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*Descriptive overview*

# Comparative Analysis of Primary Health Care Organization Models: Global Experience and the Republic of Kazakhstan

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**Abstract**

*At present, the Republic of Kazakhstan is facing an increase in chronic diseases and an aging population, which presents new challenges to the healthcare system. A comparative analysis of primary health care organization models based on global experience and the experience of the Republic of Kazakhstan can contribute to the improvement of the primary health care system, increasing its accessibility and quality, and improving the health of the country's population.*

*The purpose of this study is to evaluate and compare the primary health care systems of leading countries to improve the understanding and effectiveness of population health care at the global level.*

*In recent years, significant achievements have been observed in global health, such as an increase in life expectancy, a decrease in child mortality, and increased access to drugs and vaccines. However, XXI century healthcare systems require innovative approaches and significant investments to overcome challenges such as aging populations and the growth of chronic diseases. In this context, primary health care becomes a key component of sustainable health system development, playing an important role in the prevention, diagnosis, and treatment of common diseases. The importance of a comparative analysis of primary health care organization models in different countries lies in identifying unique features, achievements, and barriers of each. Through analysis and research, effective strategies can be developed to improve population health and increase accessibility and quality of medical care, providing a basis for the development of effective public health strategies.*

*Keywords: primary health care, international health care models, life expectancy, disease prevention.*

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## Introduction

Primary health care (PHC) is a comprehensive approach to health care that aims to achieve the best possible level of health and well-being for everyone in society. This is achieved by addressing the health needs of the population early, from prevention to treatment and palliative care. PHC comprises three key components: comprehensive health services, intersectoral action to address a wide range of health determinants, and active community involvement that strengthens the autonomy and capacity of the population to care for their own health [1-4].

PHC is based on the principles of social justice, equity and respect for the rights of every individual to achieve maximum health. The approach focuses on effective, universal health coverage, with particular attention to the quality of care provided at the primary level [5].

However, global challenges such as an ambiguous understanding of the quality of health services, mismatches between national strategies and local realities, and unrelated efforts to measure and improve indicators make it difficult to improve the quality of PHC. This requires an integrated, multimodal approach that recognizes the specificities of local contexts and integrates effective strategies at all levels of health care, supported by evidence, innovation and experience at the international level.

Thus, PHC is the foundation for improving the quality of care and the health of the population, but its successful implementation depends on the ability of the health system to adapt to changing conditions and integrate effective strategies at different levels and in different contexts [6].

The purpose of this study is to evaluate and compare the PHC systems of leading countries to improve the understanding and effectiveness of population health care at the global level.

## Search Strategy

To conduct a comparative analysis of primary healthcare organization models in different countries, a literature search strategy was developed. The literature search was conducted using databases such as PubMed, Cochrane Library, Google Scholar, and Web of Science.

Selection of Keywords: Keywords related to the research topic were selected for the literature search. The keywords were divided into three groups: Primary Healthcare, organization models, countries.

The search used keywords divided into three groups and was conducted in article titles, abstracts, and keywords. After the initial search, 80 articles were selected. These articles were then filtered based on selection criteria, and 45 articles were chosen for further analysis.

The literature analysis aimed to identify the unique features, achievements, and obstacles of primary healthcare organization models in different countries. The analysis included a comparative review of these models, conducting a systematic literature review, and identifying best practices and recommendations to improve the PHC system in the Republic of Kazakhstan.

## International experience of Primary health care models

PHC is a comprehensive approach to public health, with primary care being one of its main components; however, the understanding of PHC varies across countries and the process of defining and theorizing PHC is still ongoing [5-7]. Barbara Starfield's seminal works, the Primary Health Care Activity Monitor for Europe (PHAMEU), and Quality and Costs of Primary Care in Europe (QUALICOPC) have contributed to the exploration of what constitutes a "good" PHC. Some countries, such as the USA, UK, Australia, and Canada, have made significant strides in ongoing PHC research, with multidisciplinary teams now conducting research at the PHC level [8-9]. The U.S. health maintenance organization (HMO) and comprehensive health organization (CHO) are examples of vertically-integrated delivery models that emphasize PHC delivery. International experience confirms that PHC is the foundation of an effective health system, but further research and harmonization of terminology are needed to improve the effectiveness of PHC globally [10-11].

