

## THE INFLUENCE OF PUBLIC ADMINISTRATION ON DEMOGRAPHIC CHANGES IN THE PERINATAL SPHERE AND HEALTHCARE

<sup>a</sup>MARIYA MALACHYNSKA, <sup>b</sup>ROMAN SHEVCHUK,  
<sup>c</sup>BOHDAN PLISH, <sup>d</sup>IRYNA YAREMKO, <sup>e</sup>HANNA  
TOLCHIEVA

<sup>a</sup>PhD, Associate Professor, Director of the Municipal Non-Commercial Enterprise of the Lviv Regional Council, Lviv Regional Clinical Perinatal Center. 9 St., Korolenka, Lviv, Ukraine, 79054.

<sup>b</sup>Candidate of Medical Sciences, Department of Public Administration, Interregional Academy of Personnel Management, 2 Frometivska St., Kyiv, Ukraine, 03039.

<sup>c</sup>Candidate of Science in Public Administration, Interregional Academy of Personnel Management, 2 Frometivska St., Kyiv, Ukraine, 03039.

<sup>d</sup>PhD, Associate Professor, Department of Administrative and Financial Management, Lviv Polytechnic National University, 12 Stepan Bandera St., Lviv, Ukraine, 79000.

<sup>e</sup>PhD in Pedagogy, Department of General Pedagogy and Educational Research, Faculty of Social Sciences, Academy of Applied Sciences – Academy of Management and Administration in Opole, Mieczysława Niedziałkowskiego 18, 45-085 Opole, Poland.

email: <sup>a</sup>malaschynska.@ukr.net, <sup>b</sup>kafedrapa.@ukr.net,  
<sup>c</sup>youngscientists.@ukr.net, <sup>d</sup>Iryna.i.yaremko\_@lpnu.ua,  
<sup>e</sup>asergeeva\_29@gmail.com

**Abstract:** One of the objectives of the state is to support, optimize and develop the health care system, in particular, to increase the fertility rate. The issue of improving public management in the perinatal sphere remains relevant. The purpose of the academic paper lies in identifying the ways to improve public management in the perinatal sphere as a factor influencing the demographic situation in the country. **Methodology.** In the course of the research, a mixed approach has been used, as well as qualitative and quantitative analysis of public management and its efficiency in the perinatal sphere in Ukraine, Poland, and Germany. The qualitative content analysis was carried out based on a literature review and study of strategic, programmatic documents for the development of perinatal care. The quantitative analysis is based on the evaluation of statistical indicators of the effectiveness of public management. **Results.** The dynamics of the principal demographic indicators in Ukraine remain negative; in particular, negative natural growth and a decrease are observed in the average age of women who give birth against the background of an increase in morbidity and perinatal mortality. The system of organizing perinatal care in Ukraine is generally in the process of regionalization. Consequently, it needs improvement in the direction of regional decentralization of power and funding. Reducing the level of perinatal mortality and its components requires the further development of regionalization of perinatal care, the completion of the creation of III-level perinatal care centers, the review and provision of patient routes, the development and provision of state-guaranteed medical services / standards (standards for the safety of children, pregnant women and women in labor), the reliability of determining the weight body at birth, live birth and stillbirth criteria. It is expedient to develop individual models for the organization of perinatal care for the population in the individual regions, taking into account the level of availability of medical care and the biogeochemical zoning of the regions.

**Keywords:** perinatal care, prenatal care, regionalization of the perinatal sphere, fertility.

### 1 Introduction

One of the tasks of the state is to support, optimize and develop the health care system, in particular, to increase the fertility rate. In the context of the UN sustainable development strategy, the goals for reducing child and maternal mortality and accidents have been defined. The issue of improving public management in the perinatal sphere remains relevant. Perinatal care is one of the components of the health care system. It affects demographic indicators during the constant optimization of providing quality services (fertility rates, the condition of newborn children, the mortality rate of mothers and the quality of care for pregnant women, newborn babies).

