕР: денсаулық сақтау, медициналық персонал, кадрлық қамтамасыз ету, еңбек тиімділігі, кадр саясаты, кадрлық болжау, сапа, механизм

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* **Хат-хабаршы авторы:** Ахтаева С.М. – PhD докторант, Л.Н. Гумилев атындағы Еуразия Ұлттық университеті, көш. Сәтпаев 2, Z19A0K6, Астана, Қазақстан, 87057984122, e-mail: sauleahtaeva@mail.ru

Современное состояние кадровых ресурсов здравоохранения: проблемы и перспективы развития

Ахтаева С.М.^{а*}, Тлесова Э.Б.^а, Зейнуллина А.Ж.^б

^а Евразийский Национальный университет имени Л.Н. Гумилева, ул. Сатпаева-2, Z19A0K6, Астана, Казахстан; ^б Университет имени Шакарима города Семей, ул. Танирбергенова 1, F17H8A6 (071410), Семей, Казахстан

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АННОТАЦИЯ

Одним из важнейших направлений государственной политики является улучшение качества медицинских услуг. Актуальным становится вопрос обеспеченности кадрами. За последние годы в динамике обеспеченности кадрами системы здравоохранения есть определенные положительные тенденции развития. Но недостаточная укомплектованность штата медицинских организаций остается проблемой, что ведет к снижению эффективности и результативности мероприятий, направленных на укрепление здоровья населения. Целью работы является изучение обеспеченности кадровыми ресурсами в здравоохранении, выявление проблем и разработка мероприятий по улучшению. Основными задачами исследования являются изучение теоретических аспектов развития кадровой политики, анализ кадровой обеспеченности, разработка рекомендаций по улучшению кадровой политики. Объектом исследования являются кадры здравоохранения Республики Казахстан. Предметом исследования является прогноз потребности в медицинских кадрах. Методы исследования. В работе использованы следующие общенаучные методы исследования: обобщение, статистические методы, сравнительный и регрессионный анализы. Результаты исследования. В исследовании проведены анализ изменения численности медицинского персонала, выпускников медицинских образовательных программ, потребность в специалистах с применением регрессионного анализа, а также рассчитан прогноз потребности до 2025 года. Повышение числа потребности в медицинских кадрах является значительным препятствием для оказания качественных услуг. Заключение. На основании проведенного исследования необходимо повысить престиж врача, разработать различные методы мотивации и стимулирования труда работников здравоохранения, реализация мероприятий по решению социальных проблем и др.

КЛЮЧЕВЫЕ СЛОВА: здравоохранение, медицинский персонал, кадровое обеспечение, эффективность труда, кадровая политика, кадровое прогнозирование, качество, механизм

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* **Корреспондирующий автор:** Ахтаева С.М. – PhD докторант, Евразийский Национальный университет имени Л.Н. Гумилева, ул. Сатпаева-2, Z19A0K6, Астана, Казахстан, 87057984122, e-mail: sauleahtaeva@mail.ru

Introduction

One of the main parts of the state's socio-economic development is the development of the health system, which considers the well-being of human capital. Research and study of the works of domestic and foreign scientists confirm that the components of human capital and their functioning are health, education and culture, and health is fundamental. Namely, from the state of human resources, it is possible to determine the effectiveness of activities, the quality of services provided and, in general, the work of healthcare.

To solve the problems that have developed in healthcare, it is necessary to re-evaluate, study, and radically change healthcare workers' accepted methods of planning, management, training and remuneration. Everyone knows that the quality of services provided in the healthcare system depends on factors, one of which is the provision of highly qualified personnel and, with the development of digital medicine, the availability of more modern and productive equipment and technology and others.

There are many problematic issues in healthcare personnel policy, including personnel management, old principles of work, lack of security and shortage of specialists in healthcare, healthcare management, etc. Putting human resources issues on the political agenda and developing a clear policy in the field of human healthcare resources is a way to clarify goals and priorities in this area, rally all interested sectors around these goals and promote a more integrated and systematic approach to human resources management. In the long term, this opens up opportunities for developing healthcare systems that better meet the expectations and needs of the population (Sarinov & Kupeshova, 2021). In accordance with this, the purpose of the study is to study human resources, their availability and development prospects.

One of the essential goals of the state is to protect the population's health. Moreover, for its implementation, the following tasks are being formed in healthcare: increasing affordable quality medical services; ensuring the sanitary and epidemiological well-being of the population; implementing state programs aimed at creating conditions and reducing negative factors, reducing their impact on a person.

The solution to urgent problems of personnel policy is possible with the improvement of personnel processes in medical organizations and in general in the healthcare system. Personnel processes and relations as an object of state

personnel policy represent a set of changes in the personnel sphere, including changes in personnel policy and the personnel management system of medical organizations of various profiles (Kaprin, 2012).

Over the 30 years of Kazakhstan's independence, significant changes have taken place in the healthcare system: ownership forms, material and technical base, training and retraining of medical personnel, management forms, etc., have changed. In this direction, there is a constant search for organizational and economic mechanisms for improving the healthcare system. The legislative base of normative legal acts aimed at developing and improving the state system of medical services and health care management has been adopted and created. A compulsory medical insurance system has been introduced, and the private healthcare sector is expanding.