## Organization of Primary health care in the United States

History and Development: In the U.S., PHC is diverse and decentralized, involving the private sector and government programs such as Medicare and Medicaid. The system has a rich history of development, and it continues to evolve. The main features of the U.S. PHC system are the lack of universal health insurance and the availability of public funding through Medicare and Medicaid programs for certain population groups. Health care expenditures in the U.S. account for more than 17% of GDP [17-20].

Structure and financing: Much of the healthcare system in the U.S. is based on private insurance, but there is additional public funding for certain populations. This creates a diverse funding structure and ensures accessibility of healthcare services in the country.

The PHC system in the U.S. is known for its high healthcare spending and emphasis on specialized medical services. It provides many innovative medical solutions and high quality care.

The system's challenges include limited accessibility for some population groups and poor integration of PHC. The high cost of health care and the complex financing and insurance structure also pose challenges for the PHC system [19].

However, the system has strengths, including the high quality of health services, especially in specialized medicine. The diversity of health services and providers, as well as the availability of advanced medical technologies, make it competitive.

Despite its strengths, the system faces affordability challenges for some populations and the complexity of the financing and insurance structure. These factors lead to inequities in access to health care services.

Life expectancy in the U.S.: according to the data, life expectancy in the U.S. has experienced fluctuations in recent years. In 2020, there was a decline in life expectancy, largely due to the COVID-19 pandemic. According to the Centers for Disease Control and Prevention (CDC), life expectancy in the U.S. in 2023 was approximately 79 years [18-20].

Quality of preventive care in PHC: The percentage of adults receiving annual health screenings can vary widely. For example, according to the National Health Interview Survey, only about 20% of adults in the U.S. reported receiving an annual general health checkup.

Primary care's role in chronic disease management and prevention through vaccination programs: managing chronic diseases such as diabetes and hypertension is an important part of PHC's work. It is estimated that more than 34 million Americans (about 10% of the population) have diabetes, and about 75 million adults (about 32%) have hypertension [21].

Vaccination programs continue to play a key role in PHC's prevention work. For example, influenza vaccine coverage among U.S. adults for the 2019-2020 season was about 48.4%, according to the CDC.

To improve the PHC system in the U.S., strengthening and integrating primary care to improve the overall health of the population is suggested. Insurance reform is also recommended to create a more equitable and affordable health insurance system.

## Organization of Primary health care in the UK

History and Development: The UK provides universal health care coverage through the NHS (National Health Service). This system has a long history of development and is focused on providing quality health care to all citizens.

Structure and financing: The NHS is a system of universal health care coverage that is significantly funded by the state. Under this system, citizens are provided with free consultations with general practitioners, pharmacists and nurses. PHC in the UK is publicly funded through the NHS, ensuring that health care is available to the entire population. This system is characterized by free primary care and integration with public health [20-21].

PHCP is funded by the state through the NHS, which ensures accessibility of medical care for the entire population. PHCP is characterized by free primary care and integration with public health.

Challenges of the system include limited use of private services and financial challenges during crises. The financial burden on the NHS is high due to the growing needs of the population and there are also resource constraints, including medical staff and equipment, which affects waiting times and availability of services [19-20].

However, the system has strengths including universal coverage and accessibility, providing free primary care for all citizens. The strong link between PHC and public health programs facilitates integration of services.

Life expectancy in the UK: Life expectancy in the UK continues to be an important indicator of the overall health of the nation. Based on data up to 2023, life expectancy was around 81 years, reflecting high levels of health and access to health services. However, there is considerable regional variation and variation by socioeconomic status. Also, the 2019 U.S. death rate is down 1.2% from the 2018 rate.