The purpose of the academic paper lies in identifying the ways to improve public management in the perinatal sphere as a factor influencing the demographic situation in the country.

### 2 Literature Review

In the scientific literature, the public management efficiency of the perinatal sphere has been studied, with an assessment of perinatal mortality and morbidity indicators, the growth of which led to the need for changes and reforms. For instance, in the Netherlands, the indicated high indicators have led to changes in the policy of the Dutch perinatal health care system (Vos et al., 2016). Vos et al. (2016) have conducted a policy analysis to (1) identify the subjects, context, and factors that facilitated or hindered the development of perinatal health reform policies and (2) provide an overview of updated perinatal health policy. The scholars have concluded that reforming clinical practice and state policy is necessary to improve informed decision-making for the purpose of true reproductive choice (Asch, 1999).

The scientific literature deals mainly with the problem of the inefficiency of individual components of perinatal care. Scientists consider in particular as follows: 1) access to prenatal care and satisfaction with it among pregnant women with physical disabilities (Mitra et al., 2017); 2) state and federal coverage of prenatal care for pregnant immigrant women (Wherry et al., 2017); 3) pre-pregnancy insurance systems and timely prenatal care (Adams et al., 2019); 4) women's viewpoints on the functions and benefits of group and individual prenatal care (Heberlein et al., 2016); 5) provision of insurance coverage using prenatal care and birth outcomes (Daw & Sommers, 2018; Johnston et al., 2021); 6) prenatal care in order to meet the needs of patients and increase the value of care for pregnant women (Peahl et al., 2020); 7) redesigning prenatal care: creating flexible models of prenatal care through a virtual care model (Peahl, Smith & Moniz, 2020; Clapp et al., 2019); 8) social determinants of racial / ethnic differences in prenatal care use and maternal outcomes (Gadson, Akpovi & Mehta, 2017); 9) patients' and providers' standpoints on a new model of prenatal care implemented in response to the 2019 coronavirus disease pandemic (Peahl et al., 2021); 10) injustice in the use of prenatal care (Heaman et al., 2021); 11) adequacy of prenatal care under conditions of the presence of various diseases of pregnant women (Benzaken et al., 2019); 12) individual and regional factors related to prenatal (antenatal), parturient activity and postnatal care (Budhwani, Hearld & Harbison, 2015); 13) the importance of multidisciplinary care during prenatal care (Han et al., 2016); 14) quality of communication and discrimination in the care of pregnant women (Attanasio & Kozhimannil, 2015).

Thus, the research is focused on the problems of prenatal care, its quality, insurance for pregnant women and its role in prenatal care, women's satisfaction with prenatal care, telemedicine in the care of pregnant women, etc. At the same time, few studies pay attention to public management issues in the perinatal sphere.

### 3 Methodology

In the course of the research, a mixed approach, qualitative and quantitative analysis of public management and its effectiveness in the perinatal sphere has been used. The qualitative content analysis was carried out based on a review of the scientific literature and a study of strategic policy documents for the development of perinatal care in Ukraine, starting from 2011, when the Concept for the further development of perinatal care and the plan for the implementation of the activities of the Concept was adopted (Verkhovna Rada of Ukraine, 2022). The quantitative analysis is based on evaluating statistical indicators of the public management efficiency, namely: 1. Perinatal conditions: Number of death in 0 age, person 2000-2020. 2. Perinatal conditions: Percentage of cause-specific deaths out of total deaths in 0 age 2000-2020. 3. Perinatal conditions: Death rate of 0 age per 100 000 population 2000-2020 (WHO, 2022). Ukraine, Poland and Germany were chosen for the analysis,

which differ in the problems of social-demographic development and, accordingly, in the quality of public management of the perinatal sphere. At the same time, all countries have transformed the industry through regionalization reform.