To date, the main directions of healthcare development are medical activities, public health protection, compulsory social health insurance, circulation of medicines and medical devices, educational and scientific activities in the field of healthcare, standardization of medical services, digitalization of healthcare, maternal and child health, investment policy, project and corporate governance. The majority of unresolved issues and problems remain in the healthcare of Kazakhstan: the number of deaths, infant mortality; an increase in the number of socially significant diseases; lack of funding for the industry; staff turnover and a decline in the prestige of medical work, lack of qualified personnel, etc.

Literature review

While conducting research in the field of human resources in healthcare, the works of domestic and foreign scientists were studied. Thus, Kvachakhia (2018), in his article «An economic approach to revealing the essence of human potential in the healthcare system» wrote about the potential of a medical worker and noted that the labor potential of a medical worker is an opportunity, skills, abilities and knowledge that are accumulated and formed by an individual throughout his life is realized in labor behavior that determines the quality medical care (Kvachakhia, 2018). In his work, the author notes that in order to receive high-quality medical care it is necessary to pay attention not only to the training of personnel but also to create conditions for the realization of their skills and abilities. Also, the author noted that the outflow of

medical personnel from peripheral areas plays an important role.

In their study, the authors Reprintseva and Sergeeva (2017) note that the effective use of medical personnel not only increases the availability of medical care but also affects its quality. The fulfilment by a medical worker of labor and time standards is one of the assessments of the effectiveness of the use and management of labor resources, as well as the rational expenditure of financial resources to pay wages for the completed volumes of medical services rendered (Reprintseva & Sergeeva, 2017).

Burdastova (2020) has seen the problem of potential personnel development in the following: “Given the task of providing the healthcare sector with highly qualified personnel, as well as replenishing the staff with young specialists, we can say that public health is directly dependent on their competence. In addition, the issue of reducing staff turnover and retaining young professionals in the workplace is important, which, among other things, can be solved by the mentoring system in a medical organization”. Of course, it is essential to renew the mentoring system, but in our opinion, moving from mentoring to mentoring and coaching is necessary. These management methods aim to unlock the potential of a young specialist as much as possible and achieve total efficiency in work. Today’s management should be directed from managing human resources to managing human capabilities and personnel (Burdastova, 2020).

It is no secret that in recent years there has been a dynamic outflow of highly specialized personnel in healthcare, as our domestic scientists note, “Possible reasons for the outflow of medical personnel to private structures are the high workload in public health organizations and low wages compared to the private sector. At the same time, the overflow is observed among specialists with a high level of professionalism. Accordingly. Measures are required to revise the remuneration system at the management level of state medical organizations and conduct a fair personnel policy with high motivation” (Sultangaziev et al., 2018).

“The analysis of the provision of human resources is the core of the organization’s personnel policy in the healthcare system of Kazakhstan, which ensures high final results of the activities of medical organizations and is already the subject of the improvement of the national program and strategic documents”, Legostaeva and Jazykbaeva (2021) note in their work. They also note that the personnel policy carried out in healthcare

organizations should be based on theoretical and practical analysis, during the mandatory development of principles and methods of work, as well as strategic planning.

Koichubekov, Kharin, Sorokina, Korshukov and Omarkulov (2021), in their work «Modeling of system dynamics for predicting the workforce of general practitioners in Kazakhstan» noted COVID-19 pandemic revealed several health problems in many countries of the world, including a general shortage of doctors in primary care this problem is also relevant for Kazakhstan. The situation is aggravated by the fact that until recently, the approaches used in the republic to forecasting and planning the health workforce were ineffective. Only a third of graduates of medical universities in Kazakhstan decide to work in the PHC system. The government must develop measures to stimulate and support young doctors aspiring to become general practitioners (Koichubekov et al., 2021).

The authors also discuss the need for an innovative approach to selecting healthcare personnel that will consider a commitment to public service, a conscientious attitude to work, honesty, fairness, etc. The article by Suciú et al. (2017) conducts research in the field of identifying the causes of the outflow of specialists from Romania. The outflow of personnel is very relevant for Kazakhstan. There are three main arguments used by physicians in favour of migration: low salary, the lack of social status and the continuous deterioration of the public perception, constant lack of government interest for investment, and appropriate public policies in the healthcare sector (Suciú et al., 2017). The authors rightly point out that medical personnel’s salary and social working conditions are the factors that retain personnel.

During the pandemic, we became convinced of the importance of cohesion and commitment to health workers’ service. Thus, several authors in their work note that “in a situation of the mass spread of infectious diseases (especially in a pandemic form) the ability of outpatient medical institutions to take on part of the burden of solving patients’ health problems is extremely important. Where there is well-developed primary health care prepared to deal with a pandemic, enormous pressure on hospitals can be prevented. The leaders in the healthcare system are, of course, medical professionals. The number of health workers who are currently leading the main fight against the COVID-19 pandemic should be institutionally and systematically planned” (Cilovic-Lagarija et al., 2021).

Based on the above, it can be concluded that “capacity development is crucial at all levels of management of the healthcare system to ensure reliable policy development and monitoring, the transformation of the organization of medical care in healthcare organizations and involvement of healthcare workers to influence their working conditions” (Denis et al., 2021).

