

# The Establishment of the Public Health System in the Light of the COVID-19 Pandemic as a Condition of National Security (Experience Acquired Before the War)

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## Abstract

The authors have determined that the healthcare system is on the verge of collapse, as it is unable to meet the population's growing needs for medical care. An analysis of demographic situation and health indices of the adult population in the north-eastern region of Ukraine (based on the example of the Sumy region) was carried out. The study confirms the number of deaths caused by COVID-19, the growth of new cases of coronavirus, and the excessive burden on primary care physicians and infectious disease specialists.

It has been determined that the negative state of the domestic healthcare system is due to the shortcomings of public administration and organisation of this system in terms of COVID-19. One of the most important priorities of public policy should be to preserve and strengthen the health of the population, the development of intersectoral cooperation on the principle of 'healthcare – in all state policies', and the priority of the nation itself, i.e. the formation of healthy behaviour.

## Keywords

public health, healthcare system, COVID-19 pandemic, quarantine, lockdown, national security

## Introduction

The rapid spread of the 2019 coronavirus disease (COVID-19) in Ukraine has made significant changes in the health sector, which was in the process of reforming the secondary level and the formation of the public health system as the basis of preventive medicine (Rynda 2018; Slobodian 2019).

Today, the healthcare system of Ukraine is in crisis, as it is unable to meet the needs of the population in providing quality medical services, it does not have a single legal framework that would regulate the activities of public health (sanitary and epidemiological well-being, healthcare population, etc.) and is not able to respond to the challenges of the situation in the country. The draft Law of Ukraine "On the Public Health System", the purpose of which is to regulate the mechanisms of

creating an effective public health system aimed at strengthening public health, preventing diseases, fighting epidemics, and increasing life expectancy, remains unapproved. This is observed in a country where the overall mortality rate is twice that of the European Union (Tsiborovsky and Chepelevskaya 2017) (and this does not take into account the mortality rate due to COVID-19).

The analysis of the previous scientific endeavours shows that the issues of improving state health policy are constantly in the focus of scientific research of the specialists in state administration, medicine, and law. In particular, the issues of public administration in the field of healthcare are revealed in the works of Bilinskaya and Radish (2013). In turn, the peculiarities of the formation of the public health system in Ukraine were investigated by Rynda 2018 as well as Slobodian 2019.

Parubchak et al. (2021) investigated the reform of the healthcare system in the COVID-19 pandemic. In the author's opinion, the main problem that needs to be tackled alongside with the fight against the pandemic is the issue of patients suffering from chronic diseases that require long-term diagnosis and treatment, as well as improving outpatient specialised assistance for these patients in order to reduce the load on the in-patient system (Parubchak et al. 2021).

The problems of healthcare staff were considered by Volosovets et al. (2020), who determined the personnel resources as the most important component of the healthcare system

All these studies point out that achieving positive changes to improve the health of the population is possible when priority is given to the healthcare system in the activities of public authorities and when the financing of the healthcare industry is improved.

Despite the significant number of research, the current state of healthcare in Ukraine remains extremely unsatisfactory. Public health policy is far from being systematised, and medical reform that should be aimed at improving public health remains controversial in many aspects (Logvynenko 2020).

The relevance of the study accounts for the analysis of changes in the field of healthcare under the circumstances of the COVID-19 pandemic, which primarily influence the real conditions of medical care of the population and impact the development of public health system to implement programmes to preserve and improve the health of the population.

The negative state of the healthcare system – which is due to the shortcomings of public administration and organisation of this system in the context of reforming, as well as due to the COVID-19 pandemic – threatens the national security and necessitates the search for possible ways to improve the efficiency of the industry.

The purpose of the article is to assess the effectiveness of the public health system in Ukraine during the COVID-19 pandemic (based on the example of the Sumy region).

The study hypothesis is based on the assumption that the implementation of state health policy should follow the adoption of state complex and targeted programmes with prior importance of the health of the population in all sectors of the economy and social sphere, as well as stabilising the situation with the personnel support of the industry, without which the level of medical care will be low and the fight against epidemics – ineffective.