#### 4 Results

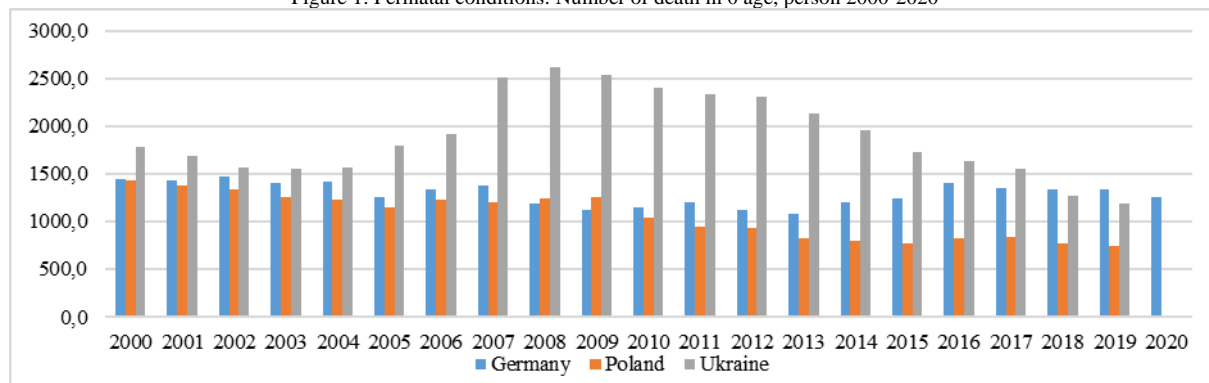
The perinatal industry in European countries is being transformed due to regionalization: the development of specialized centres for the provision of perinatal care, the introduction of a clear plan as part of the strategy for the development of obstetric medicine, and the renewal of equipment, which has generally contributed to an increase in the quality of services in this sphere. However, among the main problems, the following ones should be specified: the lack of funding in the context of deficits in the budgets of European

countries; the lack of skills of young specialists with a sufficient number of medical educational institutions and graduates.

Therefore, the issue of experienced management and effective organization of the structure of the provision of medical services remains relevant. In particular, after the regionalization of perinatal care, an important role in improving the quality of medical services is played by the quality and speed of patient transportation to the maternity ward.

Promoting a healthy pregnancy is the main priority of the healthcare policy of many European countries. The important indicators of the success of this policy are the perinatal mortality of children (Figure 1), the percentage of newborn deaths in the total number of deaths (Figure 2), and the mortality of newborns per 100 thousand persons (Figure 3). Thus, different dynamics of the specified indicators of the effectiveness of perinatal care are observed in the countries under study.

Figure 1: Perinatal conditions: Number of death in 0 age, person 2000-2020

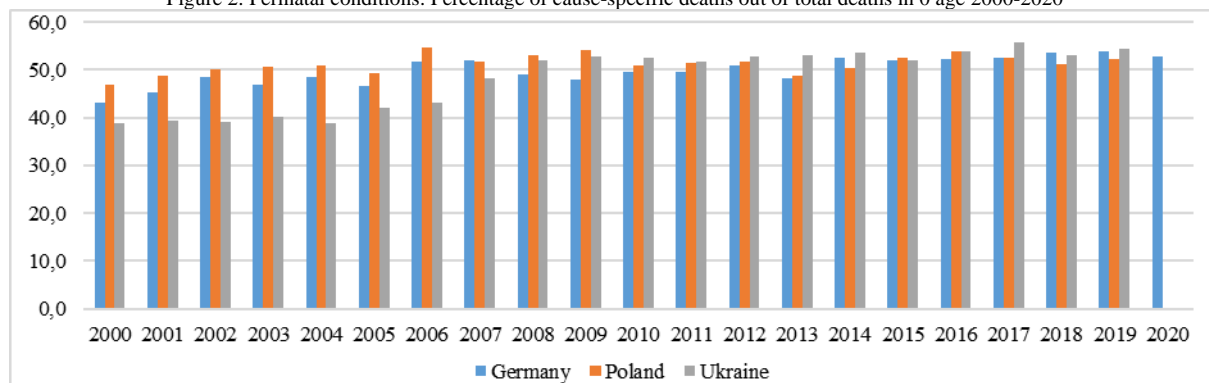


Source: WHO (2022).

