

UDC 614.2+616.21/.8+349.3+369.06+616-036.865

DOI: 10.56871/MHCO.2024.14.40.010

MEDICAL, SOCIAL AND ECONOMIC CONSEQUENCES OF DISEASES OF THE EAR AND MASTOID PROCESS

© Marina V. Avdeeva^{1, 2}, Olga V. Moguchaya², Geldi B. Hojagulyyev²

¹ Saint Petersburg State Pediatric Medical University. 2 Lithuania, Saint Petersburg 194100 Russian Federation

² North-Western State Medical University named after I.I. Mechnikov. 41 Kirochnaya str., Saint Petersburg 191015 Russian Federation

Contact information: Olga V. Moguchaya — Doctor of Medical Sciences, Professor, Professor of the Department of Public Health, Economics and Health Management. E-mail: ovm55@yandex.ru ORCID: <https://orcid.org/0000-0001-7111-6981> SPIN: 2338-0435

For citation: Avdeeva MV, Moguchaya OV, Hojagulyyev GB. Medical, social and economic consequences of diseases of the ear and mastoid process. *Medicine and Health Care Organization*. 2024;9(3):90–99. DOI: <https://doi.org/10.56871/MHCO.2024.14.40.010>

Received: 01.07.2024

Revised: 12.08.2024

Accepted: 08.10.2024

ABSTRACT. The analysis of medical, social and economic consequences for various pathologies considers a number of aspects, including the study of morbidity, temporary and permanent disability, economic losses, allowing us to highlight the main directions of treatment and preventive measures. The purpose of the study is to assess the economic damage and medical and social consequences of ear and mastoid diseases in the Russian Federation. Indicators of temporary disability, disability, and economic losses were calculated on the basis of the analyzed Materials of official statistics published by Rosstat and the Ministry of Labor. A forecast of population disability has been made. It has been shown that the proportion of cases of temporary disability due to diseases of the ear and mastoid process ranges from 0.6 to 0.9 % of all causes. During the period 2015–2020 from 0.19 to 0.23 cases and from 1.98 to 2.60 days of temporary disability per 100 workers was fixed. The average duration of temporary disability ranged from 10.2 to 11.4 days. Economic losses from initial disability in adults account for 3/4 of the total amount of damage. When predicting the occurrence of primary disability in children, an insignificant tendency towards its decrease was established, while in adults — towards an increase in this indicator. Economic losses due to diseases of the ear and mastoid process reach more than 27.87 billion rubles per year, which is 0.03 % of the country's gross domestic product. Thus, the proportion of cases of temporary disability due to diseases of the ear and mastoid process is comparatively small, but the economic losses from this pathology are quite significant, which requires improved approaches to providing treatment and preventive measures.

KEYWORDS: diseases of the ear and mastoid process, medical, social and economic consequences, temporary disability, primary disability, economic losses

МЕДИКО-СОЦИАЛЬНЫЕ И ЭКОНОМИЧЕСКИЕ ПОСЛЕДСТВИЯ ЗАБОЛЕВАНИЙ УХА И СОСЦЕВИДНОГО ОТРОСТКА

© Марина Владимировна Авдеева^{1, 2}, Ольга Владимировна Могучая²,
Гельды Батырович Ходжакулиев²

¹ Санкт-Петербургский государственный педиатрический медицинский университет. 194100, г. Санкт-Петербург, ул. Литовская, д. 2

² Северо-Западный государственный медицинский университет им. И.И. Мечникова. 191015, г. Санкт-Петербург, ул. Кирочная, д. 41

Контактная информация: Ольга Владимировна Могучая — д.м.н., профессор, профессор кафедры общественного здоровья, экономики и управления здравоохранением. E-mail: ovm55@yandex.ru ORCID: <https://orcid.org/0000-0001-7111-6981> SPIN: 2338-0435

Для цитирования: Авдеева М.В., Могучая О.В., Ходжакулиев Г.Б. Медико-социальные и экономические последствия заболеваний уха и сосцевидного отростка // Медицина и организация здравоохранения. 2024. Т. 9. № 3. С. 90–99. DOI: <https://doi.org/10.56871/MHCO.2024.14.40.010>