## Material and methods

Analytical, statistical (summary and grouping of observation data; calculation of summary indicators and their analysis) research methods as well the method of system approach and epidemiological analysis are used in this work. The information base for the epidemiological analysis was the express issues of the State Statistics Service of Ukraine, statistical reports and data of the Ministry of Health of Ukraine on the health of the population of Ukraine, and the data from the Ministry of Finance of Ukraine on the spread of coronavirus infection in Ukraine (World Health Organization 2020b; World Health Organization 2020a; Ministry of Finance 2020a). The theoretical base of the study included the analysis of 34 scientific sources.

## Results

Demographic indicators are one of the criteria for the socio-economic development of society. Low birth rate, high mortality, significant migration, high overall morbidity and disease prevalence, and significant regional disparities in morbidity levels have all been observed in Ukraine for decades (Berdnyk et al. 2018; Kornus et al. 2022).

As of December 1, 2020, the resident population of Ukraine (without temporarily occupied territories of the Autonomous Republic of Crimea, Sevastopol, and parts of the Donetsk and the Luhansk regions) was 41 629.9 (State Statistics Service of Ukraine 2020). That is, over the past 30 years Ukraine has lost more than 10 million people, which is the result of the negative dynamics of the natural and mechanical movement of the population. During the year 2020, the largest absolute population decline was typical of the eastern and northeastern regions: Dnipro (–30.5 thousand), Kharkiv (–21.4 thousand), Zaporizhia (–18.2 thousand), Poltava (–13.5 thousand), Sumy (–13.2 thousand), Chernihiv (–11, 9 thousand) (Ministry of Finance 2020b).

As can be seen, the demographic situation in the Sumy region is one of the worst, which creates great risks for the further socio-economic well-being of the region. The Sumy region ranks 19<sup>th</sup> among the regions of Ukraine by the total number of population. During the year 2020, the total population here decreased by 13.171, which is predominantly the result of natural population decline (the number of deaths was 2.5 times higher than the number of live births) (State Statistics Service of Ukraine 2020), which can be considered as a crisis demographical situation. In 2020, 18.971 people died in the Sumy region, which is 1500 people more than in 2019 (State Statistics Service of Ukraine 2020).

The main causes of the population death in the region coincide with the national ones: diseases of the circulatory system, neoplasms, and external causes of death (State Statistics Service of Ukraine 2020). However, the main cause of death in the region's population involves diseases of the circulatory system (in particular coronary heart disease and cerebrovascular diseases), which caused the deaths of 12.597 people. This is 1 100 more deaths compared to 2019.

The pandemic, which covered 216 countries as of May 2020, has led to the development of a sanitary-epidemiological, cyber-informational, economic, political, and social crisis (World Health Organization 2020b; World Health Organization 2020a). In the "visa-free" conditions, tourist, migration, and business activities, until now usually available to our citizens, have become limited, which has led to significant changes in all spheres of the social life (Gorbulin and Danyk 2020).

Due to the rapid spread of COVID-19, in March 2020, World Health Organization (WHO) declared an international emergency in the field of healthcare and approved the decision to officially name the virus SARS-CoV-2, and the disease caused by it, COVID-19 (World Health Organization 2020b).

The first months of fight against COVID-19 showed a very diverse clinical course of the disease: from the absence of any symptoms to severe viral pneumonia with the development of respiratory and multiple organ failure (Tkachenko et al. 2020; Feshchenko 2020).

The SARS-CoV-2 infection can cause acute respiratory syndrome with many epidemiological, clinical, radiological, and laboratory signs. SARS-CoV-2 is transmitted from person to person through close contact, through respiratory drops, with an average incubation period of 5.2 days. There is evidence indicating that the duration of the incubation period is up to 14 days (ranging from 2 to 14 days) (Tkachenko et al. 2020).