The highest infant mortality rates are observed in Ukraine: the average number of deaths at the age of 0 was 1 852 children for 2010-2019; the average share of deceased infants in the total number of deaths is 53%; the average mortality rate is 420 infants per 100 000 persons over ten years. For comparison, in

Poland, the average indicators were 848 people, 51,6% and 225 infants per 100 000 persons, respectively. In Germany, the average indicators were 1244 people, 51,5% and 172 infants per 100 000 persons, respectively.

Figure 2: Perinatal conditions: Percentage of cause-specific deaths out of total deaths in 0 age 2000-2020



Source: WHO (2022).

Thus, the Polish system of perinatal care can be considered as the most effective one. The quality of perinatal care in Polish hospitals has increased thanks to the introduction of Perinatal Care Standards in 2012 significantly. However, the Standards are unified and, for instance, do not define the specific needs of women with disabilities who require special individual perinatal care.

In scientific studies of perinatal care, each EU country's monopolistic, pluralistic or intermediate healthcare systems are considered. Monopolistic healthcare systems are defined as those providing care during pregnancy and childbirth exclusively in polyclinics and maternity homes in outpatient, inpatient

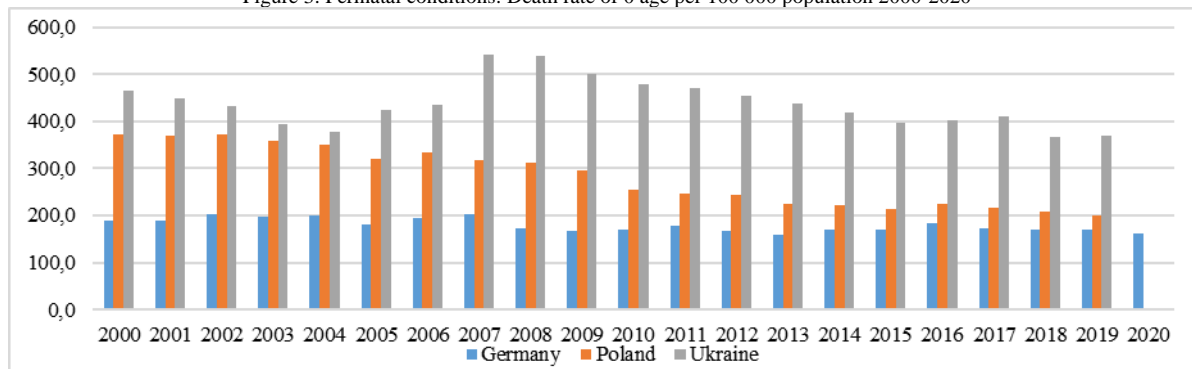
departments. In such kinds of institutions, all personnel is hired by the state. In pluralistic systems, care during pregnancy and childbirth is provided by nurse-midwives and doctors in private practice and, to a lesser extent, through medical institutions. In this case, a woman can choose the type of care she needs. Intermediate systems of perinatal care have features of both.

