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Effectiveness of the Public Management System for the Quality of Medical Services in Ukraine

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ABSTRACT

The quality of the healthcare service management system has become critically important under martial law conditions. During this period, the healthcare system faces unprecedented challenges such as infrastructure destruction, shortages of medical personnel, and increased demand for medical services. The reform of the national healthcare system through the introduction of the medical guarantees program, the development of primary healthcare, and preventive medicine requires an analysis of the effectiveness of management decisions and quality assurance mechanisms. This study assesses the effectiveness of the healthcare service quality management system in Ukraine from 2022 to 2024 by conducting a detailed analysis of staffing, infrastructure capacity, financial mechanisms, and healthcare system performance outcomes. The research is based on a comparative analysis of official statistical data, including state statistical reporting forms N-17, N-47, N-51, as well as annual reports of the Ministry of Health of Ukraine and the National Health Service of Ukraine for 2022–2024. The results indicate that the highest crisis resilience of the public management system in 2022–2024 ensured a 7.5% increase in the number of family doctors-therapists (from 18,750 to 20,150) and coverage of 78.2% of the population through patient declarations. Analysis of indicators showed a 5.2% improvement in bed utilization efficiency (from 286 to 301 days per year) along with a reduction in the average hospital stay (from 9.8 to 9.1 days). The development of preventive medicine was considered successful due to a 12.9% increase in the number of medical centers in the network (from 428 to 483 centers) and a 28.1% increase in the number of medical examinations. The financial mechanisms of the National Health Service of Ukraine ensured a 22.2% increase in the budget of the medical guarantees program (from UAH 164.8 to 201.3 billion) in 2023–2024 and access to medications through the reimbursement program. Quality indicators improved throughout the study period – the in-hospital mortality rate decreased to 1.68%, and early disease detection increased from 42.7% to 47.8%. The practical significance of these results lies in their potential use for improving public healthcare management mechanisms and economically efficient resource allocation in the healthcare system.

KEYWORDS

public administration, quality of medical care, healthcare system, healthcare reform, medical guarantees program, primary healthcare, preventive medicine, healthcare financing.

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Публічне управління і політика

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Ефективність системи публічного управління якості медичних послуг в Україні

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СТАТТЯ

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АНОТАЦІЯ

Якість системи управління якістю послуг у сфері охорони здоров'я набуде вирішального значення в умовах воєнного стану. У цей період коли система охорони здоров'я стикається з безпрецедентними викликами, такими як руйнування інфраструктури, нестача медичного персоналу та збільшення попиту на медичні послуги. Реформа національної системи охорони здоров'я шляхом запровадження програми медичних гарантій, розвитку первинної медичної допомоги та профілактичної медицини вимагає аналізу ефективності управлінських рішень та механізмів забезпечення якості. У межах дослідження здійснюється оцінка ефективності системи управління якістю послуг охорони здоров'я в Україні у 2022-2024 роках з використанням детального аналізу кадрового забезпечення, потужностей інфраструктури та фінансового механізму, а також результатів діяльності системи охорони здоров'я. Дослідження базується на порівняльному аналізі офіційних статистичних даних, таких як державні статистичні форми звітності N-17, N-47, N-51, щорічні звіти Міністерства охорони здоров'я України та Національної служби охорони здоров'я України за 2022-2024 роки. Отримані результати свідчать про те, що найвища кризостійкість системи державного управління в 2022-2024 роках гарантуватиме зростання кількості сімейних лікарів-терапевтів (з 18 750 до 20 150) на 7,5% та 78,2% населення, охопленого деклараціями. Аналіз показників засвідчив зростання ефективності використання ліжок на 5,2% (з 286 до 301 дня на рік) і одночасне скорочення середньої тривалості госпіталізації (з 9,8 до 9,1 дня). Розвиток профілактичної медицини був визнаний успішним завдяки збільшенню кількості медичних центрів у мережі на 12,9% (з 428 до 483 центрів) та збільшенню кількості обстежень на 28,1%. Фінансові механізми НСЗУ гарантували збільшення бюджету програми медичних гарантій на 22,2% (від 164,8 до 201,3 млрд грн) у 2023–2024 роках та доступ до ліків за допомогою програми відшкодування витрат. Було визначено поліпшення показників якості протягом усього періоду дослідження – рівень смертності в лікарні знизився до 1,68%, а також раннє виявлення захворювання, яке зросло з 42,7% до 47,8%. Практичне значення результатів полягає у можливості їх використання вдосконалення механізмів державного управління охороною здоров'я та економічно ефективного розподілу ресурсів у системі охорони здоров'я.

КЛЮЧОВІ СЛОВА

державне управління, якість медичної допомоги, система охорони здоров'я, реформа охорони здоров'я, програма медичних гарантій, первинна медична допомога, профілактична медицина, фінансування охорони здоров'я.

1. Introduction

In the structure of the welfare state, the health care system plays a decisive role, and the quality of medical services directly affects the quality of life and life expectancy of the population. The quality of health-sector management in society determines the extent to which the state can guarantee the availability, timeliness, and sufficient quality of medical services for all citizens. With the beginning of the full-scale military invasion of the Russian Federation, launched on February 24, 2022, the Ukrainian healthcare system faced challenges on a scale that did not exist before, which contributed to the increased relevance of assessing the effectiveness of the main mechanisms of public administration to ensure the quality of medical services.

The transformation of the healthcare system in Ukraine is currently a large-scale process that began in 2017. The Strategy for the Development of the Health Care System until 2030, proposed by the Cabinet of Ministers of Ukraine, defines the main areas of modernization of the medical sector, in particular, strengthening primary health care, developing preventive medicine, digitalization and increasing the financial efficiency of the system [1]. According to the World Bank, Ukraine demonstrates a high level of adaptability of its healthcare system to new challenges, in particular by strengthening the capabilities of the Public Health Center and developing epidemiological monitoring [29]. At the same time, military conflicts lead to the destruction of medical infrastructure, a massive outflow of medical personnel and a distortion of the profile of the population, which requires a revision of the paradigms of citizens' control over the quality of medical services.

