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HEALTH INDICATORS OF FIRST-YEAR-OF-LIFE CHILDREN IN THE REPUBLIC OF KAZAKHSTAN FOR 2013-2022

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Abstract

Background. Both maternal and child health indicators represent general social welfare and the level of demographic and socio-economic development of society. At the same time, effective control over the system of maternal and child health care requires monitoring of the morbidity of mothers, newborns, and children in the first years of life, so that correct prioritization and allocation of resources can be handled.

Aim. Conduct an analysis of the health status of the first-year-of-life children of the Republic of Kazakhstan for the period from 2013 to 2022.

Materials and methods. We studied the reporting materials of the Ministry of Health of the Republic of Kazakhstan based on official statistical data for the period from 2013 to 2022. A comparative analysis of demographic indicators, and indicators of the health status of children aged 0 to 5 years was carried out, an assessment of general and primary morbidity was carried out, and the dynamics of the chronicity rate of diseases were also considered. The following methods were used in the work: reporting, analytical, comparative analysis method, and mathematical method.

Results and discussion. Over the past 10 years (2013-2022), there has been a steady downward trend in infant mortality rates in Kazakhstan. According to data for 2022, this indicator was 7.68 per 1000 live births compared to 11.3 for 2013. In 2022, the mortality rate was high due to problems arising in the perinatal period and amounted to 38.4. Despite the decrease in morbidity rates over ten years, respiratory diseases are in first place in the morbidity structure in 2022 with an indicator of 629.8. The absolute number of deceased newborns and the average values of early neonatal mortality in the Republic of Kazakhstan tend to steadily decrease.

Conclusions. Therefore, policies and interventions to improve maternal health are a public health issue because these interventions directly affect maternal and child health outcomes.

Keywords: *morbidity analysis, child health, infant health indicators, infant mortality, Kazakhstan.*

Резюме

ПОКАЗАТЕЛИ ЗДОРОВЬЯ ДЕТЕЙ ПЕРВОГО ГОДА ЖИЗНИ В РЕСПУБЛИКЕ КАЗАХСТАН ЗА 2013-2022 ГОДЫ

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Введение. Показатели здоровья матери и ребенка отражают общее социальное благосостояние, уровень демографического и социально-экономического развития общества. В то же время для эффективного контроля за системой охраны здоровья матери и ребенка необходим мониторинг заболеваемости матерей, новорожденных и детей первых лет жизни для правильной расстановки приоритетов. и распределение ресурсов может быть решено.

Цель. Провести анализ состояния здоровья детей первого года жизни Республики Казахстан за период с 2013 по 2022 годы.

Материалы и методы. Изучены отчетные материалы Министерства здравоохранения РК на основе официальных статистических данных за период с 2013 по 2022 годы. Проведен сравнительный анализ демографических показателей, показателей состояния здоровья детей в возрасте от 0 до 5 лет, проведена оценка

общей и первичной заболеваемости, ее структуры. В работе использовались следующие методы: отчетный, аналитический, метод сравнительного анализа, математический метод.

Результаты и обсуждение. За последние 10 лет (2013-2022 гг.) в Казахстане наблюдается устойчивая тенденция снижения уровня младенческой смертности. По данным на 2022 год этот показатель составил 7,68 на 1000 живорожденных по сравнению с 11,3 за 2013 год. В 2022 году уровень смертности был высоким из-за проблем, возникающих в перинатальном периоде, и составил 38,4. Несмотря на снижение показателей заболеваемости за десятилетний период, болезни органов дыхания занимают первое место в структуре заболеваемости в 2022 году с показателем 629,8. Абсолютное число умерших новорожденных и средние значения ранней неонатальной смертности в Республике Казахстан имеют тенденцию к неуклонному снижению.

Выводы. Таким образом, политика и меры по улучшению материнского здоровья являются вопросом общественного здравоохранения, поскольку данные мероприятия напрямую влияют на показатели здоровья матери и ребенка.