Rój (2019), in her work «Improvement of Equality in the Distribution of Human Resources in Polish Healthcare», rightly noted that it is healthcare personnel who play a huge role in the sustainable development of the state human resources are the main contribution of healthcare systems, therefore, the equitable distribution of human resources in the healthcare sector is still crucial for achieving progress in achieving the goal of universal health coverage and, consequently, sustainable development.

The importance of healthcare personnel in the development of the state is also written in the work of the authors in the article “Priorities and challenges for health leadership and workforce management globally: a rapid review”. Some researchers noted that contemporary challenges and emerging needs of the global health management workforce orient around efficiency-saving, change and human resource management. The role of health managers is evolving and expanding to meet these new priorities. Ensuring contemporary health leaders and managers have the capabilities to respond to the current landscape is critical (Figueroa et al., 2019).

Having studied the works of foreign and domestic scientists, we concluded that staffing in healthcare affects not only the nation’s health but also the state’s socio-economic development. Also, the literature review determined the degree of study of human resources in healthcare by domestic and foreign scientists. In addition, we were able to determine the target direction of the study, as well as the choice of methods for assessing staffing in the healthcare of the Republic of Kazakhstan.

Materials and methodology

In the research process, the article’s authors used such methods as theoretical, economic and statistical. The graphical method of tools, analysis of statistical indicators, indicators of dynamics series and multiple regression analysis were used when using economic and statistical methods.

In the study to assess the staffing of healthcare, the number of doctors and paramedical personnel for the period from 2016 to 2020, as

well as the same data in the context of rural and urban areas, information on the registration of medical personnel in the National System of Human Resources Accounting, analysis of the dynamics of graduates of medical universities, as well as educational levels for 2021. During the analysis and evaluation, the sources of information were the data of the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, the RSE at the Salidat Kairbekova National Scientific Center for Health Development of the Ministry of Health of the Republic of Kazakhstan. The “Analysis Package” add-ons were used to calculate the forecast, according to the methodological recommendations of the authors Turumbetov et al. (2015). In forecasting, regression analysis is aimed at solving the following tasks. First, it is the choice of independent variables that affect the dependent variable based on which the form of the regression equation is chosen. Secondly, statistical data processing methods evaluate and determine the obtained parameters.

When reviewing the scientific literature on the methodology for calculating the need for personnel, we did not see any specific model that would be widely used in healthcare. Constant monitoring and forecasting of personnel in healthcare using progressive methods would lead to the timely identification of a shortage of personnel or an excess of them. They would give an opportunity to respond to the current situation and solve the problem. In accordance with this, the above methodology for forecasting human resources in healthcare is one of the methods that give the most reliable forecast, taking into account the influence of various factors. The methodology is also convenient because it is possible to calculate the forecast in the context of specialities, regions and medical organizations.

Results

Human resources are the primary health resources that ensure the effectiveness and efficiency of healthcare activities. The quality of medical services depends on medical workers’ activities, knowledge, skills, etc. Today, the world community recognizes the personnel crisis. A severe problem of personnel development is mainly related to the shortage of medical personnel who directly provide primary medical care. At the same time, it should be noted that the bulk of medical workers have recently been concentrated in megacities and cities, as well as the

saturation of the labor market with highly specialized medical workers, etc.

The lack of medical personnel has an adverse impact on the activities of the healthcare system, which in turn leads to a decrease in the quality of medical care.

Therefore, we will consider and analyze the number and availability of healthcare institutions with personnel (see Figure 1).

According to Figure 1, there is a decrease in the number of doctors in Kazakhstan in 2020 compared to 2017 data by 1.7 people per 10 thousand population. Reduction of the number of

doctors by 10 thousand. The population is observed in the cities of Almaty and Shymkent. The most significant number of doctors is concentrated in the city of Nur-Sultan – 52.9 people, 40.7 people per 10 thousand population in Almaty city and 32.4 people in the East Kazakhstan region.

Figure 2 shows the number of nursing staff.

In general, there is an increase in the number of average medical personnel, in 2020, a decrease is observed in Zhambyl, and Mangystau regions, in the cities of Astana, Almaty and Shymkent. In 2020, the most significant increase occurred in Almaty, North Kazakhstan, Mangystau and East Kazakhstan regions.