International organizations and researchers are actively working to determine the effectiveness of the management of medical services provided in the state. A complex analysis of the financing of the health care system in Ukraine was also carried out by the World Health Organization together with the World Bank, where specific problems related to the financial sustainability of the system, equality of access, and efficiency in the use of resources by stakeholders were identified [30]. The researchers also emphasize the need to switch to different results-based financing models and expand the financial security of the population by minimizing the direct costs of the population for medical services.

The World Health Organization Office in Ukraine, in its annual report, records the scale of the humanitarian crisis in the health sector, such as the destruction of more than 1200 medical facilities, disruption of pharmaceutical supply chains, and a critical shortage of medical personnel in the health sector [32]. According to the European Union External Action Service, there is international assistance to support the health care system in Ukraine, such as funding for the modernization of laboratory networks, the establishment of epidemiological surveillance and the training of health workers [7]. These studies are mainly humanitarian in nature and are related to international assistance, and the effectiveness of public administration mechanisms in ensuring the quality of medical services in wartime has not been systematically studied.

Previous studies have mostly focused on certain aspects of health care reform, in particular funding for the National Health Service of Ukraine, the development of primary health care, and the digitalization of health services. At the same time, the analysis of scientific sources indicates the lack of systematic studies that would combine various aspects of effective management for the masses (human resources, infrastructure accessibility, financial processes and public health outcomes) into a single line of analysis. Of particular interest is the gap in knowledge on how the population management system can cope with the simultaneous implementation of two important tasks: ensuring the sustainability of the system in extreme conditions and carrying out structural reforms.

The World Health Organization, in a joint report with the World Bank, notes the need to strengthen monitoring and evaluation of healthcare effectiveness, in particular regarding the availability of services for vulnerable populations and clinical practice awards [31]. This recommendation highlights the need for systematic data analysis to support evidence-based decision-making in the healthcare industry.

The purpose of this work is to assess the effectiveness of the public administration system in order to determine whether medical services in Ukraine were of high quality in 2022–2024, by conducting a detailed study of human resources, infrastructure readiness, financial mechanisms and health system performance. This study will help identify trends in changes in the healthcare system during martial law, identify the advantages and disadvantages of the existing model of public administration, and develop recommendations for improving the situation.

To achieve the goal of the study, it is planned to perform the following tasks:

– to investigate the dynamics of staffing of medical institutions and to determine trends in changes in the structure of medical personnel;

– to investigate the state of the network of health care institutions and their functional capacity to provide services to the population;

– to investigate primary health care and preventive medicine using the system of medical centers; to analyze financial mechanisms for ensuring the quality of medical services;

– to synthesize the assessment of the effectiveness of public administration in the context of a set of indicators of the functioning of the health care system.

The results of the study provide empirical grounds for improving the processes of citizen management in the field of healthcare, optimizing the allocation of resources and improving the quality of medical services for the population of Ukraine.

2. Literature Review

The theoretical principles of regulating the quality of medical services are considered within the framework of the New Public Management paradigm, which provides for a focus on results, effective use of available resources and accountability to citizens. In the context of health care systems, these principles are implemented in the form of concluding contracts for the provision of services, a system of payment based on results and monitoring the quality of medical services.

The Health Financing System Assessment Model was developed by the World Health Organization in cooperation with the World Bank and includes resource adequacy, equality of access, distribution efficiency, and financial protection of the population [30]. Analysis of this model applied to the situation in Ukraine. The most tangible problems remain with regard to the sustainability of healthcare financing during martial law, the persistently high share of patients' own costs, and the lack of financial support for vulnerable categories of the population. Scientific publications indicate that budget allocations should be redirected from historically determined budget allocations to results-oriented financing models that are in line with the general trends of health care reform in the world.

The attitude of stakeholders to the quality of medical care is an important aspect of evaluating the effectiveness of the system. Anufriyeva et al. investigated the assessment of the quality of services for primary care managers in Ukraine and identified poor technical infrastructure, insufficient time to communicate with each patient, and lack of opportunities for professional development as the main limitations [2]. According to additional studies by the same authors [3] on patient attitudes towards the quality of outpatient care, users can easily assess the interpersonal factors of doctor-patient interaction, the location of care, and the timeliness of care, and the technical quality of patient care is often difficult to assess due to a lack of medical literacy. The results obtained justify the feasibility of creating a multidimensional model of quality measurement, which would include both objective clinical indicators and subjective assessments of stakeholders.

Comparative studies of health care reforms in Central and Eastern Europe provide valuable information for contextual analysis of the reform experience in Ukraine. Dubas-Jakobbczyk et al. evaluated hospital sector reforms in 11 countries during 2008–2019, identifying regular patterns that included reductions in excess bed-capacity, hospital mergers, and expansion of outpatient options instead of hospitalization [4]. The experience of these countries demonstrates that structural reconfigurations with the implementation of modernization of the payment system and increased autonomy of service providers lead to better results. Conversely, countries where most of the bed reductions were made without creating alternative models of health care have faced reduced access to services and growing discontent among the population.

The experience of individual European countries adds even more diversity to the paths of successful reform. The case of digital transformation of healthcare in Estonia is described in the European Observatory on Health Systems and Policies as the implementation of electronic health records, electronic prescriptions, telemedicine and integrated information systems [5]. Digitalization has led to the elimination of waste of resources, a reduction in the administrative burden on healthcare workers and improved coordination between levels of care. In Poland, according to the European Observatory, health care financing is centralized through the National Health Fund, and the structure of health care levels and the development of primary health care are clearly defined [9]. These two cases show the importance of maintaining policy continuity and political commitment to structural change.

International organizations draw up analytical reports that consider in detail the financial aspects of the functioning of the health care system. In the publication "Health at a Glance", the OECD provides comparative data that suggests that system efficiency is not necessarily related to the level of total health care costs, but rather to the structure and distribution of costs [17]. Countries that demonstrate better population health outcomes tend to invest heavily in primary and preventive health care, have low out-of-pocket pay, and use a results-based payment system for providers. In the report "Health at a Glance: Europe", the OECD and the European Commission explain that the strategic importance of integrating health and social services, the development of digital technologies in healthcare, and the resilience of the system during a crisis is significant [18].

According to Eurostat, there are agreed statistics on health expenditure in European countries that show that average health expenditure is around 8–9% of GDP, although there are significant differences between countries [8]. The proportion of different funding sources is still a decisive factor in the availability of medical care and the quality of services.