In 2022, 3.661.220 babies will be born in the U.S., down about 3.000 from 2021, when 3.664.292 babies were born. It is said that the birth rate in 2022 was 56.1 babies per 1.000 women aged 15-44. Fertility declined in the 15-24 and 30-34 age groups, increased among women aged 25-29 and 35-49 and remained unchanged in the 10-14 age group. Meanwhile, the birth rate among 15-19 year olds decreased at an annualized rate of 3% to 13.5 babies per 1.000 young American women in 2022. According to the American Association for Cancer Research (AACR), the survival rate of cancer patients in 50 years in the U.S. has tripled: if in 1971 there were 3 million recovered from cancer in the country, by the beginning of 2022 - already 18 million people in the U.S. in 2019, more than 3 million people died. This is the highest death toll since 1918. Coronavirus has become the third most common cause of death for Americans after cardiovascular disease and cancer. According to the CDC, deaths in the U.S. in 2020 rose 15% to more than 3 million, the largest increase in deaths since 1918, when hundreds of thousands of Americans died from influenza. The effects of COVID-19 became the third most common cause of death, with deaths from cardiovascular disease and cancer ranking first and second [22]. According to U.S. static data, "unintentional injuries" usually come in third place. The increase in deaths in 2020 was the largest since 1918, according to the CDS. Back then, at the height of World War I, hundreds of thousands of Americans died from influenza. 2022, it was reported that the number of deaths from COVID-19 in the U.S. exceeded 1 million [22-24].

Quality of preventive work in PHC: Preventive work within the UK NHS includes a wide range of programs and initiatives aimed at reducing the risk of chronic disease and improving the overall health of the population. This includes vaccination programs, screening programs for early detection of diseases such as breast, cervical and colorectal cancer, and programs to stop smoking and promote healthy lifestyles.

The role of primary care in chronic disease management and prevention through vaccination programs:

In the UK, the PHC provides this process through routine appointments and consultations. For example, patients with type 2 diabetes regularly see a general practitioner (GP) to monitor blood sugar levels and adjust treatment. A systematic approach to managing such conditions reduces the risk of complications and improves patients' quality of life. More than 90% of preschool children are immunized against diphtheria, tetanus and pertussis, one of the highest rates in the world. Chronic diseases such as diabetes and cardiovascular disease require regular monitoring and treatment.

A UK National Health Service (NHS) study found that regular monitoring and management of chronic conditions can reduce the likelihood of hospitalization by 20% and mortality by 10% among patients with type 2 diabetes [22-23].

As of March 14, 2024, there have been more than 111 million cases of coronavirus infection in the U.S., representing 33.3% of the population. Deaths have been reported in 1.1% of cases, while 98% of those infected have made a full recovery. Currently, 0.9% of those infected are still undergoing treatment, among whom 1.435 are in serious or critical condition. In the UK, primary care plays a key role in national vaccination programs such as the annual influenza vaccination campaign and COVID-19 vaccination. These programs aim to reduce the spread of infectious diseases and protect the most vulnerable populations. According to NHS data, the influenza vaccination program in 2020 resulted in a 40% reduction in hospitalizations and a 30% reduction in deaths among older adults, highlighting the importance of vaccination as a means of preventing serious complications.The NHS COVID-19 vaccination program was the largest in history, delivering more than 156 million doses of vaccine as of November 2023, contributing significantly to the reduction in illnesses and deaths in the NHS [23-24].

However, the system has strengths, including universal coverage and accessibility, providing free PHC for all citizens. The strong link between primary care and public health programs facilitates integration of services.

Weaknesses include high demands on NHS funding due to the growing needs of the population.

Limited resources, lack of medical staff and equipment, which negatively affects waiting times and accessibility of services. To improve the PHC system in the UK, it is proposed to increase investment in the NHS, which will ensure sufficient funding to meet the growing needs of the population. It is also recommended to promote integration of services and improve coordination between different levels of health care to improve the efficiency of the system.

## Organization of Primary health care in Japan

In Japan, PHC is oriented towards universality and accessibility, with an emphasis on the insurance system, which has become a key element of health care in the country.

The PHC system in Japan is based on universal health insurance, introduced since 1961. One of the features of the system is freedom of choice for patients, who can see specialists directly without the need for a referral from a GP. The country offers three main types of health insurance, ensuring wide access to health services [22-23].

A special feature of the system is the certification of primary care specialists and accessibility of medical care. Among the problems of the system are regional differences in the availability of services. Uneven distribution of medical resources across the country and high dependence on large medical centers can lead to overloading of the system [24].

Japan is known for having one of the highest life expectancies in the world. According to the World Health Organization (WHO), the average life expectancy in Japan in 2022-2023 will be about 84 years. This figure reflects the high level of health care, including the effectiveness of PHC.

Quality of preventive care in PHC. Japan's PHC system is actively involved in disease prevention through regular medical examinations and screenings. In Japan, annual medical examinations are conducted, which include screening for cancer, cardiovascular disease, and other chronic conditions. More than 70% of the adult population undergoes these annual checkups, which is significantly higher than in many other countries.