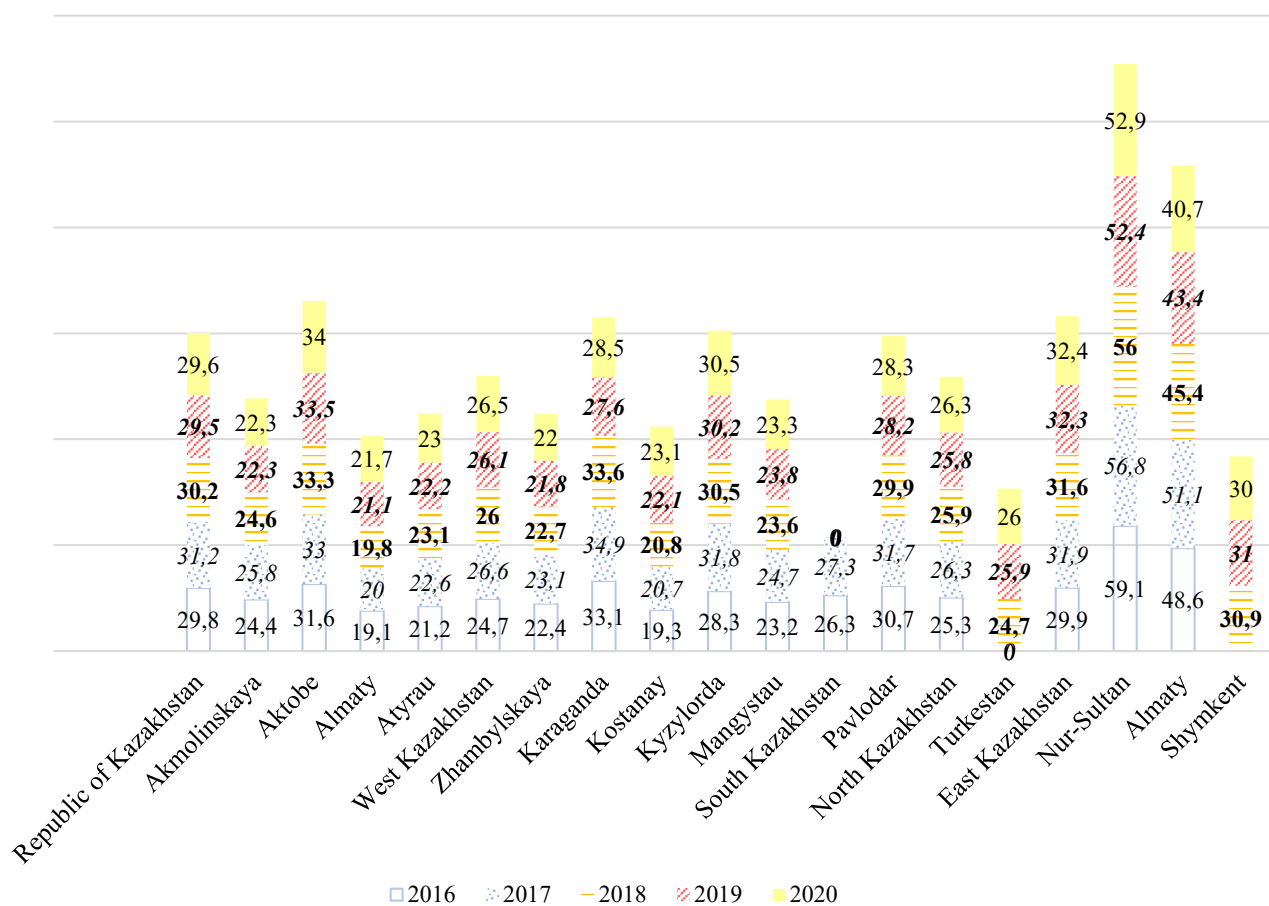


Figure 1 – Dynamics of the number of doctors of all specialties (without dentists) in the Ministry of Education and Science system per 10,000 of the population

Note: compiled from the source Statistical collection (2021)