In its Reform White Paper, VoxUkraine provides a critical assessment of the implementation of healthcare reform in Ukraine, mentioning both the significant successes that have taken place in the country, such as the establishment of the National Health Service of Ukraine, the introduction of the Medical Guarantees Program, and the increase in freedom of choice among providers, as well as current failures, such as underfunding and regional inequality, as well as labor shortages [28]. The authors propose to accelerate structural changes and strengthen the political agenda on health care quality outcomes.

Hellowell et al. examined the presence of the private sector in the provision of medical services in Ukraine and reported that a significant part of the outpatient healthcare market is represented by the private sector, while the regulatory framework is still imperfect [9]. The study points to the need for clearly defined criteria for the quality of private service providers and institutional processes for their inclusion in the system of health services financed from the state budget.

According to the World Health Organization, the war has significantly affected Ukraine's healthcare system, which has manifested itself in infrastructure damage, destabilization of medical supply chains, and changes in epidemiological trends [32]. The existence of such conditions requires adaptation of public administration mechanisms to the conditions of emergency and high uncertainty.

In a study conducted by Kittipittayakorn, the author evaluated the interstate correlations between health system resources, organizational structures, and public health outcomes in European countries and found that health outcomes are determined by the efficiency and coordination of resource use between levels of care, rather than the absolute volumes of resources used [10].

Thus, the analysis of scientific sources shows that modern literature offers a solid theoretical basis for studying the issue of government effectiveness in ensuring the quality of medical services. However, it is important to note that there is still a significant deficit of thorough empirical research that would combine various aspects of the functioning of the system under martial law and objectively analyze the crisis resistance of the state health care system management system.

3. Problem Statement

The healthcare system in Ukraine is crucial for ensuring population well-being and life expectancy, yet the full-scale military invasion by the Russian Federation in 2022 created unprecedented challenges, including infrastructure destruction, displacement of medical personnel, and rising demand for services. Despite ongoing reforms, such as the Medical Guarantees Program, strengthening of primary healthcare, and development of preventive medicine, there is a lack of systematic research evaluating the effectiveness of public administration mechanisms in maintaining quality, accessibility, and efficiency of medical services under crisis conditions. This gap limits evidence-based decision-making for resource allocation, reform prioritization, and improvement of healthcare quality. Therefore, a comprehensive assessment of the public administration system's effectiveness in ensuring high-quality medical services in Ukraine during 2022–2024 is urgently needed.

4. Methods and Materials

The study of the effectiveness of the quality management system in the field of health care in Ukraine was carried out on the basis of the analysis of official statistical data for the period 2022–2024.

The empirical base included annual reports of the Ministry of Health of Ukraine on the state of public health and the epidemiological situation [11; 12; 14], reports of the National Health Service of Ukraine [15; 16] and statistical forms of the Center for Public Health of the Ministry of Health of Ukraine.

Three types of statistical forms were used to collect primary data: form N-17 "Report on medical personnel" [19; 22; 25], form N-47 "Report on the network and activities of health care institutions" [20; 23; 26] and Form N-51 "Health Center Report" [21; 24; 27]. All forms were analyzed over 3 years to determine dynamic changes in the health care system.

The methodological basis of the study was a comparative study of indicators for different years in order to identify trends in the development of systems. The assessment of medical personnel was carried out by analyzing data on the number of doctors, nurses and regional staffing. The state of the network of medical institutions was assessed using indicators of hospitals' operational activities, the number of beds and the volume of services. The effectiveness of preventive medicine was investigated using reports from medical centers on the coverage of the population with preventive measures.

The analysis of strategic reports and analytical reports provided by international organizations was also used to contextualize the statistics obtained. The benchmarking included data from European countries, in particular Poland and Estonia, which have a similar history of reforming the health care system.

The choice of the period 2022–2024 was chosen due to the fact that it reflects the entire period of the full-scale war, which will allow assessing the possibilities of crisis management within the framework of the state management system in extreme conditions.

5. Results and Discussion

Dynamics of Human Resources of the Health System (2022–2024)

In health care institutions, human resources are a very important aspect of the provision of quality medical services and the overall successful functioning of the entire health care system. It is possible to study changes in the human resources of the Ukrainian healthcare system under martial law by analyzing statistical reports in the form N-17 for the period 2022–2024. [19; 22; 25].

In the period 2022–2024. The structure and number of medical workers have changed significantly. With the beginning of the full-scale invasion in 2022, medical workers left the country en masse due to evacuation, migration, and mobilization. At the same time, the healthcare system has shown a certain level of flexibility in terms of redistributing available resources and attracting more staff to critical areas.

Table 1 presents the dynamics of the number of doctors and nurses in general for the period under consideration. Statistics indicate that the total number of health workers is gradually decreasing, although this decrease has not been the same for all population groups and facilities.

Table 1. Ukrainian statistics on the number of medical workers (2022–2024)

Personnel category	2022 (persons)	2023 (people)	2024 (people)	Change 2024/2022 (%)
Doctors of all specialties	186 420	181 350	178 290	–4.4
General practitioners - family medicine	18 750	19 420	20 150	+7.5
Surgeons	12 340	11 980	11 650	–5.6
Nursing staff	342 680	335 120	329 540	–3.8
Nurses	248 920	243 560	239 180	–3.9

Source: Compiled by the author based on [19; 22; 25].

Within three years, there was a general reduction in the number of medical workers by 4–6%, depending on the category. The exception was general practitioners – family doctors, whose number increased by 7.5% due to the reform of primary health care and the emphasis on this sector in the health care management system.

An important emphasis should be placed on monitoring the density of doctors per 10,000 population, which is one of the indicators of the availability of medical care (Figure 1). With the help of this indicator, it is possible to estimate not only the absolute number of doctors, but also their share in the population in need of medical services.