Поступила: 01.07.2024

Одобрена: 12.08.2024

Принята к печати: 08.10.2024

РЕЗЮМЕ. Анализ медико-социальных и экономических последствий при различной патологии складывается из ряда аспектов, включающих изучение заболеваемости, временной и стойкой утраты трудоспособности, экономических потерь, что позволяет выделить основные направления лечебно-профилактических мероприятий. Цель исследования — оценка экономического ущерба и медико-социальных последствий болезней уха и сосцевидного отростка в Российской Федерации. Использованы материалы официальной статистики, опубликованные Росстатом и Минтруда, на основе которых рассчитаны показатели временной нетрудоспособности, инвалидизации, экономические потери. Сделан прогноз инвалидизации населения. Показано, что доля случаев временной нетрудоспособности по поводу болезней уха и сосцевидного отростка составляет от 0,6 до 0,9% от всех причин. В период 2015–2020 гг. на 100 работающих приходилось от 0,19 до 0,23 случаев и от 1,98 до 2,60 дней временной нетрудоспособности. Средняя длительность временной нетрудоспособности колебалась от 10,2 до 11,4 дней. Экономические потери от первичного выхода на инвалидность у взрослых составляют 3/4 от общей суммы ущерба. При прогнозировании возникновения первичной инвалидизации у детей установлена слабо выраженная тенденция к ее снижению, а у взрослых — к росту данного показателя. Экономические потери при заболеваниях уха и сосцевидного отростка достигают более 27,87 млрд рублей в год, что составляет 0,03% валового внутреннего продукта страны. Таким образом, доля случаев временной нетрудоспособности в связи с болезнями уха и сосцевидного отростка невелика, однако экономические потери от этой патологии достаточно существенны, что требует совершенствования подходов к обеспечению лечебно-профилактических мероприятий.

КЛЮЧЕВЫЕ СЛОВА: болезни уха и сосцевидного отростка, медико-социальные и экономические последствия, временная нетрудоспособность, первичная инвалидизация, экономические потери

INTRODUCTION

The problem of the analysis of medical, social and economic consequences of various pathologies is one of the key issues in the science of public health, representing the reflection of various aspects of the concept of health and well-being of the population. It consists of a number of aspects, including the study of morbidity, temporary and permanent disability, as well as economic losses as a result of diseases, allowing us to identify the main directions of therapeutic, preventive and rehabilitative measures [1–7].

It is known that the medical and social significance of a particular pathology is determined by the economic damage inflicted on society, expressed by morbidity, mortality, and temporary and permanent disability. At the same time,

these indicators allow us to assess the state of the health care system, analyze its weaknesses and identify ways to further improve it [8–10].

Indicators of temporary and permanent disability make it possible to assess more fully the condition of the population engaged in economic activity, which is especially important in conditions of increasing life expectancy and pension reform, when the age of those employed in labor activity will increase due to the increase in life expectancy and pension reform. In recent years, researchers have noted a tendency to improve the health of the working population, which is expressed in the positive dynamics of indicators of temporary disability and a decrease in the level of primary disability of the adult population at the expense of young and middle-aged people, both in general and in some nosological forms, which allows to reduce economic losses.

It should be taken into account that the indicators of temporary disability can be influenced by working conditions of different industries, the presence of harmful industries in a particular territory, and climatic conditions [11–21].

Diseases of the ear and mastoid process are an urgent medical and social problem, having a significant impact on human health, which is associated, among other things, with the important role of the hearing and speech organs in human socialization and communication. Hearing, along with speech, is not only a tool for communication, it is the instrument that allows an individual to develop harmoniously and interact in society. Diseases of the ear and mastoid can lead to disability of the patient due to the violation of the communicative component, and purulent complications of this pathology such as meningitis, brain abscesses, sepsis can cause death [22–25].

AIM

The aim of the study is to assess the economic damage and medical and social consequences of ear and mastoid diseases in the Russian Federation.