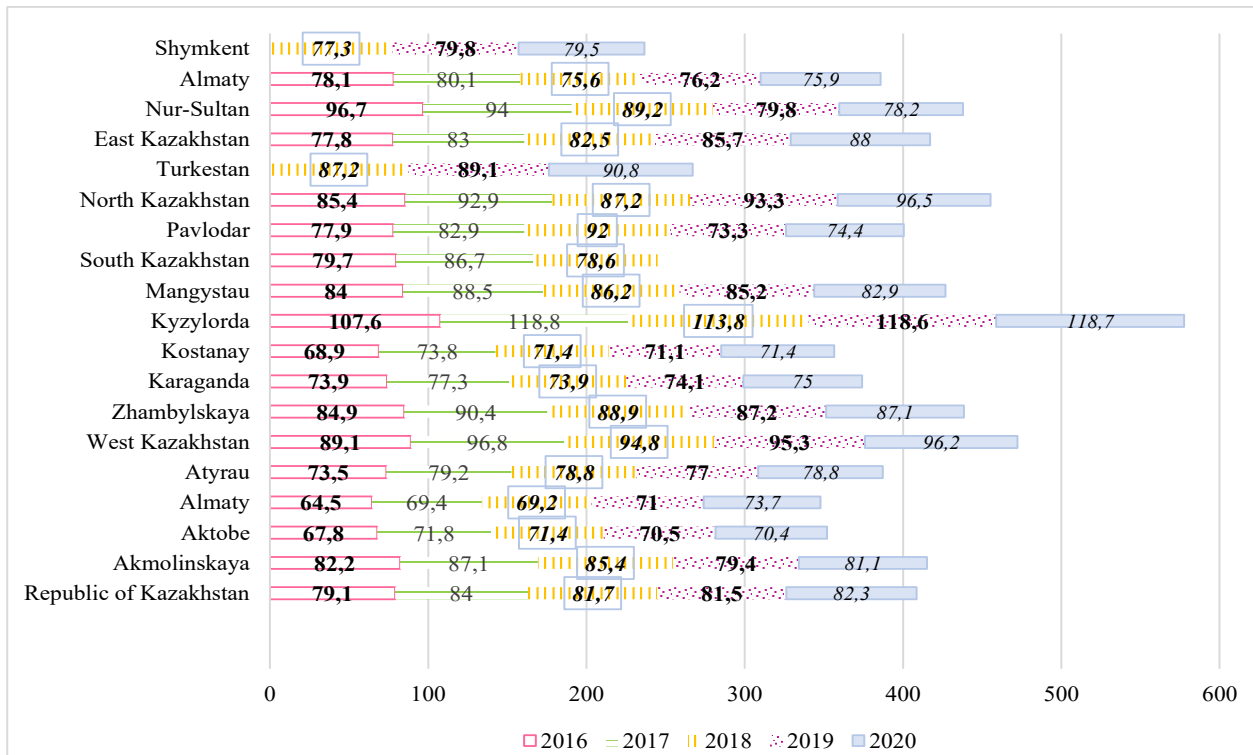


Figure 2 – Dynamics of the number of secondary medical personnel (without dental) in the system of the Ministry of Health per 10,000 people of the corresponding population

Note: compiled from the source Statistical collection (2021)

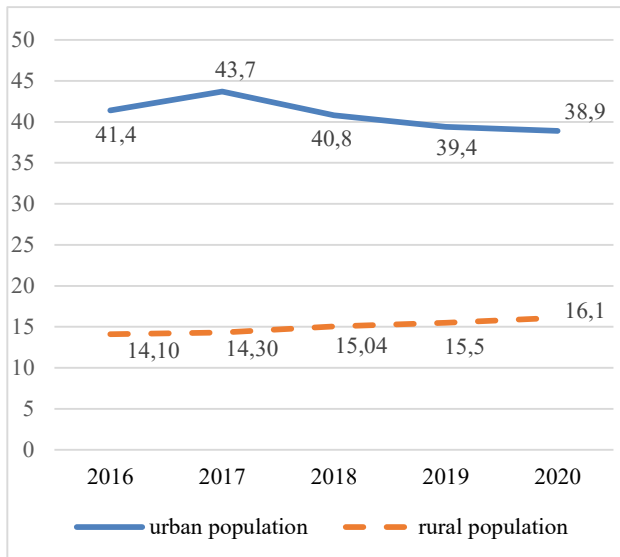


Figure 3 – Dynamics of the number of doctors of all specialties (without dentists) by city and village per 10,000 population

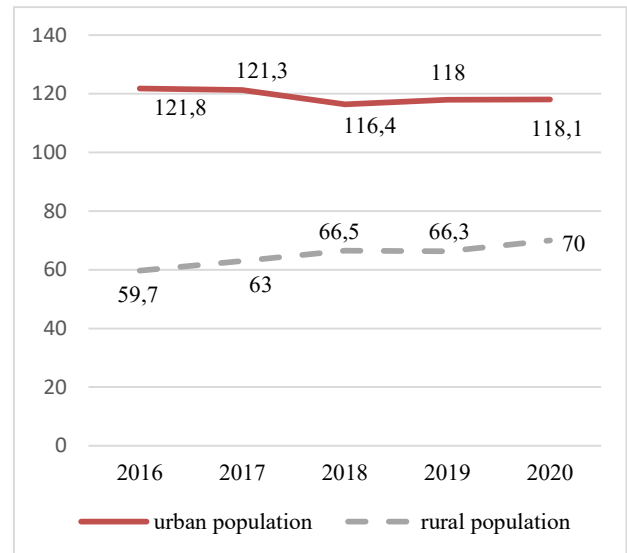


Figure 4 – Dynamics of the number of medical personnel in the context of cities and villages per 10,000 population

Note: compiled from the source Bureau of National Statistics (2021)

Thus, considering the dynamics of the number of doctors and paramedical personnel in the context of urban and rural areas per 10,000 people, we see that the number of doctors in urban areas has been decreasing over the past four years, while in rural areas, on the contrary, there has been an increase. The same pattern is observed for average medical personnel, with the exception of doctors in urban areas, compared with the figures of 2018, they increased by 1.7 people per 10,000 people of the population.

In Kazakhstan, there is a decrease in the provision of average medical personnel compared to world indicators. In order to develop the healthcare system in the country, a number of programs have been adopted, such as the “Strategic Development Plan of Kazakhstan until 2020”, which considers the following areas of development: improving the system of financing and management in healthcare, improving the provision of medical services, increasing the availability and quality of medicines, forming a healthy lifestyle (Decree of the President of the Republic of Kazakhstan from February 1, 2010, No. 922). Further, the “Strategic Plan for the Development of Kazakhstan until 2025” was adopted. However, none of these documents addressed the issues of personnel policy in healthcare, the quality of training and retraining of personnel.

Recently, a number of programs have been adopted for the development of the healthcare system in Kazakhstan: «Strategic Plan for the Development of Kazakhstan until 2020», which outlined the directions of development: improving the system of financing and management of

healthcare, provision of medical services, availability of high-quality medicines, as well as the formation of a healthy lifestyle is presented in the Decree of the President of the Republic of Kazakhstan from On February 1, 2019, No. 922 Further, the «Strategic Development Plan of Kazakhstan until 2025» was approved. At the same time, it should be noted that the above documents did not address the issue of personnel policy of healthcare, and training of human resources.