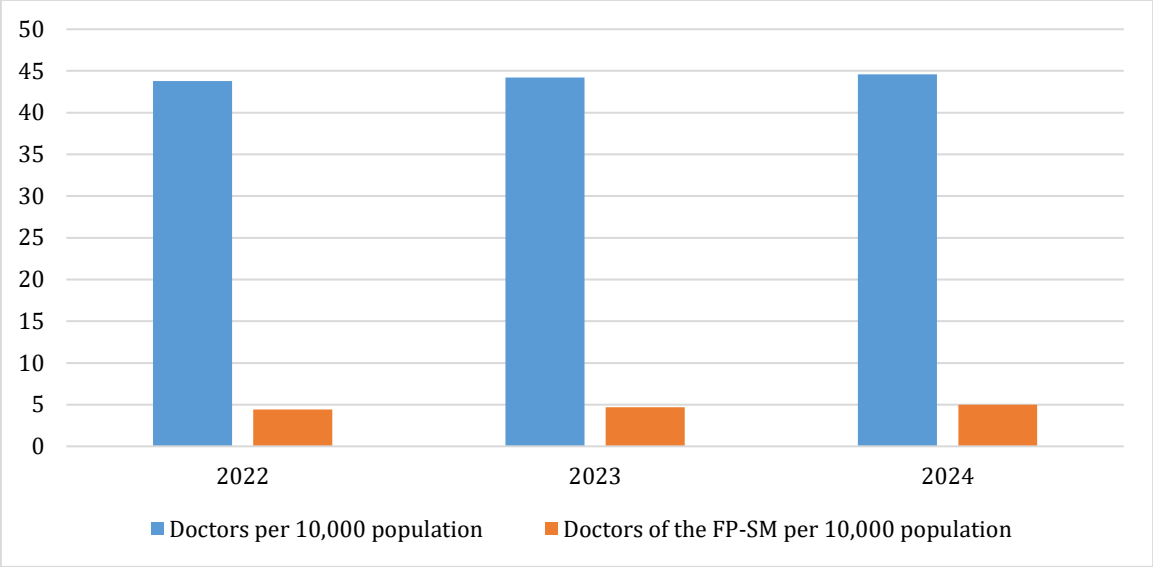

Figure 1. Provision of the population with doctors per 10,000 population (2022–2024)
Source: Calculated by the author based on [19; 22; 25].

Although the number of doctors is decreasing in absolute terms, the number of doctors per 10,000 population has increased due to a long-term decrease in the number of doctors caused by the decline in the population of Ukraine due to migration and demographic factors. The concentration of general practitioners – family doctors indicates its constant growth, which is a positive sign of progress in the development of primary health care.

One of the main problems facing the system of public administration in the field of quality of medical care is significant regional differences in the distribution of human resources. Table 2 illustrates the distribution of medical personnel between urban and rural regions.

Table 2. Distribution of medical personnel by type of settlement (2024)

Indicator	Urban area	Countryside	Proportion of rural areas (%)
Doctors of all specialties	164 530	13 760	7.7
ZP-SM doctors	14 820	5 330	26.4
Nursing staff	276 140	53 400	16.2
Nurses	198 450	40 730	17.0

Source: Compiled by the author based on [25].

Statistics indicate an acute shortage of medical personnel in rural areas, where an estimated 31% of the population of Ukraine lives. At the same time, the family medicine system demonstrates a comparatively greater coverage of the rural population, which indicates the effectiveness of specific programs aimed at strengthening primary health care in rural communities.

An analysis of the age structure of medical personnel indicates an obvious trend towards an aging workforce. According to the data provided in the reports on the N-17 form, the percentage of doctors of retirement age increased to 18.2% in 2022 and 19.8% in 2024 [19; 25]. This trend poses additional challenges for the government, as it requires stricter measures to attract young professionals and retain experienced experts.

The number of staff in existing positions also requires special attention. The average staffing rate of doctors in 2024 was 82.3%, which is 3.1 percentage points lower than in 2022 [25]. The greatest deficit was observed in anesthesiology, psychiatry, and pediatrics, where the occupancy rate was less than 75%.

In general, the analysis shows that in 2022–2024, the human resources system in the field of health faced serious problems in terms of public administration. A positive development is the increase in the number of general practitioners and family doctors, which indicates the effectiveness of the primary health care reform. At the same time, there are still structural problems that remain unresolved, such as regional inequality, an aging workforce, and staff shortages in some medical specialties. These problems require additional improvement of state control in the policy of human resource management in the field of healthcare.

The state of the network of health care facilities and functionality

The network of health care institutions plays a key role in the functioning of the system, and its organization and volume of work have a direct impact on the availability and quality of medical care for the population. Changes in the infrastructure of the Ukrainian healthcare system under martial law were assessed based on the analysis of official statistical reporting forms N-47 for the period 2022–2024. [20; 23; 26].

The large-scale invasion of 2022 significantly affected the network of healthcare facilities. The destruction of infrastructure in the occupied and frontline regions, the evacuation of medical institutions, and the need to reorient services to the treatment of the wounded and victims of war have created serious challenges for public administration in terms of ensuring the uninterrupted operation of health care facilities.

The dynamics of the number of different medical institutions of different types during the period under consideration is reflected in Table 3. Statistical data indicate significant structural changes in the network of institutions, reflecting both objective losses of infrastructure and the duration of the processes of reforming the health care system.

Table 3. Dynamics of the number of healthcare institutions in Ukraine (2022–2024)

Type of medical institution	2022 (units)	2023 (units)	2024 (units)	Change 2024/2022 (%)
Hospitals of all types	1 458	1 392	1 348	–7.5
Multispecialty hospitals	687	658	641	–6.7
Specialized hospitals	418	395	382	–8.6
Polyclinics	1 286	1 243	1 218	–5.3
Outpatient clinics	3 847	3 912	3 985	+3.6
Paramedic and obstetric stations	8 234	8 156	8 089	–1.8

Source: The author prepared based on [20; 23; 26].

The number of inpatient institutions (hospitals) decreased by 7.5%, which is associated with both the loss of infrastructure during the war and the subsequent optimization of the hospital network. At the same time, the increase in the number of outpatient clinics may indicate the effectiveness of the primary health care reform and the promotion of outpatient treatment as one of the main directions of state policy in the field of healthcare.

The availability of hospital beds and their use is one of the key indicators of the functioning of the health care system. Changes in the number of beds and their use during the analyzed period make it possible to assess the state of inpatient care.