The basic limitation of the research is the lack of quantitative data on public management in the perinatal sphere. There are data on the number of prenatal visits to various institutions providing medical services, but there is clearly no information on the time of the first prenatal visit. All medical consultants argue the diagnosis without resorting to supporting data, relying

on the fact that the involvement of women in the first antenatal visit is not a problem. Many perinatal benefits depend on the confirmation of the pregnancy and its registration with the relevant official bodies. And the registration takes place at the first visit. Improving prenatal care focuses on women who do not return after the first visit. According to some data, in EU countries, less than 2 percent of women in labor did not receive prenatal care. Standards of perinatal care are established for all countries and are expressed in rights to medical services and social support. The number of visits, examinations, laboratory tests, verification procedures, home visits, income transfers and

other benefits is determined in each EU country. In some countries (for instance, Norway), the number and content of prenatal visits take the form of government-sanctioned recommendations rather than legal regulations. The research committee working on behalf of the European Economic Community has conducted a survey of hospitals on the subject of recommended prenatal visits. Differences between countries are considered to be extremely significant. For instance, in Germany, the cervix is usually examined during antenatal visits; in the USA, such examinations are carried out only under special conditions.

Figure 3: Perinatal conditions: Death rate of 0 age per 100 000 population 2000-2020



Source: WHO (2022).

Many EU countries have implemented policies on reducing hospital costs, relying on home care and outpatient visits. Such strategies are implemented due to their lower cost compared to inpatient treatment. At the same time, a thorough analysis of costs and results is usually impossible. The exception is the Netherlands, where expenditures for the postpartum home visiting program are reviewed. In Portugal, Denmark, France, and Great Britain, there are five and a half specialized medical institutions for every ten thousand births. In comparison, there are more than ten of such specialized medical institutions in Germany, Italy, Poland, and Belgium. The study conducted under the project of obstetric medical care has revealed that more than 63% of children born at 24-31 weeks are registered in such countries as Poland and Denmark, and more than 80% - in Germany, Italy, and Portugal.

In the Central and Eastern Europe (CEE) region, prenatal and neonatal care outcomes are often satisfactory. In Poland, the perinatal mortality of children is 4,9%, and the perinatal mortality of women (pregnancy, childbirth, postpartum period) is 0,23% (9 cases). However, dissatisfaction with the quality of perinatal care is also observed, including antenatal classes, hospital equipment and the approach of hospital staff, forasmuch as they do not really meet specific functional needs (Mazurkiewicz, Stefaniak & Dmoch-Gajzlerska, 2018). The basic problems of caring for pregnant women include medical personnel ill-treatment, conducting medical procedures without prior consent (Baranowska et al., 2019). Inappropriate comments on the part of staff about their own or the woman's situation were reported in 25% of cases, while 20% of women experienced an indifferent attitude towards them (Baranowska et al., 2019). In the study conducted by Baranowska et al. (2019) 19,3% of women reported that staff did not adequately care for their privacy, and 1,7% of respondents noted that the worst treatment was related to feeling anonymous in the hospital. Thus, women experience disrespect and abusive care during Polish perinatal care. Most abuses and disrespects involve violations of the right to privacy, the right to information, the right to equal treatment and the right to freedom from violence. Low information awareness regarding abuses and complaints reported in the study may result from women's lack of awareness of relevant human rights laws (Baranowska et al., 2019).

#### 4.1 Perinatal care in Ukraine

The process of regionalization of perinatal care in Ukraine was launched in 2003-2004. Based on the distribution of perinatal care by level, the purpose and tasks of the institution were defined according to the level. Perinatal care after regionalization has certain aspects, such as a three-level obstetric hospital, with its qualifying powers and limitations. The level of the medical institution is determined based on the definition of the individual diagnosis of the woman in labor. This is related to the perinatal risk of a pregnant woman, to ensure the necessary conditions and medical capabilities of the institution for preserving the health and life of the mother and child. All levels of perinatal care, within the framework of regionalization, including coordination of activities, are regulated at the state level, namely by the Institute of Pediatrics, Obstetrics and Gynecology of the National Academy of Medical Sciences (SI "IPOG NAMSU") of Ukraine.

