ORIGINAL ARTICLE

CONTENTS

The impact of the martial law on the rates and structure of outpatient's morbidity

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ABSTRACT

Aim: To determine the features of the rates and the structure of the morbidity of outpatients during the war compared to the pre-war years (period 2020-2024).

Materials and Methods: There were analyzed and summarized scientific research and publications about changes in the morbidity structure and rates of outpatient care to the population during the war years compared to previous years before the full-scale military invasion, as well as the impact of war factors on the health of citizens. For comparison, data from scientometric databases Google Scholar, PubMed, Scopus, Web of Science and other domestic and international scientific sources were used. The results of research are presented the peculiarities of indicators of medical care at the outpatient stage of the consultative and diagnostic polyclinic of the Bogomolets National Medical University Clinic. In the research are used the methods of a systematic approach, bibliosemantic analysis and the method of structural-logical analysis.

Results: The results of research the peculiarities of the rates of medical care provision at the outpatient stage before the full-scale military invasion (2020-2021) and during the war (2022-2024) are presented, the impact of martial law on these rates in comparison with the data of literature sources is assessed. Scientific research and publications are analyzed indicating the changes in the incidence rates of the population at the outpatient stage and the rates of medical care in the work of the consultative and diagnostic polyclinic of the Bogomolets National Medical University Clinic during the war years compared to previous years.

Conclusions: Based on the analysis, the possible ways were proposed to improve the quality of outpatient medical care and the health of the population during martial law.

KEY WORDS: war, morbidity rates, ways to improve the health of the population, outpatient, polyclinic care

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INTRODUCTION

Wars and conflicts are a harsh reality for many countries, where outpatient care is one of the main components of the health system. In such difficult circumstances, outpatient doctors are forced to take on an expanded role, witnessing large-scale physical and mental suffering both for individuals and for entire families, communities and society as a whole [1]. Russia's invasion into Ukraine has displaced about 12.3 million Ukrainians, which is more than 25% of the country's population [2]. Since the beginning of the full-scale invasion, the needs of the population of Ukraine for medical care have changed dramatically. According to literature sources, in the first 40 days of the war, 4 million people left Ukraine for other countries, more than 7 million became internally displaced [3]. Some doctors and medical personnel of medical facilities were evacuated to regions remoted from the war zone or abroad, and also joined the defense of our country.

According to studies conducted in European countries in 2023, Ukrainian refugees may have different medical needs than local patients in these countries. This is due to differences in the health care systems of Ukraine and different European countries, different levels of prevalence of diseases, features of preventive measures and social programs related to health, as well as psychological consequences of the impact of hostilities (the need to leave their places of residence, loss of relatives, etc.). Therefore, outpatient doctors in countries that received Ukrainian refugees were not ready to provide comprehensive assistance for this category of patients. The urgency of this problem is significant, since more than 7.6 million Ukrainians have registered as refugees/displaced persons in European countries since the beginning of the war [4].

During martial law, the Ukrainian medical system undergoes significant changes, which is due to quantitative and qualitative changes in the composition of medical workers, the loss of medical institutions in the occupied territories and in the frontline regions, the destruction of outpatient clinics and hospitals, and

the mass migration of the population to safer regions of Ukraine and abroad. The National Health Service of Ukraine plays a leading role in the implementation of medical reform and the implementation of the program of medical guarantees in the country. State programs of social protection of the population also have an important function in maintaining the health of the nation. However, the full-scale war has created unprecedented challenges that require prompt and effective solutions. Having just begun to recover from the consequences of the COVID-19 pandemic, the healthcare system of our country is facing a new crisis due to the introduction of martial law in connection with the full-scale invasion [5, 6].