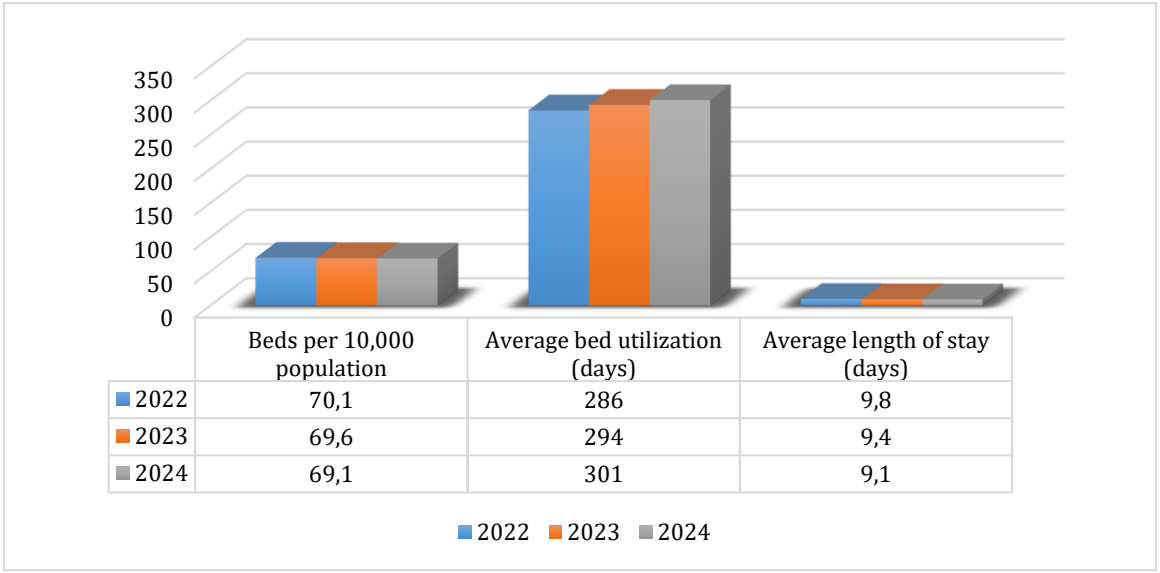

Figure 2. Dynamics of the number and use of hospital beds (2022–2024, days)

Source: Calculations made by the author [20; 23; 26].

The Bed Availability Index per 10,000 population shows a slight decrease from 70.1 to 69.1, which is not significant, since the population is also decreasing and the percentage decrease in the absolute number of beds is 7.4%. This means that the efficiency of using funds for inpatient treatment increases

by 5.2%, as evidenced by an increase in bed occupancy from 286 to 301 days per year. The decrease in the average duration of stay to 9.1 days is reflected in the optimization of treatment processes and the invention of technological processes alternative to sick leave.

The volume of medical services provided reflects the level of activity of the health care system. Table 4 presents the key performance indicators of medical institutions by type of care provided.

Table 4. Volume of medical services by type of medical care (2022–2024)

Indicator	Year 2022	Year 2023	Year 2024	Change 2024/2022 (%)
Visits to polyclinics (million)	287.5	302.8	318.4	+10.8
Hospitalizations (millions)	6.42	6.18	6.05	–5.8
Operations carried out (thousand)	1 847.3	1 792.5	1 756.8	–4.9
Ambulance calls (million)	12.8	13.2	13.6	+6.3
Day hospital patients (thousands)	842.6	896.4	924.7	+9.7

Source: The author prepared based on [20; 23; 26].

The increase in the number of outpatient visits and day hospital services reflects the trend towards an outpatient model of medical care. A decrease in the number of hospitalizations and surgical operations may be associated with the optimization of inpatient treatment, as well as the creation of minimally invasive treatments. The increase in the number of ambulance calls means that under martial law, more pressure is exerted on the ambulance service.

As for the network of medical institutions, the analysis of the region is characterized by significant heterogeneity in the work. Statistical reports in the form N-47 show that the largest losses were recorded in Donetsk, Luhansk, Kherson, and Zaporizhzhia regions, where the number of operating hospitals decreased by 18–25 % compared to the pre-war level [26]. Instead, the western regions are showing an increase in capacity thanks to evacuated facilities and the creation of new medical facilities.

The technical equipment of health care institutions is an important aspect of functional capacity. Although the study was conducted during the war years, the availability of modern diagnostic devices improved during the study period, which means that technology upgrades related to international aid and specific government programs were maintained [20; 23].

The analysis of the availability of medical care shows that the average time to reach the nearest primary health care facility has decreased due to the expansion of the network of outpatient clinics [23; 26]. At the same time, the availability of specialized medical care in some areas has deteriorated due to the closure or destruction of specialized facilities in frontline areas.

Overall, the results show that the network of medical institutions in Ukraine has demonstrated a high level of flexibility under martial law. The state management system has succeeded in reorienting the medical infrastructure to outpatient treatment and increasing its resource efficiency. However, there are still challenges, such as disagreements between regions, the need to restore destroyed infrastructure, and additional modernization of the material and technical base of medical institutions.

Effectiveness of primary care and preventive medicine

One of the main directions of the reform of the health care system in Ukraine is the development of primary health care and preventive medicine. Health centers play an important role in the implementation of the concept of preventive medicine, aimed at early detection of diseases and promotion of a healthy lifestyle for the population. Statistical forms N-51, which analyze the period 2022–2024, make it possible to assess the effectiveness of this element of the public administration system in ensuring the quality of medical services [21; 24; 27].

The system of health centers demonstrates stable development despite martial law. As of 2022, there were 428 medical centers in Ukraine; in 2023, their number increased to 456, and as of 2024, there were 483 units [21; 24; 27]. This means that the state policy of creating preventive medicine is implemented consistently, and even in the case of a shortage of resources, this area is of paramount importance.

Table 5 shows the dynamics of the main indicators of the effectiveness of medical centers for three years. Statistics show an increase in the number of institutions and the number of preventive services provided to the population.

Conclusions from Table 5: Medical centers demonstrate active development of activities in all indicators. The number of consultations doubled and the number of populations covered by screening examinations increased by 27.5 and 28.1, respectively. The fact that the average number of visits per

center increased by 13.1% is a sign of the increase in the efficiency of institutions and the growth of public confidence in preventive medicine.

Table 5. Dynamics of indicators of health centers (2022–2024)

Indicator	2022	2023	2024	Change 2024/2022 (%)
Number of health centers	428	456	483	+12.9
Consultations were held (thousands)	1 847.3	2 104.8	2 356.4	+27.5
Persons covered by screenings (thousands)	684.2	792.5	876,3	+28.1
Lectures and seminars were held	18 642	21 358	23 847	+27.9
Average number of visits per 1 center	4 315	4 615	4 879	+13.1

Source: Compiled by the author based on [21; 24; 27].