One of the priorities of the reorganization is the creation of levels. The goal of perinatal care levels is to reduce morbidity and mortality, including existing disparities, by encouraging skilled medical growth and maturing care delivery systems that consider risks specific to maternal health needs. In order to standardize the complete integrated system of perinatal regionalization and risk-based maternal care, this classification system establishes levels of maternal care that refer to basic care (level I), specialized care (level II), specialized care (level III) and regional centers of perinatal care (level IV). When determining the appropriate level of care provided by a medical facility, the decisions should be taken in reliance upon regional and state health care institutions, national accreditation and professional organization guidelines, and identified regional needs for perinatal care and regional resources.

State and regional authorities should cooperate with health facilities within the region and with the participation of obstetric care specialists to define an appropriate coordinated system of care and implement policies promoting and supporting a regional system of health care. This collaboration will increase the safety of childbirth in communities, ensuring support and providing quality obstetric care.

Regional prenatal care is aimed at supporting and expanding medical care possibilities by developing, strengthening and

defining in better way relations between medical institutions in the region. In turn, this should facilitate access to counseling and appropriate care when needed to provide the women with low and medium perinatal risk to stay in their communities, while pregnant women at high perinatal risk can receive care in facilities prepared to provide the necessary level of specialized care. Each institution should clearly understand its capacity to handle increasingly complex cases of postpartum depression and should have a clearly defined threshold for transferring women to healthcare facilities offering a higher level of care. In emergencies, the nearest hospital of the appropriate level should be used if additional trips to a higher-level hospital increase the risk of an accident. An important goal of the regionalized maternity care system is to provide medical institutions of level III or IV for training in quality improvement methods, maintaining a high educational level and analyzing cases of severe morbidity and mortality in the hospitals of its regional system.

One of the most frequently asked questions about the levels of obstetric care for mothers was related to the availability of staff, especially the requirement for staff to be “available” or “present” on-site. Permanent physical presence is understood as follows: the designated person must be present at the site of perinatal care 24 hours a day, seven days a week. Availability means that the specified person must be available 24 hours a day, seven days a week for consultation and assistance and be able to be physically present at the place of delivery of obstetric and gynecological care for a period that includes the risks and benefits to the mother, a fetus or a new-born with assistance. Further determination of these time frames should be individualized depending on the institution and region, with the participation of obstetric care facilities.

While regionalization improves health care, then the introduction of levels of obstetric care should be related to the reduction in maternal morbidity and mortality. There should also be a downward shift in the number of seriously ill women in the institutions of I and II level. Therefore, institutions and regional systems should develop methods for tracking and diagnosing maternal morbidity and mortality to measure system performance using levels of perinatal care. Quantitative, and qualitative assessment and realistic results should be an integral part of characterizing the effectiveness of the system.

State and regional authorities should work together with numerous institutions within the region and with the participation of nursery midwifery care in order to define the relevant coordinated system of care and to implement policies that will promote and maintain a skilled system of care. One of the steps towards increasing provision of medical services is the development of a system for the classification of perinatal services, corresponding to a specific state or geographical region. The next step is to establish certain levels in all facilities providing perinatal care within the system. Additional information is required to help optimize implementation, including further understanding of perceived barriers to implementation in hospitals and maternity units, identifying or developing tools and resources to address these barriers, and identifying examples and best practices of successful implementation of the levels of the medical care system. The provision of such information to other institutions and systems that are in the process of planning to implement a health care system can accelerate social-economic development. Moreover, determining how best to secure the funding needed to establish perinatal care system levels, how to manage different payer programs, and how to reveal which financial models are most sustainable is critical to implementation. An important consideration related to financial concerns is ensuring that institutions are not subject to financial “penalties” for inappropriate transferring of a woman to a higher-level institution.