Ключевые слова: *анализ заболеваемости, здоровье детей, показатели здоровья младенцев, младенческая смертность, Казахстан.*

Түйіндеме

ҚАЗАҚСТАН РЕСПУБЛИКАСЫНДАҒЫ 2013-2022 ЖЫЛДАРҒА АРНАЛҒАН ӨМІРІНІҢ БІРІНШІ ЖЫЛЫНДАҒЫ БАЛАЛАРДЫҢ ДЕНСАУЛЫҚ КӨРСЕТКІШТЕРІ

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Кіріспе. Ана мен бала денсаулығының көрсеткіштері жалпы әлеуметтік әл-ауқатты, қоғамның демографиялық және әлеуметтік-экономикалық даму деңгейін көрсетеді. Сонымен бірге, ана мен бала денсаулығын сақтау жүйесін тиімді бақылау үшін басымдықтарды дұрыс белгілеу үшін аналардың, жаңа туған нәрестелердің және өмірінің алғашқы жылдарындағы балалардың аурушаңдығын бақылау қажет. және ресурстарды бөлу туралы шешім қабылдауға болады.

Зерттеудің мақсаты. 2013-2022 жылдар аралығындағы Қазақстан Республикасында өмірінің бірінші жылындағы балалардың денсаулық жағдайына талдау жасау.

Материалдар мен зерттеу әдістері. Қазақстан Республикасы Денсаулық сақтау министрлігінің есеп беру материалдары 2013-2022 жылдар аралығындағы ресми статистикалық деректер негізінде зерделенді. 0 мен 5 жас аралығындағы балалардың демографиялық көрсеткіштері мен денсаулық көрсеткіштеріне салыстырмалы талдау жасалды. Жалпы және біріншілік сырқаттанушылықты және оның құрылымын бағалау жүргізілді. Жұмыста келесі әдістер қолданылды: есеп беру, аналитикалық, салыстырмалы талдау әдісі, математикалық әдіс.

Нәтижелер мен талқылау. Соңғы 10 жылда (2013-2022 жж.) Қазақстанда нәресте өлімі деңгейінің тұрақты төмендеу үрдісі байқалды. 2022 жылғы жағдай бойынша бұл көрсеткіш 2013 жылғы 11,3-ке қарағанда 1000 тірі туғандарға шаққанда 7,68-ді құрады. 2022 жылы перинаталдық кезеңде туындаған проблемаларға байланысты өлім-жітім деңгейі жоғары болды, 38,4. Он жыл ішінде аурушаңдық деңгейінің төмендеуіне қарамастан, 2022 жылы аурушаңдық құрылымында 629,8 көрсеткішпен респираторлық аурулар бірінші орында тұр. Қазақстан Республикасында жаңа туған нәрестелер өлімінің абсолютті саны және ерте неонаталдық өлім-жітімнің орташа көрсеткіштері тұрақты төмендеу үрдісінде.

Қорытындылар. Осылайша, ана денсаулығын жақсартуға бағытталған саясат пен іс-шаралар қоғамдық денсаулық мәселесі болып табылады, өйткені бұл араласулар ана мен бала денсаулығының нәтижелеріне тікелей әсер етеді.

Түйін сөздер: *аурушаңдық талдауы, бала денсаулығы, нәресте денсаулығының көрсеткіштері, нәресте өлімі, Қазақстан.*

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Introduction

Currently, most research in the fields of pediatrics, public health, psychology, education and law shows that the first years of a child's life are very important in his development [9, 10, 11, 15, 17]. Maternal health bears an especially influence on child health [13]. The conditions in which the fetus is enveloped-the intrauterine environment concerning the general condition of health on the part of the mothers and other prenatal environmental distressing factors-set great importance on fetal development [15]. Second, maternal health influences infant health after birth. Consequently, infant health and the avoidance of infant mortality are premised on positive maternal health [6, 17]. Lastly, with babies and children as the very foundation to adult health and health per se, it is absolutely necessary to take appropriate and timely measures [16]. A comprehensive assessment of the determinants of infant mortality is one of the pressing problems of public health and healthcare [14].