Almost all European countries (except Sweden and Belarus) have imposed strict quarantine measures, and the example of China has shown the world the speed and effectiveness of management decisions in fighting against the spread of COVID-19 with minimal economic consequences.

In April 2020, the Verkhovna Rada of Ukraine established the Fund for Combating Acute Respiratory Disease COVID-19 and its consequences (financing additional healthcare expenditures and compensation for economic losses from quarantine) in the amount of 66 billion *hryvnias*. As of September 15, 2020, 65.4 billion UAH was allocated from the Fund, which is 99% of its total amount.

The amount of 16 billion UAH was used to support the healthcare system, provide medical personnel with personal protective equipment, pay extras, and purchase the necessary medical equipment.

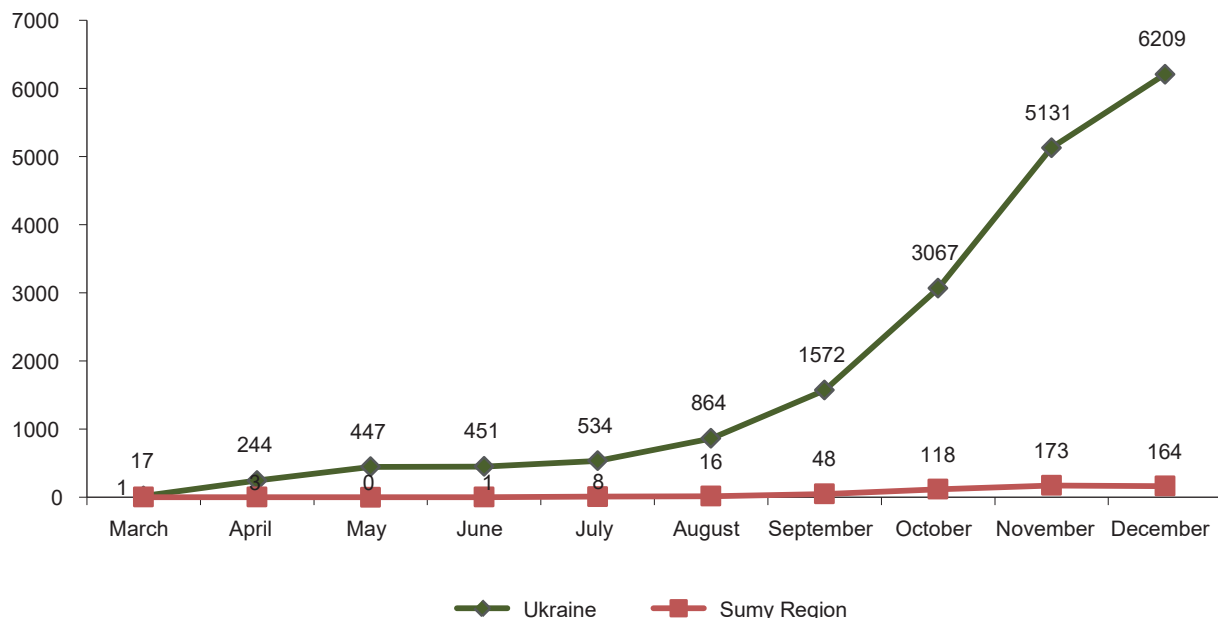
Cash assistance in the amount of 7 billion UAH was sent to the Unemployment Fund, of which 2.7 billion UAH was used as cash compensation for partial unemployment. The amount of 1.2 billion UAH was used to support individual entrepreneurs who could not work due to the quarantine and who had children under the age of 10.

The State Agency of Motor Roads was allocated the largest amount of funds (35 billion UAH) from the Fund for the construction, reconstruction, repair, and maintenance of public roads of state importance on a non-refundable basis, which is 53% of the total amount of the Fund (StateWatch 2021) Ukraine's healthcare sector has undergone drastic changes due to the outbreak of COVID-19, and the high rate of its spread both worldwide and nationally requires effective management decisions in the field of healthcare (Heorhiiivskyi 2020).