The role of primary care in chronic disease management and prevention through vaccination programs:

The management of chronic diseases through PHC in Japan involves comprehensive measures aimed at minimizing the impact of such diseases on the lives of patients and society as a whole [25].

Japan ranked seventh among the ten countries with the lowest rates of hypertension among women in 2019, with a rate of 22%. This places Japan above the UK (23%), China and Iceland (both 24%), but below Switzerland (17%), Peru (18%), Canada (20%), Taiwan, Spain and the Republic of Korea (each at 21%). About 43% of adults in Japan have hypertension, but through active prevention and treatment, the proportion of patients controlling their blood pressure to target levels is significantly higher compared to global rates. Programs to improve diet, increase physical activity, and medication have achieved blood pressure control in 60% of patients with hypertension.

According to Japan's Ministry of Health, Labor and Welfare, cancer was the most common cause of death among Japanese people in 2016. Followed by cardiovascular disease and pneumonia. The death rate per 100.000 people from cancer has risen steadily since 1947, when they began collecting such data regularly, and it has been the leading cause of death since 1981. In 2016, 372.986 people died of cancer in Japan, 28.5% of the total death rate. Although cardiovascular disease is one of the leading causes of death in Japan, the mortality rate from coronary heart disease is much lower than in many OECD countries, at about 30 cases per 100.000 population, indicating that the country's prevention and management of the disease is highly effective [24,25].

Screening and prevention programs: Japan, using advanced screening methods such as gFOBT and FIT since the 1970s, has demonstrated high efficacy in early detection and reduction of colorectal cancer (CRC) mortality. Screening programs tailored to different age groups optimize diagnosis and treatment, significantly improving population health. Screening programs aimed at early detection of chronic diseases, including cancer, are widespread in Japan. For example, participation in colorectal cancer screening reaches 33%, which promotes early detection and treatment, reducing mortality [18-19].

Vaccination programs: Japan also has high rates of vaccination coverage, indicating that PHC is doing a good job in preventing infectious diseases. For example, influenza vaccine coverage in Japan is estimated at 60%, which is higher than the average for many countries.

The PHC system in Japan has strengths, including freedom of choice and accessibility of health services for all citizens. The insurance system ensures that health services are available to all segments of the population [26-28].

Weaknesses include regional disparities and uneven distribution of medical resources across the country.

To improve the PHC system in Japan, the development of community health systems is suggested to create models that allow for more efficient resource allocation and improved accessibility of services at the local level. Also important is the certification and training of primary care professionals to improve their skills and the quality of care provided.

*Table 1 Comparison of Primary Health Care Systems [7, 17-20]*

| Country | Structure and Funding | Strengths | Weaknesses |
|---|---|---|---|
| Kazakhstan | State program "Densaulyk" 2020-2025, GVFMC and MSMI | Universal coverage, integrated care, family-centered approach | Limited accessibility in some areas, lack of awareness about available services |
| United States | Private insurance and public funding (Medicare, Medicaid) | High quality of care, innovation, specialized services | High cost, limited accessibility for some population groups, complex financing and insurance structure |
| United Kingdom | Publicly funded (NHS) | Free primary care, comprehensive coverage, integration with public health | Financial sustainability, resource constraints |
| Japan | Universal health insurance, high level of patient autonomy | Effective chronic disease management, preventative care, high life expectancy | Limited accessibility in some areas, high out-of-pocket expenses |

## Primary Health Care in Kazakhstan

PHC in Kazakhstan has its historical development. After the adoption of the Almaty Declaration in 1978, Kazakhstan focused on the development of PHC through a family-based approach and strengthening the role of nurses.

The PHC system in Kazakhstan is being actively developed under the state program "Densaulyk" 2020-2025, aimed at creating universal, integrated and quality health care. PHC serves as a basis for improving the health of the population by providing access to health services even for the poor and people with disabilities through a wide geographical network of polyclinics. The introduction of new medical and organizational technologies, such as evidence-based staff training and family-centered care, is helping to improve the efficiency of the system [12]. A key aspect of improving PHC is also the development of information systems, including electronic patient records, which simplifies access to services and promotes better interaction between doctors and patients.