The Republic of Kazakhstan is the only country in the Central Asian region that in 2015 achieved the 4th Millennium Development Goal on Reducing mortality among children under 5 years of age – it reduced the child mortality rate by 2/3 by 2015 from the 1990 level of 34.0% to 11.9‰ [8].

Priority strategic measures for the protection of motherhood and childhood have found their development in the implementation of State programs for the development of healthcare of the Republic of Kazakhstan, which has made it possible in recent years to reduce the indicators of children and infant mortality [7].

The country is improving the organization of perinatal and neonatal care. In this regard, an integrated model of providing medical care to children was introduced, which provides for improving the quality of prenatal screening, reducing child and infant mortality, and improving the qualifications of specialists providing medical care to children. A system of three-level regionalization of perinatal care has been introduced and is being developed [12].

Under the Ministry of Health of the Republic of Kazakhstan, there is a Coordination Council for the provision of medical care to children, within the framework of which a comprehensive analysis of morbidity and mortality rates of children is carried out, focusing on problematic issues in organizing the provision of medical care to the child population of the country with the further adoption of management decisions.

The country has adopted the WHO strategy “Safe Motherhood”, early breastfeeding, mother and child staying together, and exclusive breastfeeding, aimed at caring for full-term and mature children. A system for recording fetal and infant losses has been introduced [7, 12].

Since May 2016, monitoring of newborns in critical condition has been operating in the Republic of Kazakhstan. In general, as a result of timely interventions, 93-95% of newborns are brought out of critical condition [8].

The analysis and development of the regulatory framework is carried out on an ongoing basis, taking into account international practice and WHO recommendations. Legal acts have been developed and implemented to regulate the work of children's services, taking into account the needs of the population and modern requirements: Standard for organizing the provision of pediatric care in the Republic of Kazakhstan and Standard for organizing the provision of pediatric surgical care in the Republic of Kazakhstan [10].

The organization of preventive medical care for children is being improved by introducing a universally progressive model of patronage visits and assigning the status of “Child-Friendly Hospital” to all medical organizations of the children’s service.

Over the past decades, there has been a positive trend in reducing the infant mortality rate in the Republic of Kazakhstan. The key task in healthcare in recent years has been to preserve the basic potential of the maternal and child health service, adapt it to new economic conditions based on restructuring and increasing the role of the outpatient clinic, ensuring access to medical care for all children and strengthening services that ensure the realization of the right to life [8].

The development in the Republic of Kazakhstan of comprehensive plans, road maps, an Action Plan to reduce child and infant mortality, regulatory legal acts on childhood and obstetric care, the provision of organizational and methodological assistance to regional medical organizations as part of general methodological and analytical work has made it possible to significantly reduce infant mortality rates. Thus, in the Republic of Kazakhstan in recent years (2013-2022), there has been a tendency towards a decrease in the infant mortality rate from 14.8 to 8.3 [9]. The Ministry of Health has developed a concept for the development of maternal and child health services in the Republic of Kazakhstan for 2024-2030, “Every woman, every child.”

According to literature data, despite the decrease in infant mortality both in Kazakhstan and in neighboring countries, this indicator remains one of problematic ones, since it causes enormous socio-economic damage to society [7].

Aim: based on the analysis of official statistical data for 2013-2022 for the Republic of Kazakhstan, to assess the dynamics of the main trends in health indicators of children in the first year of life.

Materials and methods. We studied the reporting materials of the Ministry of Health of the Republic of Kazakhstan based on official statistical data for the period from 2013 to 2022. A comparative analysis of demographic indicators, and indicators of the health status of children aged 0 to 5 years was carried out, an assessment of general and primary morbidity was carried out, and the dynamics of the chronicity rate of diseases were also considered. The following methods were used in the work: reporting, analytical, comparative analysis method, and mathematical method.

The study was conducted in December 2023 as part of a doctoral dissertation on the topic: Comprehensive assessment of risk factors affecting the health of mother and child. The research was approved by the Local Ethics Committee (IRB00011496, protocol №6(129) from 25.05.2022) of Asfendiyarov Kazakh National Medical University, Almaty, Kazakhstan. Consent for publication is not applicable.

