

<https://doi.org/10.5281/zenodo.4782088>

УДК 614.1

## ОЦЕНКА СОВРЕМЕННОЙ МЕДИКО-ДЕМОГРАФИЧЕСКОЙ ОБСТАНОВКИ Г. ГРОДНО

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**Аннотация:** Проведена оценка современной медико-демографической обстановки г. Гродно. На основании проведённого анализа установлено, что по сравнению с показателями смертности, показатели рождаемости населения выше. За 2010-2019 гг. отмечен наиболее высокий среднегодовой темп снижения показателей смертности (4,5 %). В анализируемый период отмечалась положительная тенденция в развитии медико-демографической ситуации: повысился общий показатель рождаемости, показатель общей продолжительности жизни при рождении, снизился общий показатель смертности населения. Показатель младенческой смертности 2010-2018 гг. имел умеренную тенденцию к снижению и в 2019 г. оценивался как очень низкий. Основными причинами смертности детей до 1 года были отдельные состояния, возникающие в перинатальном периоде, врожденные аномалии, деформации и хромосомные нарушения.

**Ключевые слова:** медико-демографическая обстановка, смертность, рождаемость, население

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## ASSESSMENT OF THE MODERN MEDICO-DEMOGRAPHIC SITUATION OF GRODNO

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**Annotation:** The assessment of a modern medico-demographic situation of Grodno is carried out. Based on the carried-out analysis it is established that in comparison with rates of mortality, indicators of birth rate of the population are higher. For 2010-2019, the highest average annual rate of decrease in rates of mortality (4.5 %) is noted. During the analyzed period, the positive trend in development of a medico-demographic situation was noted: the general indicator of birth rate, an indicator of the general life expectancy at the birth raised the general rate of mortality of the population decreased. The indicator of infantile mortality of 2010-2018 had a moderate tendency to decrease and in 2019 was estimated as very low. The separate states arising in the perinatal period, congenital anomalies, deformations and chromosomal disturbances were the leading causes of death of children till 1 year.

**Keywords:** medico-demographic situation, mortality, birth rate, population

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**Relevance.** Health is one of the main values of life, which costs at the highest step in the system of human inquiries. Health is important not only for assessment of success of life of one person, but also for society in general.

Now 70 % of the population of Republic of Belarus live in conditions of the urban environment [1]. The city is considered as an ecosystem, which has a number of risk factors of disturbances of health. In this regard, the analysis of a modern demographic situation, in particular Grodno as one of the regional centers is relevant. Assessment of these indicators allows giving objective characteristic to public health, to establish influence of adverse factors of the environment.

Development and improvement of a health care system is also impossible without studying of current trends of medico-demographic processes, the analysis of structure of population, the indicators characterizing birth rate, mortality, natural increase [2].

**Purpose.** Assessment of a modern medico-demographic situation of Grodno.

**Materials and methods of a research.** As material for a research served official statistical data of the Grodno center of hygiene, epidemiology and public health for 2010-2019 to which generalization and systematization the comparative and analytical method of a research is applied.

**Results and their discussion.** Grodno takes the 5th place on the population in Republic of Belarus. The population for January 1, 2019 was 373547 people [3]. During 2010-2019 increase in population was observed (2010 – 330311 people, 2019 – 373547 people, the gain made 12.1 %). Natural increase for 2019 – 619 people.

It is established that in Grodno the unstable situation concerning indicators of birth rate and mortality is observed. So during the period from 2010 to 2012 increase in level of birth rate took place (2010 – 13.7, 2011-2012 – 13.9). From 2014 to 2016 birth rate indicators also increased (2014 – 13.6, 2015 – 14.2, 2016 – 14.6), and during the period since 2017 – 2018 the tendency to their decrease was outlined [4]. So the birth-rate coefficient in 2017 made 12.0, in 2018 – 10.7, in 2019 – 9.7.

Ranging on average long-term values of birth rate for 2010-2019 showed that rated intensive indicators in Grodno are 1.10.

Age structure of the population of regressive type is characteristic of all administrative territories of the Grodno region, except for Grodno where the share of children exceeds a share of persons of retirement age. The population more young than working-age made for 2019 – 19.5 %, the population at working-age – 61.53 %, the population is more senior than working-age – 18.97 %.

Coefficients of a marriage and divorce can be considered as indirect indicators of reproductive health of the population. In Grodno, these indicators are unstable. So during the period since 2016-2017, the trend on decrease in number of stains and increase in number of marriages was observed [4]. In comparison with 2016 the number of the registered marriages in 2017 increased by 0.5 %, a marriage indicator – 7.5 %. The number of stains decreased by 0.9 % and made – 1258. The marriage coefficient for 2018 made 6.6 %, divorce coefficient – 3.7 %. In 2019 these indicators increased and made 6.9 % and 3.8 % respectively.

Mortality as the key demographic indicator, is the most essential and significant indicator of the level of development of society and directly or indirectly indicates wellbeing of health of the population. During the period from 2010 to 2014 the trend on decrease in rates of mortality (2010 – 9.3, 2014 – 7.9) was observed [5]. In 2016 the mortality rate was 8.0, in 2017 – 8.2, in 2018 – 8.4 that demonstrates increase in mortality during this period. For 2019 rate of mortality decreased and made 8.1.