The COVID-19 pandemic caused the National Security and Defence Council of Ukraine to apply to the Cabinet of Ministers of Ukraine with a proposal to resume the activities of the sanitary-epidemiological service, which had been liquidated in 2017 (Stepanov 2020b). The State Sanitary and Epidemiological Service has solved most of the tasks in the field of public health, such as: the prevention of infectious and non-infectious diseases, epidemiological surveillance and control, social and hygienic monitoring, and many others.

In February 2020, the Cabinet of Ministers of Ukraine restored the position of Chief State Sanitary and Epidemiological Physician, and appointed Deputy Minister of Health of Ukraine, Viktor Lyashko, Chief Sanitary and Epidemiological Physician (Stepanov 2020b).

Today, the healthcare system is on the verge of collapse, as it is unable to meet the population's growing needs for medical care. Medical institutions and laboratory centres fail to do tests on time, there are not enough beds, including intensive care units, and the workload of primary care physicians and infectious disease specialists is growing. This fact contributed to the number of deaths caused by COVID-19, which is increasing on a daily basis (Fig. 1). In 2020, the death rate of the population of the Sumy region due to coronavirus disease (COVID-19) was 532 people (Ministry of Finance 2020a).



**Figure 1.** The dynamics of deaths caused by COVID-19 in 2020

Source: own elaboration.

However, the crisis in the healthcare system was observed before the appearance of coronavirus, as evidenced by low life expectancy (compared to the European Union, the difference is

more than 10 years), high overall mortality and the mortality of population of working age, infant mortality, male „supermortality”, a high level of overall morbidity, and the prevalence of diseases (Heorhiiievskiyi 2020; Chorniyi 2020).

Given the high rate of the spread of COVID-19 as well as the lack of vaccines and drugs for effective treatment (as of March 2020), the Government and local government bodies are trying to make new decisions to reduce the spread of COVID-19, approve an action plan in the COVID-19 epidemic, and impose quarantine restrictions.

On March 12, 2020, in order to counteract the spread of COVID-19 throughout Ukraine, the Cabinet of Ministers of Ukraine imposed a strict quarantine for three weeks: borders were closed as well as public transport, intercity and interregional services, air services, educational institutions, etc. were suspended.

At the end of the ‘three-week lockdown’, quarantine restrictions continued with the development of economic and social tensions.

The Cabinet of Ministers of Ukraine adopted Resolution of July 22, 2020 № 641 *On the establishment of quarantine and implementation of enhanced anti-epidemic measures in areas with a significant spread of acute respiratory disease COVID-19 caused by coronavirus SARS-CoV-2*, which has established the levels of epidemic danger (green, yellow, orange, red), depending on the epidemic situation in the region.

At the meeting of the Cabinet of Ministers of Ukraine on November 11, 2020, a decision was made to abolish the adaptive quarantine and introduce ‘weekend’ quarantine in Ukraine. In accordance with the Resolution of the Cabinet of Ministers of Ukraine of November 11, 2020 № 1100 On Amendments to the Resolution of Cabinet of Ministers of Ukraine of July 22, 2020 № 641, the weekly division into quarantine zones ceased. Instead, on weekdays, nationwide quarantine with anti-epidemic restrictions for the ‘orange’ level of epidemiological safety and additional quarantine restrictions from 00:00 on Saturday to 00:00 on Monday was introduced (Resolution of the Cabinet of Ministers of Ukraine of July 22, 2020).

According to the Minister of Health of Ukraine, Maksym Stepanov, coronavirus disease is spreading at a rapid pace both in Ukraine and in the countries of the European Union, many of which are going to full lockdown. Total quarantine is the most effective way to curb the spread of infection. However, according to the forecasts of the Ministry of Economy and the Ministry of Finance of Ukraine, the economy of our country will not withstand a full lockdown. Therefore, in order to break the chain of infection and reduce the rate of morbidity, the Government decided to introduce ‘weekend’ quarantine from 14 to 30 November 2020 (Stepanov 2020a).