Research results.

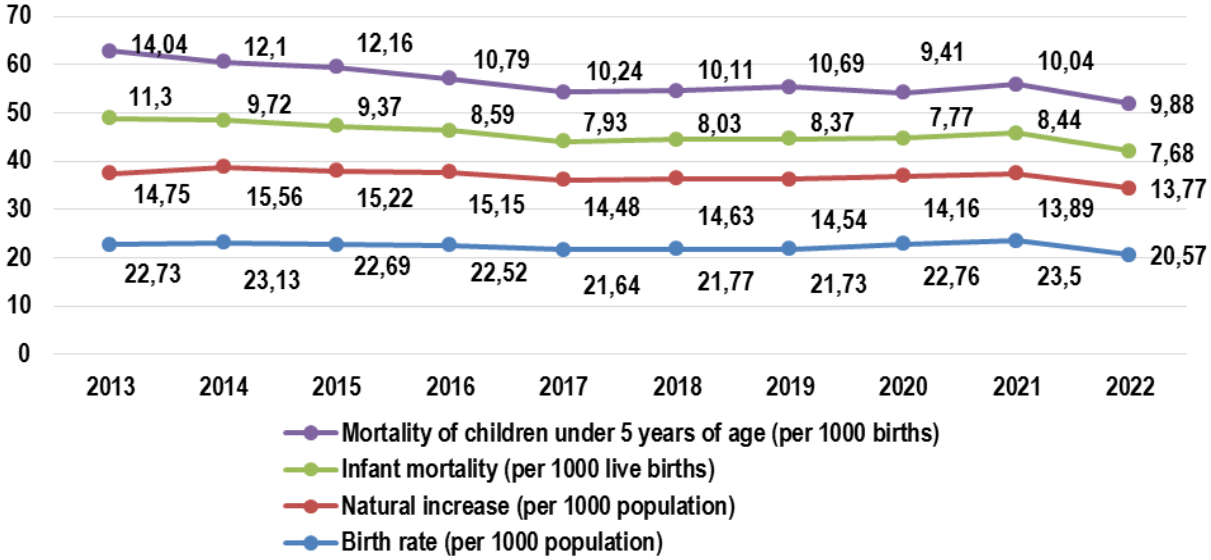
In the structure of the population of the Republic of Kazakhstan, the dynamics of the child population is positive: in 2022, 403.9 thousand children were born in Kazakhstan (387.2 per thousand people – 2013), of which 51.5% were boys, 48.5% - girls. 241.4 per thousand children or 59.8% of

the total number of births were born in urban areas, and the remaining 162.4 thousand children - 40.2% in rural areas [11]. Compared to 2013, the number of births in 2022 increased by 4.2% [1, 5].

The birth rate (per 1000 population) in the Republic of Kazakhstan decreased by 9.5% over the 10 years under study [1-5]. The total fertility rate was 20.57 births per 1000 people (2013 – 22.73). Dynamics of health indicators for children under 5 years of age in the Republic of Kazakhstan for 2013-2022. presented in Table 1.