From 2020, medical care in Kazakhstan is provided under two main programs: the guaranteed volume of free medical care (GVFMC) and the system of mandatory social medical insurance (MSMI). GVFMC provides everyone with control of diseases important for the whole society, while MSMI is aimed at improving the quality of life and health of future generations. It is important to note that primary health care in Kazakhstan remains free and accessible to all residents of the country, including visitors and foreign citizens permanently residing in Kazakhstan, regardless of their participation in the MSMI system [13].

One of the key indicators of health care is life expectancy, in Kazakhstan in 2022 this indicator amounted to 74.4 years, which is a historical maximum for the country. This is an increase of 4 years from 2021 (2021 - 70.23 years). One of the important areas of PHC is the quality of preventive work, at the beginning of 2024 it is noted that only 23.2% of citizens adhere to a healthy lifestyle, which indicates the need to strengthen prevention programs and educational campaigns to promote healthy lifestyles among the population. It is expected that by 2025 the percentage of citizens leading a healthy lifestyle will increase to 40%, which should contribute to a further increase in life expectancy to the target of 75 years [14-15].

The role of primary care in chronic disease management and prevention through vaccination programs:

Vaccination programs are an important part of PHC's preventive work. Active promotion of vaccination against influenza and other diseases helps to reduce their spread and protect the population, especially vulnerable groups. In general, at the end of 2021, the rate of total mortality in the Kazakhstan decreased by 29% and amounted to 6.77 per 1.000 population. Mortality from diseases of the circulatory system decreased by 32.7%, from cancer - by 7.9%, injuries - by 5.3%. Maternal mortality compared to 2020 decreased by 3 times and amounted to 17.0 per 100 thousand live births, infant mortality decreased by 4.6%, amounting to 7.97 per 1000 live births.

For the first 11 months of 2022 in Kazakhstan, the total mortality rate decreased by 30% (29.7%) compared to the same period of the previous year. We can also note a decrease in mortality rates from diseases of the circulatory system by almost 34% (33.7%), cancer - by 8% (8.3%), mortality from respiratory diseases - by 1.7 times, and mortality from tuberculosis decreased by 12.5%. Thus, there has been a significant reduction in maternal mortality in the country - more than 3 times (2021 - 185 cases, 2022 - 57 cases). In 2022, the infant mortality rate decreased by 3%.

As of January 17, 2023, the important stage of vaccination in Kazakhstan is marked by impressive figures: out of 19.205 thousand residents of the country, more than 56% (10.858.101 people) have started the vaccination process, while more than 55% (10.629.063 people) have already been fully vaccinated. A booster dose has been given to 2.514.071 people, which is about 13% of the population. The total number of vaccinations carried out reaches almost 21 million, demonstrating the country's commitment to protecting its citizens and striving for public immunity [16].

The structure and financing-standards of nursing care organization assume independent reception and examination of patients by nurses, active participation in diagnostic and treatment processes, as well as in screening programs [16-17].

Features: Strengthening the role of nurses and attracting international experience to the formation of a modern model of primary care nurses in Kazakhstan.

Challenges: Insufficient autonomy of nurses and inconsistency between regulations and practice limit their effectiveness in the PHC system.

Strengths: Targeted transformation of the PHC system, expansion of nurses' functions and utilization of international experience contribute to improving the quality of care.

Weaknesses: Limited authority of nurses and the gap between regulations and practice reduce the efficiency of health care delivery [16].

Ways to improve: Development and implementation of PHC standards, improvement of nursing management system, introduction of information systems to improve documentation and record keeping, which will increase transparency and efficiency of health care delivery.

## Conclusions

The analysis reveals that PHC serves as the backbone of effective health systems, ensuring universal coverage and the integration of health services, but with varying degrees of success and approaches across nations.

The diverse experiences of the U.S., UK, Japan, and Kazakhstan highlight the critical importance of PHC in achieving health equity and underscore the need for continuous investment, innovation, and research. Strengthening PHC systems globally requires addressing the unique challenges faced by each country, including improving accessibility, enhancing integration with public health initiatives, and ensuring sustainability amidst changing health needs. The shared goal remains clear: to provide comprehensive, accessible, and high-quality care that meets the health needs of all individuals.