The resolution prohibited the work of all cultural institutions (theatres, cinemas), swimming pools, gyms, fitness centres, shopping centres, and entertainment centres.

Bars, restaurants, and cafes were allowed to work in the ‘take away’ mode and make targeted delivery without serving visitors in person.

Both local authorities and small and medium-sized businesses were dissatisfied with the ‘weekend’ quarantine rules, as evidenced by mass protests.

Representatives of culture, the gastronomy sector, entertainment, and trade industry organised rallies near the government office building, demanding not to introduce a ‘quarantine of a day off’, considering it an ineffective solution to remedy the situation with the epidemic. The most profitable period of the week for cinemas, shopping, and entertainment centres, where more than 50% of all income is generated, is the weekend. To deprive the facilities of work at this period meant a slowdown in the rate of economy after spring knockdown, the reduction of tax revenues to budgets, and unemployment rising, in particular among vulnerable segments of the population.

The requirement of representatives of the business community was to introduce a ‘flexible’ quarantine regime, which envisaged the opportunity to work for those institutions and enterprises that can meet the quarantine requirements. The proposed way out of the crisis could reduce the need for small and medium-sized businesses in direct financial support from the state.

According to the official statistics, as of November 14, 2020, 12,524 new cases of COVID-19 were registered in Ukraine, 1,525 people were hospitalised, 191 deaths were registered, and 4,962 people recovered. The total number of cases of the coronavirus disease exceeded half a million. The largest increase in confirmed cases was registered in the regions of Kyiv, Zaporizhia, Odesa,



and Kharkiv (Ministry of Finance 2020a). At the end of the 'weekend' quarantine, as of December 1, 2020, 12,498 new cases of the COVID-19 infection were registered and 221 people died.

Thus, the 'weekend' quarantine did not give the expected result (the reduction of the number of new cases by 20%) due to a low adherence by the population of the country. Intensified measures have somewhat stabilised the situation in hospitals in terms of reducing the percentage of beds occupancy.

To prevent the spread of a new rapid wave of infections, which may occur after the New Year's holidays, enhanced anti-epidemic measures were introduced on the territory of Ukraine from 8 to 24 January 2021 (Resolution of the Cabinet of Ministers of Ukraine of December 9, 2020).

Analysing the situation, namely the weekly new ideas of the Government to fight against the COVID-19 pandemic, one can conclude that there is no developed plan and no system of measures to reduce the disease indices of population.

By the spread of COVID-19 in the world, Ukraine ranks 17<sup>th</sup>, and by the number of deaths caused by it – 24<sup>th</sup> (Ministry of Finance 2020a).

Like in many European countries, the healthcare system and the economy of Ukraine is on the verge of choosing a priority between public protection and economic development. On the one hand, the price of strict quarantine restrictions can be high: the suppression of economic activity in certain areas, the closure of small and medium-sized businesses, the reduction of jobs, the reduction of incomes, etc., and, as a result – the lack (reduction) of funding for medicine and research, including numbers associated with vaccine development. On the other hand, the weakening of anti-epidemic measures can lead to an increase in the burden on the healthcare system and medical staff and the rapid occupancy of hospital beds, including intensive care (Terzi et al. 2020).

An analysis of international experience in overcoming the effects of the economic crisis related to the COVID-19 pandemic shows that measures are being taken to increase government spending on healthcare, abolish (reduce) taxes, support workers who have lost their jobs, reduce interest rates, etc. (Heorhiievskiy 2020; Chornyi 2020).