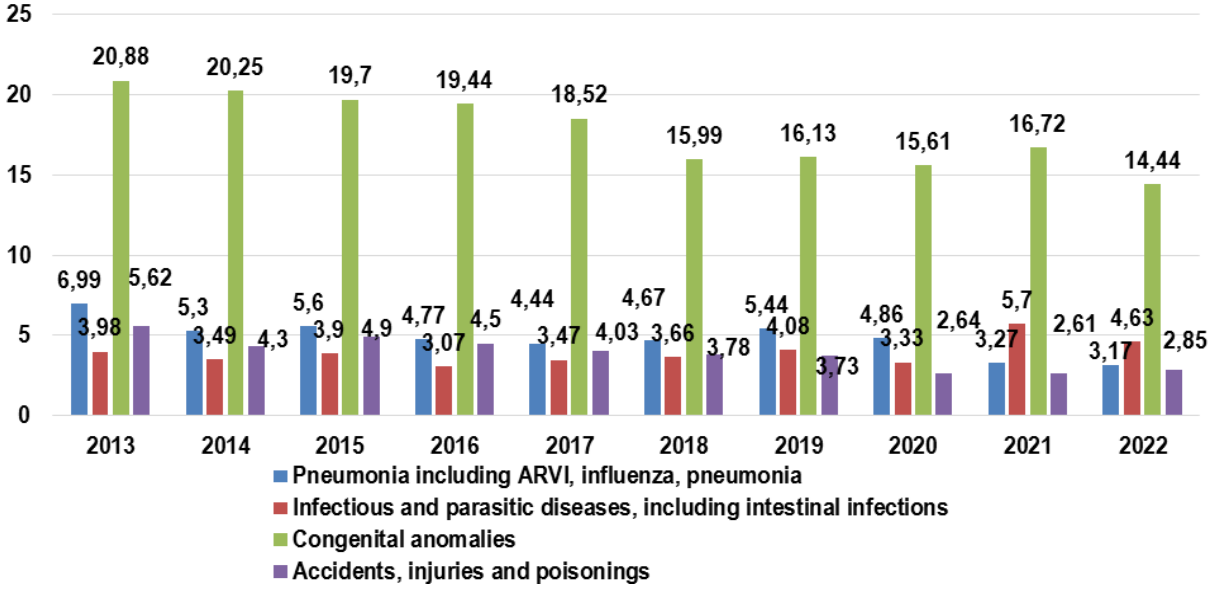
Infant mortality is one of the most important medical and social characteristics of society, reflecting the influence of a complex of unfavorable factors on the health of the population, such as maternal health, quality and accessibility of medical care, socioeconomic conditions, etc. [8]. Over the past 10 years (2013-2022), there has been a steady downward trend in infant mortality rates in Kazakhstan. According to data for 2022, this indicator was 7.68 per 1000 live births compared to 11.3 for 2013 (Diagram 1). The average rate of decline was 17.68%.

Diagram 1. Dynamics of health indicators for children under 5 years of age in the Republic of Kazakhstan for 2013-2022.



An objective indicator for assessing the performance of the healthcare system is the characteristics of the causes of death. In 2022, the mortality rate was high due to problems arising in the perinatal period and amounted to 38.4. In second place are congenital anomalies with an indicator of 14.44 (in 2013 - 20.88). The unfavorable situation with congenital malformations in the country is largely due to the health status of women of reproductive age and the quality of perinatal care. Despite the ongoing prenatal screening of pregnant women to diagnose congenital malformations, their detection rate remains low. Overall, there has been a decline in the leading causes of infant mortality over the ten years (Diagram 2). Mortality due to accidents and injuries decreased by 2 times from 5.62 in 2013 to 2.85 in 2022. An increase in mortality is observed due to infectious diseases in children in the first year of life. This indicator increased from 3.98 in 2013 to 4.63 in 2022.