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## Медициналық-санитарлық алғашқы көмекті ұйымдастыру модельдерін салыстырмалы талдау: Әлем елдерінің және Қазақстанның тәжірибесі

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**Түйіндеме**

*Қазіргі уақытта Қазақстан Республикасында созылмалы аурулардың және халықтың қартаюының өсуі байқалуда, бұл денсаулық сақтау жүйесіне жаңа міндеттер қойып отыр. Дүниежүзілік тәжірибе мен Қазақстан Республикасының тәжірибесі негізінде медициналық-санитарлық алғашқы көмекті ұйымдастыру модельдерін салыстырмалы талдау біріншілікті көмек жүйесін жетілдіруге, оның қолжетімділігі мен сапасын арттыруға, сондай-ақ ел тұрғындарының денсаулығын жақсартуға ықпал ете алады.*

*Бұл зерттеудің мақсаты жаһандық деңгейде халық денсаулығын сақтауды түсіну мен тиімділігін арттыру үшін жетекші елдердің алғашқы медициналық-санитарлық көмек жүйелерін бағалау және салыстыру болып табылады.*

*Соңғы жылдары өмір сүру ұзақтығының ұлғаюы, нәресте өлімінің азаюы, дәрі-дәрмек пен вакциналардың қолжетімділігінің артуы сияқты жаһандық денсаулық сақтауда айтарлықтай жетістіктер байқалды. Дегенмен, 21-ғасырдың денсаулық сақтау жүйелері халықтың қартаюы және созылмалы аурулардың өсуі сияқты қиындықтарды жеңу үшін инновациялық тәсілдер мен*

*үлкен инвестицияларды қажет етеді. Бұл тұрғыда алғашқы медициналық-санитарлық көмек кең таралған аурулардың алдын алу, диагностикалау және емдеуде маңызды рөл атқара отырып, денсаулық сақтау жүйесінің тұрақты дамуының негізгі құрамдас бөлігіне айналады. Түрлі елдердегі алғашқы медициналық-санитарлық көмекті ұйымдастыру үлгілерін салыстырмалы талдаудың маңыздылығы олардың әрқайсысының бірегей ерекшеліктерін, жетістіктері мен кедергілерін анықтауда. Талдау және зерттеулер арқылы халық денсаулығын жақсарту және денсаулық сақтаудың тиімді стратегияларын әзірлеуге негіз болатын медициналық көмектің қолжетімділігі мен сапасын жақсарту үшін тиімді стратегияларды әзірлеуге болады.*

*Түйін сөздер: медициналық-санитарлық алғашқы көмек, халықаралық денсаулық сақтау модельдері, аурулардың алдын алу.*

## Сравнительный анализ моделей организации первичной медико-санитарной помощи: Мировой и казахстанский опыт

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**Резюме**

*Первичная медико-санитарная помощь является ключевым элементом устойчивого развития систем здравоохранения и играет важную роль в профилактике, диагностике и лечении распространенных заболеваний. Сравнительный анализ моделей организации первичной медико-санитарной помощи на основе мирового опыта и опыта Республики Казахстан может способствовать совершенствованию системы первичной медико-санитарной помощи, повышению ее доступности и качества, а также улучшению здоровья населения страны.*

*Целью данного исследования является оценка и сравнение систем первичной медико-санитарной помощи ведущих стран для улучшения понимания и эффективности охраны здоровья населения на глобальном уровне.*

*В последние годы в мировом здравоохранении наблюдаются значительные успехи, такие как увеличение ожидаемой продолжительности жизни, снижение уровня детской смертности и повышение доступности лекарств и вакцин. Однако системам здравоохранения XXI века необходимы инновационные подходы и крупные инвестиции для преодоления вызовов, таких как старение населения и рост хронических заболеваний. В этом контексте первичная медико-санитарная помощь становится ключевым компонентом устойчивого развития систем здравоохранения, играя важную роль в профилактике, диагностике и лечении распространенных заболеваний. Важность сравнительного анализа моделей организации первичной медико-санитарной помощи в разных странах заключается в выявлении уникальных особенностей, достижений и препятствий каждой из них. Путем анализа и исследований можно разработать эффективные стратегии для улучшения здоровья населения и повышения доступности и качества медицинской помощи, что обеспечит основу для разработки эффективных стратегий общественного здравоохранения.*

*Ключевые слова: первичная медико-санитарная помощь, международные модели здравоохранения, продолжительность жизни, профилактика заболеваний.*