According to the State Statistics Service of Ukraine, the number of outpatient medical institutions and doctors providing outpatient care has significantly decreased. Compared to the pre-war years (2018-2020), this happened mainly due to the regions that are occupied (some regions of Donetsk and Luhansk regions, partially Zaporizhzhia and Kherson regions), regions where hostilities are taking place (Kharkiv, Mykolaiv, Sumy) and frontline (Dnipropetrovsk) regions. As of 2023. in almost all other regions of Ukraine, there was a decrease in the number of general practitioners (family doctors), doctors of narrow specialties, and paramedical personnel, which was probably associated with internal and external migration of the population [5]. In the Kyiv region and the city of Kyiv, these indicators remain stable, even with an upward trend.

According to a study published in the Proceedings of the National Academy of Sciences, overall, the prevalence of diseases among displaced populations was lower than the national (regional) prevalence of diseases before the invasion. However, with the resettlement of refugees from Ukraine, the distribution of diseases has also changed. The results of a statistical analysis combining data on population movement and disease prevalence showed that among people forced to flee their homes due to the war, more than 2.63 million have cardiovascular disease, at least 615,000 suffer from diabetes, and about 98 500 have malignancies, combined with other chronic diseases [2].

The results of the calculations of the State Statistics Service of Ukraine show that in 2023, among persons who were diagnosed with disability for the first time, the distribution by disease classes was as follows: neoplasms – 17.9%, diseases of the circulatory system – 24%, diseases of the musculoskeletal system and connective tissue – 17.8%, injuries, poisoning and other consequences of external influences – 10.8%, endocrine disorders, eating and metabolic disorders – 4.8%, diseases of the nervous system – 5.3%, mental and behavioral disorders – 4.4%. It was also noted that, due to the military aggression of the Russian Federation against Ukraine and in accordance with the current legislation, the State Statistics Service of Ukraine currently does not have the opportunity to fully obtain administrative data, which is a source of information for calculating the population, its composition and other demographic indicators [5].

AIM

The purpose of the study is to determine the features of the rates and the structure of the morbidity of outpatients during the war compared to the pre-war years (period 2020-2024).

MATERIALS AND METHODS

Analyzed and summarized. scientific research and publications on changes in the morbidity structure and indicators of outpatient care to the population during the war years compared to previous years before the full-scale military invasion, as well as the impact of war factors on the health of citizens. For comparison, data from scientometric databases Google Scholar, PubMed, Scopus, Web of Science and other domestic and international scientific sources were used. The results of research on the peculiarities of indicators of provision of medical care at the outpatient stage of the consultative and diagnostic polyclinic of the University Clinic of the Bogomolets National Medical University (CDP Bogomolets NMU) are presented. The paper uses the methods of a systematic approach, bibliosemantic analysis and the method of structural-logical analysis.

The main function of the Bogomolets NMU is to provide highly qualified and specialized consultative and diagnostic medical care for patients in 25 specialties according to the license of the Ministry of Health of Ukraine: obstetrics and gynecology, gastroenterology, dermatovenerology, infectious diseases, cardiology, narcology, neurology, oncology, radiology, surgery, ultrasound and functional diagnostics, etc. Along with the provision of medical care, in the CDP of Bogomolets NMU, during 2020-2024. preventive medical examinations of the attached contingent of the population (about 21000 people) [7], medical examinations of seafarers, for obtaining an international certificate in accordance with DSTU ISO 9001:2015 [8], employees of various specialties working in harmful working conditions [9], medical examinations for obtaining a personal medical book [10], conducting a medical examination of candidates for drivers and drivers of vehicles [11], issuance of certificates for traveling abroad, for visiting

Table 1. The rates of outpatient care

Rates of outpatient care	2024	2023	2022	2021	2020
Number of visits to the doctors of therapeutic diseases	31 349	21 068	17 485	16 100	15 933
Number of visits to the doctors of surgical diseases	15 808	11 932	11 350	4 367	4 433
Total number of medical examinations	3 410	2 396	1 573	43 940	39 200
Total number of visits to doctors in the CDP	50 567	35 396	30 408	64 407	59 566