MATERIALS AND METHODS

The study used materials of official statistics published by the Federal State Statistics Service (Rosstat) and the Ministry of Labor. The indicators of temporary disability due to diseases of the ear and mastoid process were calculated (the share of this pathology among all cases of diseases with temporary disability, the number of cases and days of disability per 100 workers, the average duration of a case of disability). The indicators of primary disability in children (up to 18 years of the age) and adults were studied, and relative indicators were calculated. Regression analysis with calculation of the coefficient of determination R^2 was carried out to predict the dynamics of the indicators of disability of the child and adult population of the Russian Federation from diseases of the ear and mastoid process. The economic losses from morbidity and disability of the population from diseases of the ear and mastoid process were calculated based on the methodology approved by the orders of the Ministry of Economic Development of the Russian Federation, the Ministry of Health and Social Development of the Russian

Federation, the Federal State Statistics Service dated 10.04.2012.

RESULTS AND DISCUSSION

The survey data show that during the last years the share of cases of temporary disability due to diseases of the ear and mastoid process has been stable, and their specific weight in the structure of all cases of temporary disability is 0.6–0.9% (Table 1).

The calculation of the number of cases per population employed in economic activity revealed that the indicator of the number of cases of temporary disability per 100 workers tended to decrease. Thus, in 2015–2016, there were 0.23 cases of temporary disability due to ear and mastoid diseases per 100 workers. In 2017–2019 there were 0.22 cases, and in 2020 this indicator decreased to 0.19 cases.

The data on the calculation of the number of days of temporary disability for ear and mastoid diseases per 100 employees indicate that it also tended to decrease with a slight peak in 2016. Specifically, in 2015, the number of days of temporary disability for ear and mastoid diseases was 2.39; in 2016 it was 2.60; in 2017 it was 2.27; in 2018 it was 2.29; in 2019 it was 2.14; and in 2020 it was 1.98.

The average duration of temporary disability was calculated, which ranged from 10.2 to 11.4 days during the analyzed period. The indicator

Table 1

The share of cases of temporary disability due to diseases of the ear and mastoid process in the structure of all causes in 2015–2020 (in absolute figures and % of total)

Таблица 1

Доля случаев временной нетрудоспособности в связи с болезнями уха и сосцевидного отростка в структуре всех причин в 2015–2020 гг. (в абс. цифрах и % к итогу)

Год / Year	Болезни уха и сосцевидного отростка / Diseases of the ear and mastoid process		Все заболевания / All diseases	
	Абс.	%	Абс.	%
2015	170 430	0,9	19 648 688	100,0
2016	163 887	0,8	19 531 542	100,0
2017	159 365	0,8	19 443 172	100,0
2018	159 378	0,8	19 577 934	100,0
2019	147 329	0,8	19 005 988	100,0
2020	129 770	0,6	23 205 130	100,0

was minimum in 2015 and 2016 (10.2 days). It was slightly higher in 2018–2019 (10.3 days) and 2020 (10.6 days), and its maximum value was observed in 2016 (11.4 days).

The study showed that during 2005–2022, there were wave-like fluctuations in the primary disability rate of the pediatric population due to ear and mastoid diseases (Table 2).

There was a significant increase in the rate of primary disability among children in 2006 — by 105.0%, which amounted to 1,078.7 cases per 10,000 children (the baseline of 2005 year is 526.3 cases). In 2007–2009, there was a steady downward trend in this indicator, and the increase compared to the baseline in this period amounted to 70.0–86.4% (894.5–980.8 cases per 10,000 people). In 2010, there was again an increase in the primary disability rate by 88.7 % from the initial level. In the subsequent period from 2011 to 2022, there was a progressive decline to 179.5–682.4 cases with slight rises in 2014 and 2022 (949.8 and 871.4 cases per 10,000 people, respectively).

This trend is confirmed in predicting the occurrence of primary disability in children: the coefficient of determination $R^2=0.27$, that is, there is a weakly expressed tendency to decrease the level of this indicator (Fig. 1).