## 5 Discussion

In 2011, the Ministry of Health of Ukraine (MOH) issued the Order No. 52 dated February 2, 2011 “On Approval of the Concept for the Further Development of Perinatal Care and the Plan for the Implementation of the Concept’s Measures” (The Verkhovna Rada of Ukraine, 2022). It clearly defined goals, objectives and methods for improving perinatal care, a new stage in the development of the maternal and child healthcare industry has begun in the state. The purpose of the concept lies in reducing maternal and perinatal morbidity, disability and mortality in Ukraine by structurally reorganizing the system of providing medical care to women during pregnancy and childbirth, as well as to their new-born children, increasing the level of accessibility and quality of maternity care, its safety and economical use of resources. A number of negative trends in changes in population health indicators hindered the development and implementation of this order. From 1991 to the present day, a negative trend in population growth has been maintained in Ukraine. From 1991 to 2002, there was a sharp decline in the birth rate. It lasted until 2012, and had a positive dynamics until 2022. The birth rate of 11,4 per 1000 population in 2012 decreased to 7,3 in 2021 (State Statistic Service of Ukraine, 2022). Several factors have contributed to the decrease in the birth rate in recent years in Ukraine. The crucial ones are the decrease in the number of women of childbearing age over the same period and the adoption by the population of a quasi-planned family tendency that is characteristic of developed countries in Europe and the world. The total fertility rate, which is calculated and analyzed by the UN Population Division, characterizes the fertility processes quite indicatively. According to their calculations, if this coefficient  $\leq 2,1$ , then simple reproduction of the population is not ensured in this situation. In the world, this indicator was 3,0 in 1990-1995, and decreased to 2,5 in 2010-2015 (Rohach, Keretzman, Hadzheha, 2019).

An unfavorable demographic situation is accompanied by an unsatisfactory state of health of women, mothers and newborns. During the third millennium, the prevalence of women’s menstrual disorders has increased by 32,7%, inflammatory diseases of the cervix - by 82,5%, malignant neoplasms of the uterine body - by 33,9%, mammary glands - by 15,3%, and the incidence rate of pregnant women with diabetes – by 9,6 times, diseases of the thyroid gland - by 16,1%, diseases of the circulatory system - by 31,2%, diseases of the genitourinary system - by 12,3% (Marushko & Dudina, 2020). The negative trend of the most objective indicator of the health of new-borns - the frequency of low birth weight new-borns – 5,39% in 2000 and 5,78% in 2019 is observed; the health index of new-borns remains low despite positive dynamics – 72,8 % and 84,2%, respectively (Marushko & Dudina, 2020). In general, the level of perinatal mortality in Ukraine, calculated according to WHO criteria, decreased by 3,1 times - from 27,1 per 1 000 births in 2000 to 8,64 in 2019; however, it still exceeds the similar indicator on average for the countries of the European Union (6,1‰) and the European region (7,2‰ in 2017), respectively. Based on the data of the State Statistics of Ukraine, the decrease in the level of perinatal mortality occurred only due to a decrease in early neonatal mortality (from 4,71‰ in 2000 to 2,99‰ in 2018) with a tendency to increase stillbirths (from 5,4‰ to 5,91‰, respectively). At the same time, an excess of the real rate of early neonatal mortality over the actual rate by 2,2–2,3 times is noted, leading to an underestimation of the overall rate of perinatal and infant mortality.

The key indicator, taken into account during formation of the total mortality structure, is the mortality of infants under 1 year (infant mortality), which is an essential factor of the level of the country’s social-economic development. This indicator, starting with the declaration of independence of Ukraine, had a stable positive trend; however, during the period 1991-2021, it decreased almost twice. In terms of the structure of infant mortality, the so-called external causes that have arisen in the perinatal period are at the first place (53%). In 2021, congenital