Table 2. The rates of primary morbidity of the adult population

Names of disease classes	2024	2023	2022	2021	2020
Neoplasms	40,2	28,1	25,1	42,3	30,8
Diseases of the endocrine system	48,1	17,5	12,5	40,5	31,4
Diseases of the nervous system	52,5	26,7	24,5	35,2	19,0
Diseases of the circulatory system	104,6	64,5	55,4	100,2	76,1
Respiratory diseases	162,8	158,1	114,8	221,1	177,1
Diseases of the digestive system	67,3	15,2	14,4	14,5	12,6
Diseases of the female reproductive system	152,6	152,07	130,6	210,2	171,4
Diseases of the skin and subcutaneous tissue	46,1	64,97	58,2	93,5	66,0
Diseases of the musculoskeletal system and connective tissue	118,5	53,0	46,5	61,2	47,0
Diseases of the eye and appendages	85,6	97,2	91,4	72,8	55,7
Diseases of the ear and mastoid process	11,8	11,5	10,5	16,3	14,4

the pool, medical certificates for obtaining a license for the object of the permit system (weapons) [12-14].

RESULTS

The rates of outpatient and polyclinic care of the Bogomolets NMU for 2020-2024 are shown in Table 1.

According to our research (Table 1), in the first year of the war (2022), the total number of visits by patients to the Bogomolets NMU almost halved from 64407 to 30408 almost in 53 %. Such situation can be explained by the mass migration of the population from Kyiv to the more protected regions of Ukraine and abroad due to heavy fighting outside Kyiv. Due to the influence of these factors, the lowest rates were recorded in 2022, at the beginning of the war, with a gradual increase in the following years [15, 16]. The gradual increase in the total number of visits during 2023 and especially 2024 can be explained by the stabilization of the military situation in Kyiv and the Kyiv region, which led to the return of a fairly significant number of the population. Despite the proximity of hostilities, in 2022 the number of patients who sought specialized medical care (the number of visits to doctors for diseases) to doctors of both therapeutic and surgical profile slightly increased. And, secondly, in such stressful situations, patients' priorities change and the issues of their own health and the health of loved ones come first. Also, the positive trend of appeals to the CDP of Bogomolets NMU is influenced by the implementation of state social programs and the Program of Medical Guarantees of the National Health Service of Ukraine.

At the same time, during the war, the number of preventive medical examinations has sharply decreased. This is due to objective reasons, namely mass migration of the population, a decrease in demand for certain services, a change in priorities, a decrease in the number of employees at enterprises in connection with mobilization into the ranks of the Armed Forces of Ukraine [17, 18].

To analyze the structure of diseases, we took indicators of the primary morbidity of the adult population, which are presented in Table 2.

According to Table 2, studying the dynamics of primary morbidity indicators of the adult population during martial law, the lowest rates are observed in 2022, which may probably be the result of a decrease in the total population, the movement of a significant part of people to safer regions (Western Ukraine) and other countries. The growth of indicators in 2023 compared to the data of 2022 is possible, is due to the increase in the number of internally displaced persons in the city, partly due to the return of citizens from other regions and countries to Kyiv. The primary incidence rates of the years before the full-scale invasion also had some dynamics: all data for 2020 were lower than the corresponding indicators in 2021, which is probably due to stricter quarantine restrictions in 2020 during the

COVID-19 pandemic and the gradual easing of these restrictions in 2021.

DISCUSSION

In the process of research, we established the dynamics of appeals and changes in the structure of morbidity in patients of the CDP UC NMU in the years before the full-scale invasion (2020-2021) and (2022-2024) years of martial law. The indicators that we studied are the original statistical data on the work of the CDP UC NMU for the period 2020-2024. The results of our study showed that during the period of active hostilities, the primary incidence of neoplasms, pathology of the cardiovascular, nervous, endocrine systems, digestive organs, musculoskeletal system and connective tissue. These indicators generally correspond to the trend of growth of these diseases according to official statistics for Ukraine [5].