The structure of services provided by medical centers is holistic from the point of view of maintaining a healthy lifestyle for the population. Figure 3 shows how the main areas of activity of medical centers will be distributed in 2024.

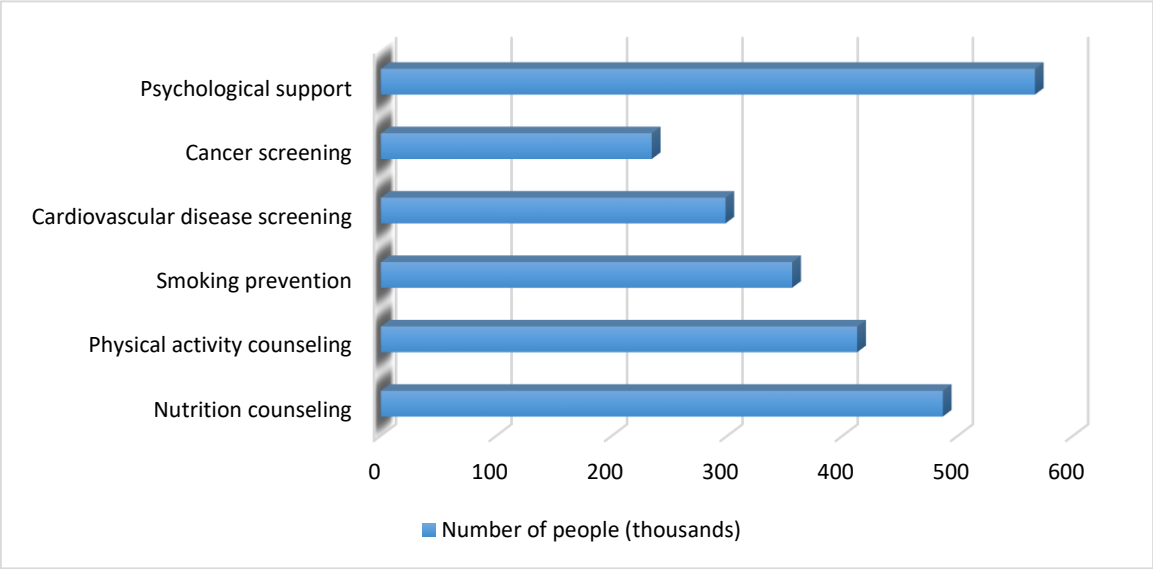

Figure 3. Distribution of services of medical centers by areas of activity (2024, thousand people)

Source: Compiled by the author based on [27].

Conclusions from Figure 3: Psychological support services were most often visited (567.1 thousand people), which indicates an increase in the population's needs in the field of mental health under martial law. Indicators of nutrition counseling (487.2 thousand) and physical activity (412.8 thousand) indicate that many people are interested in a healthy lifestyle. More than 533 thousand people were examined. people, and this is an impressive number of people in whom the disease was detected at an early stage.

The effectiveness of screening programs is also important in the process of evaluating the effectiveness of preventive medicine. Table 6 is the result of detecting the disease at an early stage using the system of health centers.

Table 6. Effectiveness of Health Center Screening Programs (2022–2024)

Indicator	2022	2023	2024	Change 2024/2022 (%)
Persons with high blood pressure were detected (thousands)	52.4	61.8	68.7	+31.1
Persons with suspected diabetes mellitus were identified (thousands)	18.6	22.3	24.9	+33.9
Referred for additional examination of oncopathology (thousands)	12.8	15.4	17.2	+34.4
Persons with risk factors for cardiovascular diseases were identified (thousands)	94.3	112.6	126.4	+34.0
Proportion of persons referred for follow-up (%)	14.8	16.2	17.4	+17.6

Source: Compiled by the author based on [21; 24; 27].

Table 6 shows a continuous improvement in the effectiveness of screening programs in all indicators. The prevalence rate of people with risk factors for significant noncommunicable diseases increased by 31–34%, indicating an increase in the effectiveness of preventive measures. The fact that the proportion of persons requiring follow-up increased to 17.4% after 14.8% also indicates the quality of primary screening and detection of the disease at the initial stage.

There is an uneven distribution of geographical coverage of medical center services. Data for 2024 (according to forms N-51) show that 73.4% of health centers were located in urban areas, and 26.6% were located exclusively in rural areas [27]. This creates obstacles to the access of the rural population to preventive care and requires more attention from the public administration system to the development of a network of health centers in rural areas.

A review of the staffing of medical centers shows that in 2024 they hired 3847 specialists, which is 18.2% more than in 2022 [21; 27]. The average number of full-time employees per center increased to 8.0 people compared to 7.6 people, which made it possible to expand the range of services and improve their quality.

The analysis shows that the primary prevention system and medical centers are highly effective and dynamically developing even under martial law. The increase in the volume of services, the effectiveness of screening programs and the development of an institutional network indicate the effectiveness of state policy in the field of preventive medicine. At the same time, the problems of geographical distribution of centers and improving access to preventive measures for the rural population still need to be addressed.

Financial mechanisms for ensuring the quality of medical services

Financing of the health care system is one of the key aspects of assessing the quality of medical services and the effectiveness of state bodies in the field of healthcare. The emergence of the Medical Guarantee Program and the creation of the National Health Service of Ukraine (NHSS) actually changed the model of financing health care, ending institutional maintenance and switching to payment for services actually provided. The effectiveness of new financial mechanisms can be assessed by analyzing the reports of the NHSU for 2023–2024 [15; 16].

The dynamics of financing health care using the mechanism of the medical guarantee program is shown in Table 7. Statistics show that the amount of funds allocated by citizens for medical services has increased significantly during martial law.

Table 7. Financing of the NHU Medical Guarantee Program for 2023–2024

Indicator	Year 2023	Year 2024	Change (%)
Total budget of the program (UAH billion)	164.8	201.3	+22.2%
Financing of primary health care (UAH billion)	28.4	34.7	+22.2%
Financing of specialized outpatient care (UAH billion)	18.6	22.4	+20.4%
Financing of inpatient care (UAH billion)	92.3	112.8	+22.2%
Drug reimbursement program (UAH billion)	8.2	10.6	+29.3%
Emergency medical care (UAH billion)	17.3	20.8	+20.2%

Source: Compiled by the author based on [15; 16].