In 2018, the Decree of the President of the Republic of Kazakhstan dated February 15, 2018 No. 636 approved the National Development Plan of Kazakhstan until 2025, it is in this normative document that measures the development of human resources of the health and education system are considered.

In accordance with paragraph 3 of Article 266 of the Code, determining the compliance of an individual’s qualifications with qualification requirements and standards in the field of healthcare, as well as determining readiness for professional activity in the field of healthcare, including readiness for clinical or pharmaceutical practice, or activities in the field of sanitary and epidemiological welfare of the population of a person who has a certificate of a specialist in the field of healthcare, they are subject to mandatory registration in the National Human Resources Accounting System and only upon registration the certificate is valid.

Consider the data on the registration of medical personnel in the human resources accounting system (Figure 5).

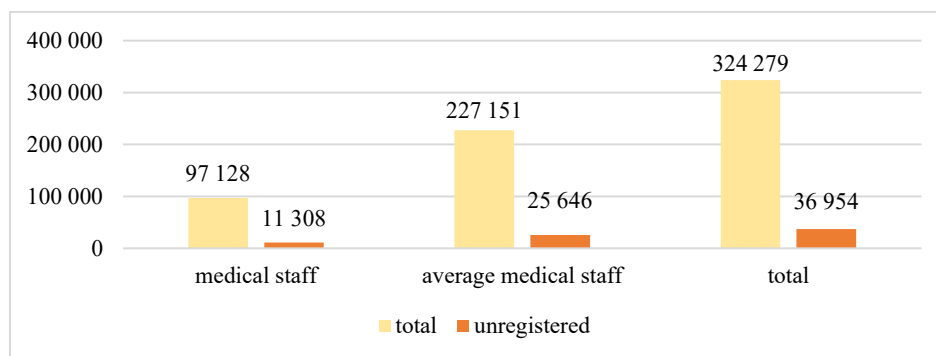


Figure 5 – Information on the registration of medical personnel in the National Human Resources Accounting System

Source: compiled by the authors

According to the data of the Resource Management System, the total number of medical personnel is 324279 people, of which 36954 people are unregistered. Out of the total number of medical personnel, 97,128 people are medical personnel, and 11,308 people are unregistered, which is 12% of the number of doctors. The average medical staff was 227,151 people, of which 11,29% or 25646 people were unregistered. In our opinion, it is necessary to monitor certification since there is a possibility that medical personnel are carrying out their activities without permits. Another problem in healthcare is the shortage of personnel, which is calculated based on the difference between staffing units and occupied positions.

So, as of January 1, 2022, 262200 units of medical personnel are working 75% of them in urban areas and the remaining 25%, respectively, in rural areas. The security per 10000 population was 87,3%, about 70% is a shortage in average medical workers, and the remaining 17% are

doctors. One of the positive aspects is that over the past five years, the ratio of doctors to nursing staff has been increasing annually and in 2020 amounted to 2,78.

The shortage of doctors amounted to 3,931 people. Based on the shortage, many medical personnel work by combining positions, which leads to an additional burden and a decrease in the quality of services provided.

One of the indicators affecting the availability of personnel in healthcare is the training of personnel and their annual graduation, so let's consider the number of graduates of medical specialties over the past three years.

Five medical universities with state participation, three private universities, five faculties as part of multidisciplinary educational organizations and 13 scientific and research centres are engaged in training personnel in the healthcare field.

The number of university graduates over the past three years is shown in Figure 6.

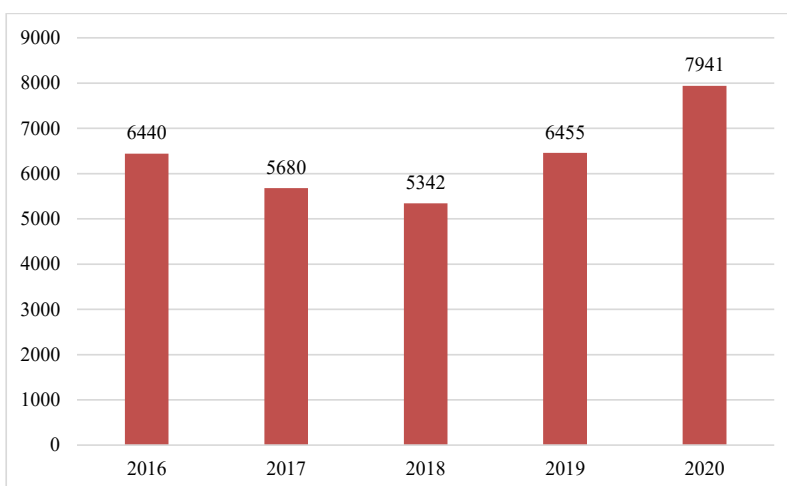


Figure 6 – Dynamics of graduates of medical universities

Source: compiled by the authors by source Bureau of National Statistics (2021)

According to the figure, it can be seen that over the past year, the number of graduates has increased by 1,486 people. At the same time, the number of graduates does not cover the shortage of personnel. The following is information on graduates and educational levels. The total number of graduates was 7941 graduates, including 5580 undergraduate graduates, 1611 residency graduates, 375 masters and 375 doctoral students.