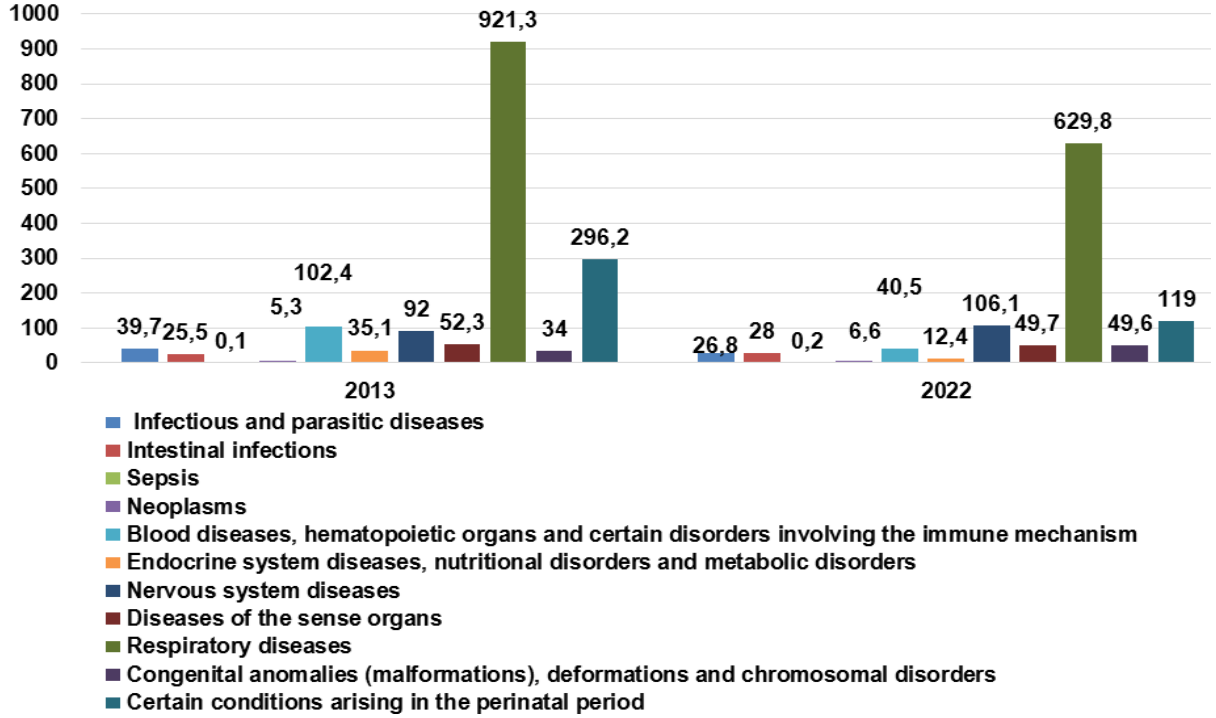
Diagram 2. Mortality rates for children under 1 year of age by main classes of causes of death per 10,000 live births in the Republic of Kazakhstan for 2013-2022.



Despite the decrease in morbidity rates over a ten-year period, respiratory diseases are in first place in the morbidity structure in 2022 with an indicator of 629.8, and in second place are individual conditions arising in the perinatal period 119.0. Diseases of the nervous system came in third place, with an increase of 15.3% from 92 in 2013 to 106.1 in 2022. For the period from 2013 to 2022. There is also a steady trend of decreasing morbidity among children of the Republic of Kazakhstan under the age of 1 year for diseases of the hematopoietic organs and certain disorders, congenital anomalies, diseases of the endocrine system, infectious and parasitic diseases, and diseases of the sensory organs. Diagram 3 shows the dynamics of the incidence rate of children in the first year of life in the Republic of Kazakhstan over 10 years for various diseases.

There is a tendency to increase the incidence of neoplasms and congenital anomalies in children in the first year of life. The incidence rate of congenital anomalies increased from 34.0 in 2013 to 49.6 to 6.6 in 2022. The incidence rate of neoplasms increased from 5.3 in 2013 to 6.6 in 2022. The number of children with malnutrition has also increased; in 2013 this figure was 13.3, and in 2022 it increased to 29.6.

Diagram 3. Dynamics of the morbidity rate of children in the first year of life in the Republic of Kazakhstan over 10 years for various diseases.



Indicators of perinatal and early neonatal mortality show the level of socio-economic development of the country, quality of life, accessibility and quality of medical care, and efficiency of health authorities and institutions. According to a joint report by the UN, WHO, UNICEF, and the World Bank, from 1990 to 2020, neonatal mortality in the Republic of Kazakhstan decreased by more than 4 times - from 23 per 1000 live births to 5. This figure is the lowest among Central Asian countries. Analyzing the dynamics of perinatal mortality over the past 10 years in the Republic of Kazakhstan, it should be noted that there has been a decrease in the rates of deaths in the perinatal period and stillbirths, with a constant decrease in the number of deaths in the early neonatal period. The rate of stillbirths per 1,000 live and stillbirths was 9.1 in 2013, which decreased to 7.5 in 2022. The average rate of decline was 17.6%.