The data of the study indicate that, in contrast to children, in adults, according to the data for 2000–2022, there is a lower level of primary disability from diseases of the ear and mastoid process, but the tendency to its growth prevails

Table 2

Dynamics of primary disability due to pathology of the ear and mastoid process in the Russian Federation in 2005–2022 among persons under 18 years of age (per 10,000 child population)

Таблица 2

Динамика первичной инвалидизации при патологии уха и сосцевидного отростка в Российской Федерации в 2005–2022 гг. среди лиц до 18 лет (на 10 000 детского населения)

Год / Year	Показатель первичной инвалидизации (на 10 000 чел.) / Primary disability rate (per 10,000 people)	Показатель наглядности (%) / Visibility Score (%)
2005	526,3	100,0
2006	1078,7	205,0
2007	980,8	186,4
2008	906,9	172,3
2009	894,5	170,0
2010	993,0	188,7
2011	937,7	178,2
2012	929,4	176,6
2013	873,2	165,9
2014	949,8	180,5
2015	946,1	179,8
2016	944,9	179,5
2017	927,9	176,3
2018	905,0	172,0
2019	805,8	153,1
2020	682,4	129,7
2021	748,4	142,2
2022	871,4	165,6

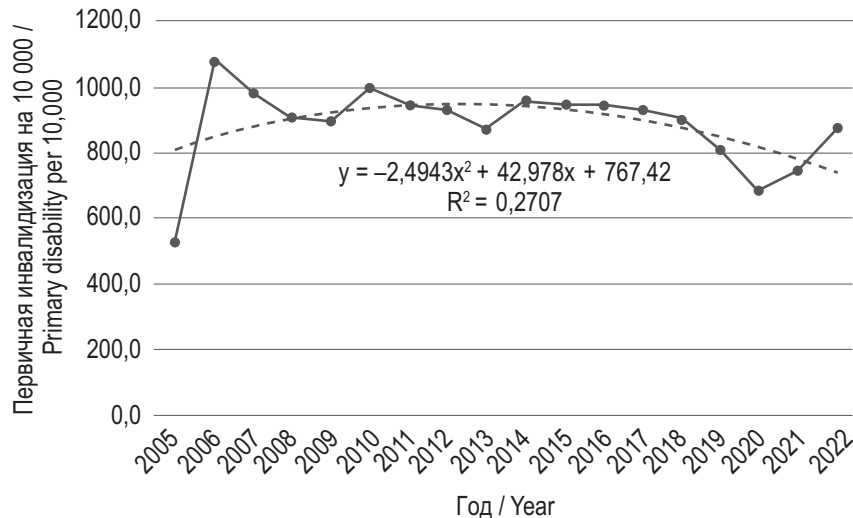


Fig. 1. Prognosis of the dynamics of primary disability among the child population from diseases of the ear and mastoid process

Рис. 1. Прогноз динамики первичной инвалидизации среди детского населения от болезней уха и сосцевидного отростка

(Table 3). At the same time, the wave-like dynamics is much less pronounced. Thus, in 2001–2002, as compared to 2000, there was a 20% increase in the primary disability of the adult population from diseases of the ear and mastoid process. By 2005–2006 the level of primary disability of the adult population from diseases of the ear and mastoid process increased more significantly, and the increase was 100–140% (up to 1.0–1.2 cases per 10,000 people). A slight decrease in the level of primary disability of the adult population from diseases of the ear and mastoid was observed in 2007–2014, but compared to 2000, the increase in the indicator was 80%. Further, in 2015–2022, the growth of primary

disability of the adult population from diseases of the ear and mastoid process was again observed, and the increase was 100–180% of the initial one.

The obtained data are confirmed by the results of regression analysis (Fig. 2). According to the forecast, further growth of primary disability among the adult population is possible in the near future (the coefficient of determination R^2 is 0.74, which corresponds to the average level).

Economic losses were calculated on the basis of official statistics provided by the Federal State Statistics Service and the Ministry of Labor in accordance with the calculation methodology defined by the order of the Ministry of Economic Development, the Ministry of Health and the Federal State Statistics Service dated 10.04.2012 “On approval of the methodology for calculating economic losses from mortality, morbidity and disability of the population” [25].