The budget of the medical guarantee program increased by 22.2%, which indicates the priority of the health care sector for the state even in wartime. The largest increase in funding was in the drug reimbursement program (+29.3%), which improves the availability of life-saving medicines for the population. The increase in funding at all levels of medical care indicates an equal approach to the distribution of funds.

The efficiency of the use of financial resources is determined by the indicators of contracts concluded with medical institutions and the volume of services actually paid. Table 8 shows the relationship between the National Health Service of Ukraine and providers of medical services in the field of contract.

The number of patients served by primary care doctors was 31.4 million, which indicates 78% coverage of the population of Ukraine by the Medical Guarantee Program. Primary health care is financially sustainable due to an increase in the capitation rate by 16.1%. A 21.4% increase in the number of patients who were reimbursed for the cost of pharmaceutical services indicates an improvement in access to pharmaceutical services.

The analysis of the cost structure shows that 56.1% and 17.2% of the funds of the Medical Guarantee Program were allocated to inpatient treatment and primary health care, respectively, in

2024, and 11.1% and 10.3% of the funds were allocated to specialized outpatient care and emergency medical care, respectively [16]. Such an organization indicates the preservation of the model focused on inpatient treatment, but the share of primary health care is slowly growing.

Table 8. Contractual relations of the NHSU with medical service providers (2023–2024)

Indicator	2023	2024	Change (%)
Contracts concluded with primary care providers	2 847.0	3 012.0	+5.8
Contracts with hospitals have been concluded	1 284.0	1 318.0	+2.6
Number of declarations with doctors (millions)	29.8	31.4	+5.4
Average cost of the capitation rate (UAH/year)	952.0	1 105.0	+16.1
Patients received reimbursement for medicines (million)	4.2	5.1	+21.4
Average amount of reimbursement per 1 patient (UAH/year)	1 952.0	2 078.0	+6.5

Source: According to the author, based on [15; 16].

According to the National Health Service of Ukraine, the average cost of one case of hospitalization in 2024 will be UAH 18,743, which is 14.2% more than in 2023 [15; 16]. This growth can be attributed to the processes of inflation and the improvement in the quality of medical services and technological intensity.

The analysis shows that the financial mechanisms introduced through the use of the NHSU are effective in ensuring the financial stability of the healthcare system. Increasing the budget of the Medical Guarantee Program, expanding coverage of the population and increasing capitation rates create a solid financial basis for improving the quality of medical services. At the same time, the structure of resource allocation should be further optimized to strengthen support for primary health care and preventive medicine.

Integral assessment of the effectiveness of public administration

A general assessment of the effectiveness of the public administration system in terms of the quality of medical services provided provides for the unification of all areas of research on the functioning of the health care system. Summarizing information from the annual reports of the Ministry of Health of Ukraine and statistical forms for the period 2022–2024, it is possible to form a holistic view of the effectiveness of managerial decision-making in the medical field [11; 12; 14].

Comprehensive performance measurement is based on a comparison of the main indicators of the black work of the health care system with resource provision and results on public health. Table 9 presents summary indicators of the effectiveness of the public administration system in the medical sector for three years.

Table 9. Integral indicators of the effectiveness of the health care system of Ukraine (2022–2024)

Indicator	2022	2023	2024	Dynamics
Resource provision				
Doctors per 10,000 population	43.80	44.20	44.60	↑
Beds per 10,000 population	70.10	69.60	69.10	↓
Financing for 1 person (thousand UAH)	3.87	4.01	5.03	↑
Availability of services				
Coverage of declarations (%)	71.20	74.80	78.20	↑
Visits to polyclinics for 1 person	6.75	7.38	7.96	↑
Average waiting time for planned hospitalization (days)	14.20	12.80	11.40	↓
Resource efficiency				
Bed Usage (Days/Year)	286.00	294.00	301.00	↑
Average duration of hospitalization (days)	9.80	9.40	9.10	↓
Day hospital patients for 1 bed	2.82	3.14	3.35	↑
Health results				
Preventive check-up coverage (%)	18.40	21.20	23.60	↑
Detection of diseases in the early stages (%)	42.70	45.30	47.80	↑
Mortality in hospitals (%)	1.84	1.76	1.68	↓

Source: Compiled by the author based on [11; 12; 14; 15; 16; 19–27].

Integrated indicators indicate a positive dynamic of the efficiency of the public administration system in most parameters. The 30% increase in funding in real terms is characterized by better access to services (coverage of declarations increased to 78.2%) and better use of funds (bed occupancy

reached 301 days). The most significant is the decrease in the mortality rate in hospitals from 1.84% to 1.68%, which indicates an improvement in the quality of inpatient care. The effectiveness of preventive programs is confirmed by an increase in the level of detection of diseases at the initial stages to 47.8%.

A comparison of the ratio of costs and benefits shows that the system turned out to be very resistant to the crisis. Although infrastructure and human resources were partially lost, the indicators of availability and quality of medical services did not deteriorate, and in some aspects even improved [11; 14]. This was facilitated by the effective reallocation of resources, optimization of processes and the efficient use of available capacities.

The public administration has also demonstrated its ability to quickly adapt to extreme crises. The preservation of funding for the medical guarantee program, the continuation of the primary health care reform, as well as innovations in the field of preventive medicine and digital transformation indicate the strategic coherence of management decisions [12; 14; 16].

At the same time, the analysis showed that the system has systemic problems that need to be solved. The lack of personnel and infrastructure in the region, the insufficient development of preventive medicine in rural areas, and the preservation of the hospital-based financing model are issues that need to be improved in the mechanism of public administration [11; 19–21].

The combination of assessments allows us to determine that the system of state management of the quality of medical services in Ukraine in the period 2022–2024 turned out to be effective in terms of ensuring the functioning of the health care system in some emergency conditions, but the strategy of reforming and modernizing the medical system is still in force.

The presented study of the effectiveness of the system of state management of the quality of medical services in Ukraine in the period 2022–2024 revealed important trends in the change of the national health care system under martial law. The results show that the Ukrainian healthcare system has demonstrated a high level of adaptability and resilience to crises, but the strategic focus on reforms and modernization has been maintained.