Indeed, the absolute number of deceased newborns and the average values of early neonatal mortality in the Republic of Kazakhstan tend to steadily decrease. In 2013-2022 the early neonatal mortality rate (calculated as the number of children who died in the first 6 days after birth per 1000 live births) decreased by 64.3%. The most pronounced rate of decline in early neonatal mortality was observed in 2017 (Table 1.).

Table 1.

Indicators of perinatal and early neonatal mortality of newborns in the Republic of Kazakhstan for 2013-2022.

Indicators	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Number of stillbirths per 1000 live and stillbirths	9.1	9.3	9.0	9.3	9.3	9.0	8.8	9.3	8.6	7.5
Number of stillbirths and deaths of newborns aged 0-6 days per 1000 live and stillbirths	13.3	12.6	12.2	12.0	11.6	11.5	11.4	11.9	11.6	10.2
Number of deaths of newborns aged 0-6 days per 1000 live births	4.2	3.4	3.2	2.7	2.4	2.5	2.7	2.6	3.0	2.7
Number of sick and sick newborns born per 1000 live births	110.5	119.5	107.8	123.4	125.0	113.9	113.5	123.6	126.7	139.6

Discussion

Currently, most scientists and researchers in the fields of pediatrics, public health, psychology, pedagogy and law are unanimous in the opinion that the first years of a child's life are very important in his development [7, 8].

The health indicators of children in the first year of life are largely related to the neonatal period, the health of the mother, the socio-economic and environmental situation, the nature of the child's feeding, as well as timely examinations by a pediatrician and the need for rehabilitation and therapeutic treatment [8].

The mortality of children from such controllable causes as respiratory diseases and infectious diseases indicates persistent omissions in the work of primary health care organizations (MO) [11], including insufficient preventive work, underestimation of the severity of the patient's condition, insufficient level of knowledge and skills of medical workers, untimely provision of assistance, insufficient analysis of the causes of mortality and work on mistakes [7].

It can be assumed that the introduction of a set of preventive measures to strengthen the reproductive health of citizens and protect the health of mothers and children to improve the health of the population and reduce the level of major socially significant diseases, which will undoubtedly have a positive impact on maternal and infant mortality rates [11].

These studies recommend the need to study the health status of children and analyze the medical and hygienic aspects that determine it. Thus, it is necessary to conduct further research to clarify risk factors, and the structure of infant morbidity, and develop new approaches to prevention [17]. The main goal in improving the health of the new generation should be to improve basic care for every woman and every child born. At the same time, it is necessary to deeply study the characteristics of the medical and social characteristics of families with children who were born sick and became ill [15, 18].

Our study covers the analysis of health indicators of children in the first year of life based on official statistics for the Republic of Kazakhstan, the number of live births, the number of stillbirths, the number of stillbirths, the ratio of stillbirths to early neonatal mortality, the number of children who died by period of life, by age, and the structure of the causes of mortality. Our research allows us not only to analyze it and suggest trends but also to direct the attention of specialists with an emphasis on growing pathology for timely prevention, diagnosis, treatment and rehabilitation of children in the first year of life.

The analysis does not show a complete picture of the health status due to the lack of data for 2023 and due to the study of general data for the country. This article does not provide data on the study of the quality and coverage of prenatal screening, or an analysis of staffing levels in organizations providing medical care to the child population.

Conclusions. Despite the positive trend of decreasing morbidity and mortality rates for children in the first year of life in the Republic of Kazakhstan over the past 10 years, infant mortality rates for some reasons should serve as a direction for taking measures to radically reduce it. The identified individual fluctuations in the incidence rates of some diseases require further study of the dynamics in these nosological groups. The results obtained can form the basis for the development of a strategy for factor-based prevention of disease development, leading to an increase in the level of public health.

The analysis of early neonatal mortality indicators indicates that in the Republic of Kazakhstan, there is a positive trend of a significant reduction in its indicators. At the same time, the organization of perinatal care should be aimed at reducing the number of sick and sick newborns born, which dictates the need to optimize maternal and child health services.

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