disabilities (anomalies) occupied the second place (25%), and birth trauma took the 3rd place (15%). It should be noted that the vast majority in the structure of infant mortality belongs to factors that can be controlled. According to the data of WHO, the main cause of newborn mortality in developed countries is the extreme degree of morphofunctional immaturity and neonatal sepsis. There are no data on the first indicator in the Centre for Medical Statistics of the Ministry of Health of Ukraine, and according to the researchers' conclusions, the indicator is practically not determined and is not taken into account in the vast majority of regions. Neonatal sepsis is the second most common cause of death of newborns in the EU countries based on the data of WHO, while in Ukraine, congenital anomalies of development are in the second place. The situation with the mortality of newborns from neonatal sepsis in Ukraine is acute and surrounded by several mysterious factors. First of all, difficulties arise in the formulation of this diagnosis during pregnancy and, subsequently, inconsistencies with the pathoanatomical diagnosis. The main reason for this phenomenon is that it is necessary to have modern equipment for the correct and timely diagnosis of this pathology in children, the effectiveness of which is proven by the principles of evidence-based medicine. These manipulations are highly specialized and are not conducted in rural areas and in all district obstetric and gynecological hospitals. This is confirmed by the fact that neonatal sepsis is far from the first place in large cities of Ukraine, among the causes of death of newborns, compared to other regions.

In economically developed countries, perinatal and infant mortality reduction occurs primarily due to the improvement of the quality of medical care for children with very low birth weights. In particular, in most countries of Western Europe, the survival rate of such children in the first 168 hours of life reaches 80-95%. In Ukraine, it slightly exceeded 81% in 2014 and reached almost 82% in 2015 (Zhylka, Slabkiy & Shcherbinska, 2021).

Maternal mortality and the severity of childbirth are increasing not only in Ukraine but also abroad. The main medical causes of maternal mortality include as follows: cardiovascular diseases, infections, and municipal obstetric complications such as bleeding and they vary over time considering the period of pregnancy. Despite the introduction of specific changes in the clinical examination and careful periodic examination, it is possible to improve the system and foresee some risks related to childbirth.

Nowadays, a three-level perinatal care system exists in all Ukraine regions, except for Volyn, Zakarpattia, and Chernihiv regions. The system of providing medical care based on the principle of regionalization provides for a reasonable and effective distribution between healthcare institutions of different levels. For instance, according to world experience, approximately 17% of births require a timely response to obstetric and neonatal problems in the conditions of the III-level perinatal care facility (Shylo & Nykytyuk, 2018). In Ukraine, this indicator was 17,7% in 2015, although the difference is noticeable in terms of regions, namely: from 0% in Zakarpattia, and Chernihiv regions, less than 10% in Mykolaiv, Cherkasy, and Vinnytsia regions, over 32% in Sumy region, and 36% in Kharkiv, and 45% in Chernivtsi regions, respectively. In the regions under study, perinatal care institutions of the first level delivered 40,3% of births, II – 42,5%. This gives evidence of insufficient adjustment of the functioning of regional perinatal care regarding the distribution of childbirth between institutions of different levels (Shylo & Nykytyuk, 2018).

## 6 Conclusions

Currently, the dynamics of the main demographic indicators in Ukraine remain negative. The negative natural increase and decrease in the average age of women who give birth against increasing morbidity and perinatal mortality is an urgent

problem of modern Ukrainian society and all components of the healthcare system. In the process of regionalization, the current system of organizing perinatal care in Ukraine requires improvement in the direction of regional decentralization of power and funding. Reducing the level of perinatal mortality and its components requires the further development of regionalization of perinatal care, the completion of the creation of III-level perinatal care centers, the review and provision of patient routes, the development and provision of state-guaranteed medical services / standards (standards for the safety of children, pregnant women and women in labor), the reliability of determining body weight at birth, live birth and stillbirth criteria. In a related move, it is necessary to develop individual models of the organization of perinatal care for the population for individual regions, taking into account the level of availability of medical care and the biogeochemical zoning of the regions. The experience of highly developed countries in solving the above-described problem can serve as a basis for the settlement of an issue in our country with further optimization of existing models of a perinatal service organization according to our economy, geography and social components in Ukraine.

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**Primary Paper Section: A**

**Secondary Paper Section: AE, FM**