No economic losses from mortality directly from diseases of the ear and mastoid process were recorded during 2000–2021, because these patients die from complications, which are recorded by official statistics as the main diagnosis. For the calculation of economic losses, the data for 2019, as the last pre-documentation year, were taken.

Economic losses from primary disability are the amount of lost profit in the production of gross domestic product due to the withdrawal of the patient from the production sphere in connection with the emergence of permanent disability and the registration of disability. This is the difference between the gross domestic product that could have been produced by persons who became disabled and the gross domestic product produced by working disabled persons (the calculations do not take into account the reduction in working hours and increased vacation for this group of disabled persons). The data on the number of persons with a primary permanent loss of working ability, the gross domestic product of the Russian Federation, and the number of the working population were obtained from materials published by the Federal State Statistics Service and the Ministry of Labor.

Thus, the lost profits are equal to:

$$LP_{pd} = (GDP : NE \cdot ND) - (GDP : NE \cdot WD),$$

where LP_{pd} — lost profit from the primary disability due to diseases of the ear and mastoid; GDP — gross domestic product; NE — the

Table 3

Dynamics of primary disability of the adult population from ear and mastoid diseases in the Russian Federation in 2000–2022 (per 10,000 people)

Таблица 3

Динамика первичной инвалидизации взрослого населения от болезней уха и сосцевидного отростка в Российской Федерации в 2000–2022 гг. (на 10 000 человек)

Год / Year	Показатель первичной инвалидизации (на 10 000 чел.) / Primary disability rate (per 10,000 people)	Показатель нагляд- ности (%) / Visibility Score (%)
2000	0,5	100,0
2001	0,6	120,0
2002	0,6	120,0
2003	0,5	100,0
2004	0,6	120,0
2005	1,0	200,0
2006	1,2	240,0
2007	0,9	180,0
2008	0,9	180,0
2009	0,9	180,0
2010	0,9	180,0
2011	0,9	180,0
2012	0,9	180,0
2013	0,9	180,0
2014	0,9	180,0
2015	1,0	200,0
2016	1,1	220,0
2017	1,3	260,0
2018	1,4	280,0
2019	1,5	300,0
2020	1,2	240,0
2021	1,3	260,0
2022	1,4	280,0

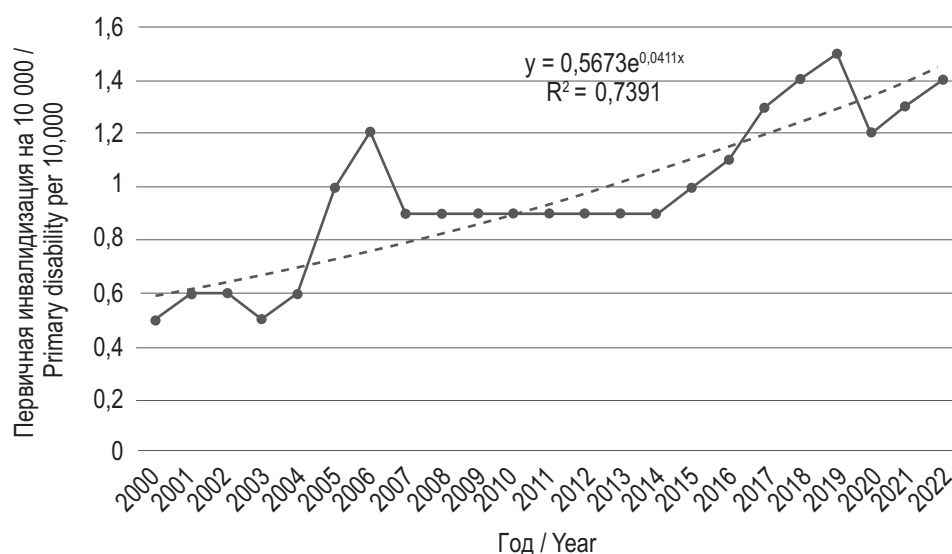


Fig. 2. Prognosis of the dynamics of primary disability among the adult population from diseases of the ear and mastoid process

Рис. 2. Прогноз динамики первичной инвалидизации среди взрослого населения от болезней уха и сосцевидного отростка

number of employed in the economy; ND — the number of those who were initially disabled due to diseases of the ear and mastoid; WD — the number of working disabled due to diseases of the ear and mastoid (taken as 18.6%) [21].