Population rates of mortality from new growths in 2019 were 155.1, from diseases of a nervous system and sense organs – 46.4, mortality from the external reasons – 48.8, for the reason "old age" – 14.9.

The general trends in mortality are defined directly by changes in mortality of working-age population. In 2019 this indicator was 284.6, in comparison with previous years (2016 – 241.8, 2017 – 242.3, 2018 – 275.1) growth of mortality [5] was observed, however, this indicator all the same was the lowest across the Grodno region. Mortality of men of working-age (5.14 %) exceeded rate of mortality of women of working-age (0.99 %) by 5.2 times.

The coefficient of infantile mortality is one of basic in assessment of the general level of social and demographic development and rather precisely characterizes a social status of the population, a condition of a health care system and the relation to human life in general. The indicator of infantile mortality in 2019 was 2.4 on 1000 been born [4]. Since 2013 this indicator is in Grodno at socially low level with fluctuations from 1.5 % to 3.8 %.

The indicator of demographic safety is the depopulation coefficient (this relation of number of the dead to number who were born) and vitality coefficient (the relation of number of the dead who were born to number). Extremely critical value of coefficient of depopulation should not exceed unit in order that natural losses of the population were filled. In Grodno during 2010-2017, the tendency to decrease in coefficient of depopulation was observed. In 2019 in Grodno the coefficient of depopulation made 0.86 (2018 – 0.79).

The incidence of the population is the major parameter characterizing a condition of public health. Level and dynamics of indicators of incidence allows defining the priority directions in protection of public health, to plan the need for different types of medical care, to estimate efficiency of medical and preventive actions.

Major factors of risk of growth of unfortunate trends in the state of health of the population of Grodno are habitat factors, the production and labor circle, irrational food of the population, insufficient physical activity, smoking and abuse of alcohol, stressful states. At establishment of availability of communication between complex air pollution and the general incidence of the population during the period since 2017-2019 with use of the correlation analysis, the correlation coefficient made 0.89 that testifies to close connection of incidence from concentration of pollutants in air.

In structure of the general incidence of the population of Grodno, the first ranks occupy diseases of a system of respiratory organs, blood circulations, digestion, a trauma and poisoning, mental disorders and disorders of behavior [3]. In structure of mortality first place is won by blood circulatory system diseases (58.1 %), in the second and third places – new growths (18.4 %), the external reasons (6.3 %).

**Conclusions.** Based on the carried-out analysis it is established that in Grodno the demographic situation remains favorable. In comparison with rates of mortality, indicators of birth rate of the population are higher. For 2010-2019, the highest average annual rate of decrease in rates of mortality (4.5 %) is noted.

During the analyzed period, the positive trend in development of a medico-demographic situation was noted: the general indicator of birth rate, an indicator of the general life expectancy at the birth raised the general rate of mortality of the population decreased.

The indicator of infantile mortality of 2010-2018 had a moderate tendency to decrease and in 2019 was estimated as very low. The separate states arising in the perinatal period, congenital anomalies, deformations and chromosomal disturbances were the leading causes of death of children till 1 year.

### Список литературы

[1] Численность населения Республики Беларусь. // Национальный статистический комитет Республики Беларусь. [Электронный ресурс]. – URL: <https://www.belstat.gov.by/>. (дата обращения: 01.02.2021).

[2] Глушанко В.С. Общественное здоровье и здравоохранение как наука и предмет преподавания. Методики расчета и анализа медико-демографических показателей: Методическая разработка дня студентов высших медицинских учреждений образования по дисциплине «Общественное здоровье и здравоохранение». / В.С. Глушанко, А.П. Тимофеева. – Витебск: Издательство ВГМУ, 2004. 18 с.

[3] Информационно-аналитический бюллетень «Здоровье населения и окружающая среда Гродненской области в 2019 году». – Гродно, 2020. 156 с.

[4] Информационно-аналитический бюллетень «Здоровье населения и окружающая среда Гродненской области в 2018 году». – Гродно, 2019. 135 с.

[5] Информационно-аналитический бюллетень «Здоровье населения и окружающая среда Гродненской области в 2017 году». – Гродно, 2018. 120 с.

### **Bibliography (Transliterated)**

[1] The population of the Republic of Belarus. // National Statistical Committee of the Republic of Belarus. [Electronic resource]. – URL: <https://www.belstat.gov.by/>. (date of access: 01.02.2021).

[2] Glushanko V.S. Public health and healthcare as a science and teaching subject. Methods for calculating and analyzing medical and demographic indicators: Methodological development of the day of students of higher medical institutions of education in the discipline "Public health and health care". / V.S. Glushanko, A.P. Timofeeva. – Vitebsk: VSMU Publishing House, 2004. 18 p.

[3] Information and analytical bulletin "Health of the population and the environment of the Grodno region in 2019". – Grodno, 2020. 156 p.

[4] Information and analytical bulletin "Health of the population and the environment of the Grodno region in 2018". – Grodno, 2019. 135 p.

[5] Information and analytical bulletin "Health of the population and the environment of the Grodno region in 2017". – Grodno, 2018. 120 p.

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Поступила в редакцию 02.04.2021

Принята к публикации 15.04.2021

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#### ***Для цитирования:***

Зиматкина Т.И., Александрович А.С. Оценка современной медико-демографической обстановки г. Гродно // Инновационные научные исследования : сетевой журнал. 2021. № 4-2(6). С. 175-180. URL: <https://ip-journal.ru/>