The Organisation for Economic Co-operation and Development recommended anti-crisis measures aimed at reducing the economic losses from the spread of COVID-19 in four main ways: 1) **social policy** (providing medical personnel with the necessary resources; reducing adverse effects on vulnerable social groups; time with the preservation of jobs and wages; temporary assistance, unemployment insurance, guarantees of medical expenses); 2) **fiscal policy** (fiscal support for the provision of medicines, medical equipment, and related goods; provision of tax holidays, exemption or deferral of tax payments for small and medium-sized businesses); 3) **budget policy** (an increase in expenditures for financing medical institutions and measures to support the business sector; the prevention of excessive growth of the public debt); 4) **monetary policy** (ensuring adequate liquidity; temporary reduction of banks' reserves; a reduction of interest rates, etc.) (OECD, 2020; Oleshko and Rovnyagin 2020).

Ukraine's experience is less optimistic: declining household incomes, the absence of tax benefits and support for small and medium-sized businesses, the increasing number of the unemployed, etc.

At the meeting of the European Commission for Health (November 11, 2020, Brussels) it was proposed that a body be established to respond to health emergencies – the European Health Union. This decision was due to the COVID-19 pandemic and its consequences beyond national borders, as well as the crisis of most national health systems in the EU, including their inability to respond adequately in the event of a biological emergency (Remarks, 2020).

The global crisis of medical personnel has sharply worsened, which manifested in the weakness of biosecurity systems, the lack of hospital sector reserves, and low manageability of private healthcare providers to take responsibility for the pandemic (Gorbulin and Danyk 2020; Oleshko and Rovnyagin 2020; Ustinov 2020).

Ukraine met a pandemic with a shortage of personnel resources, a primarily junior medical staff, and with a destroyed system of the State Sanitary and Epidemiological Service.

Today, health professionals play a key role in combating the dangerous virus of acute respiratory illness (COVID-19), constantly exposing themselves to risks that endanger their own lives and health.

Since the beginning of the pandemic, more than 115,000 health workers in the world have died from the complications of COVID-19 in the line of duty (Slovoidilo, 2021).

According to the Ministry of Health of Ukraine (Legislation of Ukraine, 2021), the number of infected medical workers has changed from 20% of all cases at the beginning of the pandemic in April 2020 to 5% in October. About 1.5% of medical workers died in Ukraine out of the total number of dead cases of COVID-19.

The work in dangerous conditions, which are formed in institutions, in particular in infectious hospitals, leads to high levels of morbidity of medical workers with the coronavirus disease. Among the medical workers who were diagnosed with the acute occupational disease (COVID-19), nurses (38%), junior nurses (22.7%), anesthesiologists (5.8%), general practitioners (4.18%), and therapists (4.09%) dominate. Measures to prevent the incidence of medical workers for the coronavirus disease and improve the safety of the hospital environment should be aimed at the strict compliance with the legislation and regulatory requirements to protect medical personnel and provide infectious control in institutions in terms of anti-epidemic, sanitary, and hygienic measures (Volosovets et al. 2020).

The Resolution of the Cabinet of Ministers of Ukraine of 17.06.2020 № 498 approved the Procedure for making insurance payments in case of illness or death of medical workers in connection with the infection with acute respiratory disease (COVID-19) caused by SARS-CoV-2, and determining their size. The resolution stipulates that the Social Insurance Fund of Ukraine makes insurance payments in case of illness or death of medical workers (Resolution of the Cabinet of Ministers of Ukraine of June 17, 2020).

Against the background of this catastrophic situation with medical personnel in the pandemic, the number of registered unemployed persons in the health sector is one of the largest, namely 28.4 thousand people (compared to 17 thousand in 2019) (6.4%). In turn, the number of registered vacancies, as of November 1, 2020, in the field of healthcare was 27.7 thousand.

In the industry, there are vacant positions of 1354 therapists, 1086 pediatricians, 784 surgeons, 763 doctors-obstetricians-gynecologists, 965 anesthesiologists, 406 physicians-phthisiologists, 3188 general practitioners, 655 laboratory assistants, and 911 dentists. The main reason for this situation is the reduction of the prestige to work in state medical and preventive institutions among doctors, especially young people, due to low payment and poor working conditions. A particular role is played by the termination of the practice of state distribution of specialists since 2017 – who were financed by government – and reducing the number of doctors and nurses that have been trained (Volosovets et al. 2020).