The need for medical personnel is one of the most critical problems. Therefore, we will consider the regression analysis and calculate the forecast for personnel need until 2025. For the analysis, we use the population, the number of graduates of medical universities and the number of doctors per 10 thousand people in the population.

Table 1. The output of regression statistics

Multiple R	0,993815117
R-square	0,987668487
Normalized R – square	0,950673948
Standard error	1181,663942
Observations	5

Table 2. Results of the analysis of variance

	df	SS	MS	F	Significance of F
Regression	3	1,12 E+08	37278767	26,69768332	0,14109874
Remains	1	1396330	1396330		
Total	4	1,13E+08			

Table 3. Regression analysis results

	Coefficients	Standard error	t - statistics	P - Value	Lower 95%	Upper 95%	Lower 95%	Upper 95%
Y - intersection	-257834,5	60840,76	-4,23	0,147523	-1030889,6	515220,6	-1030890	515220,6
Variable X 1	-1210,028	1064,85	1,136	0,4594270	-14740,22	12320,17	-14740,2	12320,17
Variable X 2	-2,512583	1,571634	-1,59	0,3558465	-22,482	17,45692	-22,4821	17,45
Variable X 3	0,0179997	0,003464	5,196	0,1210322	-0,026	0,062013	-0,02601	0,062

According to calculations, the multiple correlation coefficient is 0,993, and the determination coefficient is 0,987, confirming the chosen model's correctness and the high relationship between the factors.

Using the results of the regression analysis, we will calculate the predicted values of the needs of medical personnel, the results are presented in Figure 7.

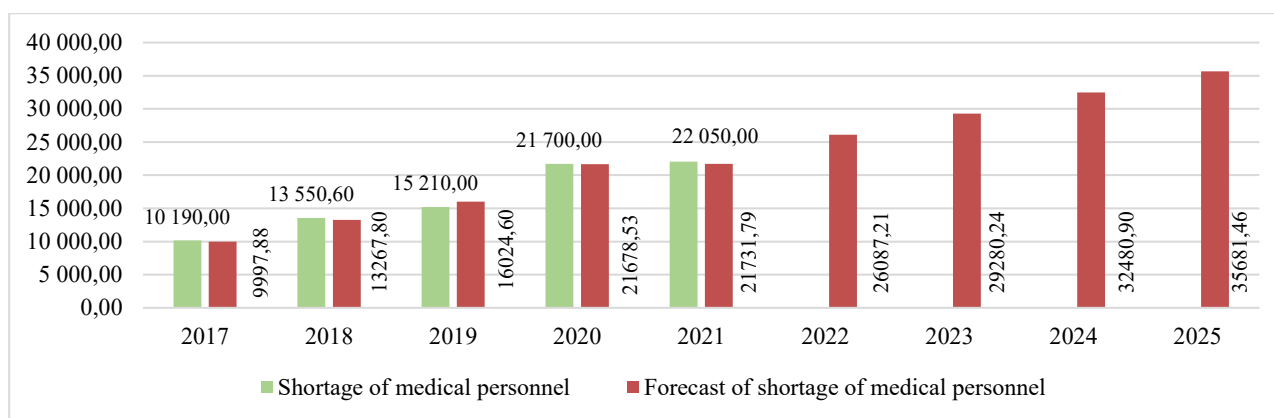


Figure 7 – Forecast value of the need for medical personnel

Note: calculated by the authors

As can be seen from the calculated data, an increase in the need for personnel is predicted. The ability to effectively and competently manage human resources, the state of the material and technical base of medical institutions, and, significantly, the availability of qualified employees with specialized knowledge affects the quality of medical care and its availability (Strategic plan of the Ministry of Health of the Republic of Kazakhstan for 2011 – 2015, 2011).

Discussions

The literature review several problems related to the development of personnel in healthcare and their potential. The issues of security and staffing in this area are still open. On the part of the State, various measures are being taken to improve the personnel policy.

The coronavirus pandemic infection has made its own adjustments to the educational process, because of the situation in the country, students were forced to study online and in a combined form. The curricula of educational programs are being updated, and disciplines have been introduced into the programs, including biological safety and protection issues.

In 2021, several measures were carried out for personnel development in healthcare. Thus, the Ministry of Health organized and conducted additional seminars and lectures on epidemiology, pathogenesis, clinic, diagnostics, differential diagnosis and treatment of COVID-19 coronavirus infection. Educational programs have been updated, and new educational programs “Epidemiology”, “Hygiene”, “Kinesotherapy”, “Ergotherapy”, “Nuclear Medicine”, “Geriatrics” have been developed.

During the reporting year, training courses related to the pandemic were conducted for 60 thousand of medical workers. Work has also been carried out on the training and retraining of more than 15 thousand medical workers, according to the results of which 150 epidemiologists, 100 infectious diseases specialists and 165 emergency medical doctors will be replenished in the healthcare sector.