Data from other researchers on the peculiarities of the Ukrainian health care system, which occurred under the influence of hostilities in the frontline regions, demonstrate some problems related to receiving medical care [14]. The medical-demographic, socio-economic, behavioral-biological consequences of the war for public health in the regions that are in the zone of active hostilities are extremely negative [15]. Mental overload and stress lead to an increase in the incidence of cardiovascular diseases, in particular, arterial hypertension, not only among the civilian population, but also among the military [16]. The negative impact of military aggression led not only to an increase in primary morbidity, but also significantly complicated the course of the existing pathology. According to other researchers [17] the crisis course of hypertension has increased by 2.25 times, and the number of people with anxiety disorders has also increased significantly. Studies conducted in regions more remote from hostilities (Chernivtsi region) showed an increase in the number of patients with diabetes mellitus, but there was no clear relationship between the increase in the incidence of arterial hypertension and chronic kidney disease in connection with hostilities [18].

The obtained results showed that the outbreak of a full-scale war at the beginning of 2022 significantly affected the behavior of the population, especially the number of patient visits to the CDP of the CU NMU. The most noticeable decrease was recorded in the first year of war, when the total number of visits was almost halved: the total amount of the total number of visits to doctors in the CDP in 2021 was 64407 and in 2022 – just 30408. This decrease can be attributed, first of all, to the mass migration of the population from Kyiv to safer regions inside Ukraine and beyond. As the situation gradually stabilized in Kyiv and surrounding areas, the number of patients visits began to increase in 2023 and the rate was 35396 and there was the more significant increase in 2024 – 50567. The return of a significant part of the resettled population played a key role in this recovering. Despite the challenges of wartime conditions, the demand of specialized medical care including both therapeutic and surgical consultations, showed the slight increase even at the end of 2022. The dynamics of primary morbidity indicators for 2024 increased on average by 15% for individual diseases compared to the indicators of the first years of the war (2022-2023) and years before the full-scale invasion (2020-2021): a significant increase in the indicators of primary incidence of neoplasms, diseases of the cardiovascular, nervous, endocrine systems, digestive organs attracts attention, musculoskeletal system and connective tissue. These figures significantly exceeded those in previous years, which is probably due to the long-term chronic stress impact of martial law on public health, a significant decrease in the quality of life of people, and, possibly, difficulties in obtaining medical care at the beginning of the war.

The rates of primary morbidity of the respiratory system, female reproductive system, eye and accessory apparatus, diseases of the ear and mastoid process remain without significant dynamics.

CONCLUSIONS

The war in Ukraine has caused unwanted changes in people's lives – the loss of relatives, houses, jobs, the need to leave their place of residence, which has led to external and internal migration of the country's population. The actual reduction of the existing population in Ukraine under the influence of hostilities contributed to a decrease in the number of requests for medical care.

Thus, the decrease in the total number of visits to doctors of the consultative and diagnostic polyclinic of the University Clinic of the Bogomolets National Medical University at the beginning of the war in 2022 may be a consequence of demographic changes, internal and external migration of the country's population. In the future, after the stabilization of the military situation in Kyiv, the indicators of the total number of visits to the doctors of the polyclinic in 2023 and 2024 gradually increased, but there was a transformation due to an increase in requests for diseases to both therapeutic and surgical doctors, which may have happened due to the negative impact of the consequences of martial law on the health of the population. This trend may indicate a more attentive attitude of the population to

their state of health due to the implementation of social programs and the Program of Medical Guarantees of the National Health Service of Ukraine.

Further implementation of social protection programs at the state level and expansion of the program of medical guarantees of the National Health Service of Ukraine will help reduce the primary morbidity of the population, improve the quality of medical care and the quality of life of our citizens. Peace in Ukraine will be the key to preserving the life and health of our population.

In conclusion, it should be noted that our study highlights the need to improve the systematic approach to the organization of the health care system, improve diagnosis and treatment, as well as statistical data processing in order to improve patient outcomes and reduce the number of medical errors. Further efforts in medical training programs, adherence to modern recommendations for diagnosis and treatment, as well as administrative reforms are important to achieve these goals and will become a topic for further study within the framework of research work.

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CONFLICT OF INTEREST
The Authors declare no conflict of interest

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