As of January 1, 2020, the country lacked 33,707 doctors and 35,000 paramedics. Since April 2020, more than 5,000 specialised doctors have resigned in Ukraine, and only more than a thousand new doctors have registered in the electronic healthcare system.

At the same time, about 2,000 doctors and 3,000 nurses from Ukraine applied to the Polish employment agency (LB,ua, 2020).

To improve the situation with personnel resources in healthcare and prevent the risk of deterioration in the provision of medical care to the population, urgent political decisions are required. Without stabilising the situation with the healthcare staff, the restoration of proper training and re-training of doctors, their social protection, safe working conditions, and the level of medical care will become poor, which will deprive the population of the right to get proper healthcare.

Access to necessary medical procedures not related to the coronavirus disease has declined sharply. In Ukraine, since November 9, 2020, there is a ban on scheduled surgery and hospitalisation.

Patients with chronic diseases (except for acute conditions) will be consulted by a family doctor by telephone. In case of the exacerbation of the disease, patients are recommended to be referred to specialised medical institutions (not working according to the COVID-19 profile) (World Health Organization 2020a).

To control the spread of COVID-19, one prerequisite is the creation of an effective system for early detection of virus carriers by increasing the number of PCR tests, the formation of immunity to SARS-Cov-2, and the search for an effective vaccine. Public health measures, such as

self-isolation and the quarantine of infected persons, are needed for curbing the spread of the infection. However, quarantine measures can only reduce the rate of infection, not overcome the pandemic.

## Discussion

In a biological emergency, the healthcare sector needs to make effective management decisions aimed at preserving the health and lives of citizens, overcoming the pandemic consequences with minimal economic consequences.

Today, all countries are making changes to their national health systems. If the national health care policy remains unchanged, Ukraine will lose the industry's human and infrastructure reserves in the future – reserves that will be essential for combating new biological threats (Yavorovsky et al. 2020; Soloviov et al. 2020).

Public policy should first and foremost focus on the pandemic and humanitarian needs, healthcare, and mitigating the social and economic consequences of the crisis by supporting the private sector, small and medium-sized businesses, and political reforms aimed at reducing unemployment and poverty. A system of measures should be implemented, e.g. free delivery of modernised ambulance vehicles for sanitary treatment, individual means of protection, and product kits. In the conditions of the COVID-19 epidemic, international solidarity and the multilateral approach are both necessary for coordinated and successful overcoming of the crisis (Chornyj 2020; Volosovets et al. 2020).

Additionally, a policy to increase the number of medical staff is needed, as the COVID-19 pandemic has significantly aggravated the problem of medical staff shortage in Ukraine, including secondary medical staff who would take care of patients suffering from COVID-19. Therefore, active efforts should be made to increase the number of medical workers and optimise the use of human resources, without which the healthcare system will not be able to function effectively and qualitatively (Parubchak et al. 2021).

## Conclusions

The implementation of state policy in the field of healthcare requires the formation of a clear strategy for its development as well as the adoption of comprehensive state and targeted programmes.

One of the directions of the new National Healthcare System is the organisation of public health, which is based on the principles of preventive medicine and as such is aimed at preventing the occurrence of diseases, preserving and strengthening the health of the population.

The implementation of the tasks assigned to the public health system requires the training of highly-qualified personnel for public administration and local government in the field of public health, which would be able to conduct effective activities in demographic development, reducing morbidity and disease prevalence, disability, mortality, at the same time promoting health and a healthy lifestyle as well as the development of intersectoral cooperation on the principle of 'health care – in all state policies'.

Ukraine's healthcare sector has undergone drastic changes due to the outbreak of COVID-19, and its high rate of spread both worldwide and nationally requires effective management decisions in the field of healthcare which would be aimed at maintaining the health and life of the citizens, overcoming pandemic consequences with minimal economic costs.

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