Studying the staffing of the healthcare system, we were convinced that the number of graduates of medical universities is growing dynamically, but the provision of medical workers remains insufficient. For a more complete picture, the predicted values in medical personnel were calculated. To calculate the forecast, the following model was used, namely, to identify the impact of the population, the number of

graduates of medical universities and the number of doctors per 10,000 people in the population on the need for doctors. For this purpose, correlation and regression analysis was applied. This analysis helps to solve a number of problems that cannot be solved using other methods and the main advantage of this method is that it increases the degree of accuracy. And another advantage is to identify the relationship between the factors. The results of the analysis revealed that with the current trend of population growth, the number of doctors and university graduates, the need for medical personnel is also increasing. In this connection, it is necessary to work towards developing personnel policy in healthcare.

Conclusions

Based on the conducted research, the following conclusions can be drawn.

1. In order to solve the problems of the healthcare system, it is necessary first of all to improve regulatory legal acts and personnel policy tools. To do this, it is necessary to study the international experience of the healthcare system, analyze all regulatory documents, including paying special attention to the issues of personnel planning and forecasting, management and incentives. At the same time, it is necessary to revise the organization of the process of providing medical care and actively develop professions related to medicine but not medicine respectively, a revision of the staff structure is necessary. It is also necessary to revise the current regulation in accordance with the level of technology development.

2. Based on professional standards, it is necessary to develop educational programs for colleges and universities aimed at practice orientation. In addition, it is necessary to expand training within the framework of grant funding and targeted training in care professions.

3. The next direction should be implemented in terms of the modernization of human resource management centres and the formation of personnel services with new competencies. In this direction, it is necessary to implement the training of managers in the healthcare system in economics and management, as well as the inclusion of university components «Economics» and «Management» in educational programs.

4. It is necessary to work towards increasing the prestige of the doctor, improving the system of motivation and stimulation of health workers. To this end, there was an instruction of the Head of State to the people of Kazakhstan dated

September 01, 2020, which proposed a gradual increase in the salaries of doctors and secondary medical workers.

5. It is necessary to solve social problems to ensure a high standard of living for medical workers. This requires the implementation of programs for the construction of office housing for medical workers.

6. It is necessary to continue the work of digitalization of the healthcare system as a whole. In accordance with this, constantly monitor educational programs with their constant updating, considering the development of world medicine and technology.

7. And as the Head of State announced in his following Message (dated September 01, 2022) the people of Kazakhstan need to find new approaches to financing healthcare, comprehensive improvement of medical infrastructure, and developing telemedicine to help residents of remote regions. In addition, all these areas of development are directly related to the improvement of the training system and the provision of personnel.

In order to increase the competitiveness of domestic healthcare, it is necessary to consistently improve the system of training doctors through the involvement of foreign scientists in training courses and the exchange of experience and knowledge.

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Information about the authors

***Akhtayeva S.M.** – PhD student, L.N. Gumilyov Eurasian National University, Astana, Kazakhstan, e-mail: sauleahtaeva@mail.ru, ORCID ID: <https://orcid.org/0000-0001-6369-3690>

Tlessova E.B. – Candidate of Economic Sciences, Associate Professor of the Department of Economics, L.N. Gumilyov Eurasian National University, Astana, Kazakhstan, e-mail: t.ilvira@mail.ru, ORCID ID: <https://orcid.org/0000-0001-7057-0461>

Zeinullina A.Zh. – Candidate of Economic Sciences, Associate Professor, Shakarim University, Semey, Kazakhstan; e-mail: aigul-zeinullina@mail.ru, ORCID ID: <https://orcid.org/0000-0002-4787-4966>

Авторлар туралы мәліметтер

***Ахтаева С.М.** – PhD докторант, Л.Н. Гумилев атындағы Еуразиялық ұлттық университеті, Астана, Қазақстан, e-mail: sauleahtaeva@mail.ru, ORCID ID: <https://orcid.org/0000-0001-6369-3690>

Тлесова Э.Б. – экономика ғылымдарының кандидаты, «Экономика» кафедрасының қауымдастырылған профессоры, Л.Н. Гумилев атындағы Еуразия ұлттық университеті, Астана, Қазақстан, e-mail: t.ilvira@mail.ru, ORCID ID: <https://orcid.org/0000-0001-7057-0461>

Зейнуллина А.Ж. – экономика ғылымдарының кандидаты, қауымдастырылған профессоры, Семей қаласының Шәкәрім атындағы университеті, Семей, Қазақстан, e-mail: aigul-zeinullina@mail.ru, ORCID ID: <https://orcid.org/0000-0002-4787-4966>

Сведения об авторах

***Ахтаева С.М.** – PhD докторант, Евразийский национальный университет им. Л.Н. Гумилева, Астана, Казахстан, e-mail: sauleahtaeva@mail.ru, ORCID ID: <https://orcid.org/0000-0001-6369-3690>

Тлесова Э.Б. – кандидат экономических наук, ассоциированный профессор кафедры «Экономика», Евразийский национальный университет им. Л.Н. Гумилева, Астана, Казахстан, e-mail: t.ilvira@mail.ru, ORCID ID: <https://orcid.org/0000-0001-7057-0461>

Зейнуллина А.Ж. – кандидат экономических наук, ассоциированный профессор, университет им. Шакарима города Семей, Семей, Казахстан, e-mail: aigul-zeinullina@mail.ru, ORCID ID: <https://orcid.org/0000-0002-4787-4966>