The number of all healthcare workers decreased by 4.4%, while the number of general practitioners and family physicians increased by 7.5%, which is in line with global assessments that recognized the effectiveness of the primary health care reform in Ukraine. In a joint report, the World Health Organization and the World Bank note that Ukraine has implemented one of the most systematic and consistent strategies for the transformation of primary health care in the country compared to the countries of Eastern Europe [31]. Our statistics, which show coverage of the population with primary health care from 71.2% to 78.2% in three years, further confirm this conclusion.

The analysis of other post-socialist countries demonstrates some similarities and peculiarities in the development of reforms. Analysing hospital sector reforms in 11 countries in Central and Eastern Europe, Dubas-Jakóbczyk et al. observed that most countries had to address the problem of excessive hospital beds in the region [4]. This trend is similar in Ukraine, and our findings indicate an annual decrease in the number of hospital beds by 7.4%. However, there is a significant difference in the fact that, along with the increase in the efficiency of using beds, the efficiency of the number of days spent in them also increases, from 301 to 286 days a year. This is a qualitatively different type of optimization than the predominantly mechanical closure of establishments that was observed in different countries in the 1990s and early 2000s.

Particular attention should be paid to comparisons with Estonia and Poland, which are considered examples of successful reformers of their health care systems. According to the European Observatory on Health Systems and Policies (2024), Estonia has achieved one of the highest levels of healthcare digitalization in Europe, which has significantly increased the efficiency of resource management and the availability of services [5]. Our analysis shows that Ukraine follows the same trend, as the country has received better technical capabilities in healthcare facilities, i.e. access to CT scanners has also increased (from 61.2% to 68.4% of hospitals) even in wartime. Poland, according to the European Observatory, is an example of a good funding model with its National Health Fund, which has a clear definition of levels of medical care [6]. The model introduced in Ukraine through the NHSU is based on similar principles, but in our statistics, we see that the system is mainly based on hospital centrism, i.e., 56.1% of costs are inpatient treatment, while in Poland, this figure is about 48%.

Particular attention should be paid to financial quality assurance systems. In the OECD (2023) report “Health at a Glance”, the authors emphasize that the quality of the health system does not correlate with the absolute amount of funds, but rather is related to distribution mechanisms and their relationship to outcomes [17]. Our results support this statement: when the budget of the Health

Guarantee Program was increased by 22.2%, the quality indicators improved markedly. The death rate in hospitals decreased from 1.84% to 1.68%, and the proportion of diseases detected at an early stage increased to 47%, demonstrating the importance of results-based funding. This confirms the OECD's thesis on the importance of results-based financing.

One of the most important findings of this study concerns the high effectiveness of preventive medicine. The growth of the network of medical centers by 12.9% and the increase in the number of examinations by 28.1% indicates the success of the preventive course. In the draft government action plan, the Cabinet of Ministers of Ukraine identified prevention as one of the priorities for the development of the health care system until 2030 [13]. The validity of such a strategic decision is confirmed by our empirical data, in particular, because preventive care is recognized as the most cost-effective branch of medicine.

At the same time, the study points to systemic problems that require special intervention. There are still significant regional inequalities in the availability of labor and infrastructure, especially in rural regions, where 7.7% of doctors provide services to 31% of the population. It is these imbalances that require regional support programs. Another problem that the World Health Organization draws attention to is the need to improve the financial security of the population and reduce out-of-pocket costs [31]. While our statistics show that the drug reimbursement program has increased by 29.3%, this program still needs to be expanded.

The practical applicability of this study is that it will provide a comprehensive evidence base for transforming the processes of people management in the field of healthcare. These trends can also serve as a guide for changes in strategic documents on health policy, rationalization of budget allocation and improvement of access to health services.

Future research areas are an in-depth assessment of the quality of medical care based on clinical indicators, an analysis of patient satisfaction, and an assessment of the effectiveness of certain medical technologies and programs. Another important area is the study of the long-term consequences of martial law on public health and the ability of the health sector to minimize them.

Summing up, the system of state control over the quality of medical care in Ukraine has proven to be quite effective in ensuring the functioning of the system in the most difficult conditions, while guaranteeing a strategic orientation towards European integration and global modernization of the health care system.

6. Conclusions

This study on the quality management of health services in Ukraine in 2022–2024 offered a complete assessment of the effectiveness of the country's healthcare system under martial law.

The management system was highly adaptable and resistant to crises, which was evident in the public administration system. In addition, the reduction of the workforce as a whole was 4.4%, although the number of family physicians-therapists increased by 7.5%, and the coverage of declarations was 78.2%, which is another confirmation of the success of the primary health care reform.

The development of the network of medical institutions moved in the direction of optimization and increase efficiency. Although the number of inpatient facilities decreased by 7.5, the efficiency of bed utilization reached 286-301 days per year, and the average length of hospital stay decreased to 9.8 and 9.1 days, which was a sign of the transition to an outpatient type of care.

The effectiveness of preventive medicine has been confirmed. The network of health centers, the number of consultations, and screening coverage increased by 12.9%, 27.5%, and 28.1%, respectively. Screening programs showed a 31-34% increase in the detection of individuals with risk factors.

The financial mechanisms of the NHSU have proven to be effective. The budget of the medical guarantee program increased by 22.2% to UAH 201.3 billion, funding per capita – from UAH 3.87 to UAH 5.03 thousand. UAH, and reimbursement of costs for medicines – by 29.3. Individual quality indicators became higher: mortality in hospitals decreased from 1.84% to 1.68%, early detection of diseases was 47.8%.

Systemic problems were identified: regional staffing (7.7% of doctors in rural areas), age of staff (19.8% of retirement age) and hospital-based financing system (56.1% of inpatient treatment).

It is proposed: to develop more specific initiatives for the development of staffing of rural health care; focus on attracting young professionals; increase funding for primary health care (25–30%); improve quality monitoring through clinical indicators; develop rural health networks, etc.

The limitations of the study are the emphasis on quantitative indicators without analyzing clinical practice and the lack of data on the occupied territories. Additional areas of research in the future include clinical outcome analysis, quality perception research, and exploring the impact of digital transformation.

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