In 2019, the gross domestic product of the Russian Federation amounted to 110.046 trillion rubles, the total number of persons working in the economy was 71,064.5 thousand, the number of persons who became disabled for the first time due to diseases of the ear and mastoid process was 17.000.

Thus, the lost profit due to the first-time disability due to diseases of the ear and mastoid process in 2019 amounted to:

$$LP_{pd} = (110\,046\,000\,000\,000 : 71\,064\,500 \times 17\,000) - (110\,046\,000\,000\,000 : 71\,064\,500 \times 3162) = 21\,428\,653\,519 \text{ rub.}$$

Economic losses due to morbidity from ear and mastoid diseases represent the lost profit due to underproduction of gross domestic product due to temporary withdrawal of a worker from the production process due to the onset of temporary disability. Economic losses due to morbidity from ear and mastoid diseases were calculated as the product of the number of days of temporary disability by the gross domestic product produced by one worker per working day. Data on temporary disability, gross domestic product of the Russian Federation, and the number of working population were obtained

from materials published by the Federal State Statistics Service.

Thus, the lost profit in connection with morbidity with temporary disability in ear and mastoid diseases is equal to:

$$LP_{dtd} = NDTD \cdot (GDP : NE : NDY),$$

where LP_{dtd} — lost profit in ear and mastoid diseases with temporary disability; $NDTD$ — number of days of temporary disability due to ear and mastoid diseases; GDP — gross domestic product; NE — number of employed in the economy; NDY — number of days in a year (taken as 365 days).

Therefore, the lost profit due to ear and mastoid disease incidence in 2019 is:

$$LP_{dtd} = 1\,519\,168 \cdot (110\,046\,000\,000\,000 / 71\,064\,500 : 365) = 6\,445\,172\,024 \text{ rub.}$$

In general, economic losses in ear and mastoid diseases are equal to the sum of the lost profit from primary disability and lost profit in diseases with temporary disability.

$$EL = LP_{pd} + LP_{dtd} = 21\,428\,653\,519 + 6\,445\,172\,024 = 27\,873\,825\,543 \text{ rub.}$$

Thus, economic losses in ear and mastoid diseases amount to more than 27.87 billion rubles, which is equal to almost 0.03% of the country's gross domestic product (GDP).

CONCLUSION

1. The analysis of primary disability from diseases of the ear and mastoid process among the child population of the Russian Federation shows a multidirectional dynamics of this indicator in the period from 2005 to 2022, but the possibility of its growth in the near future is not excluded.

2. In the Russian Federation there is a tendency of growth of primary disability of the adult population from diseases of the ear and mastoid process, and the possibility of continuation of unfavorable dynamics is not excluded. The obtained data indicate the expediency of an in-depth analysis of the causes of the growth of primary disability from diseases of the ear and mastoid process in the adult population of the Russian Federation.

3. Economic losses from morbidity of the adult population of the Russian Federation due to ear and mastoid diseases reach 27.87 billion rubles per year, which is about 0.03% of the gross domestic product of the country. At the same time 3/4 of this amount falls on the primary disability of the able-bodied population.

4. In the structure of all causes of temporary disability, the share of diseases of the ear and mastoid process is relatively small. However, economic losses from this pathology are quite significant, which requires improvement of organizational measures to ensure timely implementation of therapeutic and preventive measures among the able-bodied population of the Russian Federation.

ADDITIONAL INFORMATION

Author contribution. Thereby, all authors made a substantial contribution to the conception of the study, acquisition, analysis, interpretation of data for the work, drafting and revising the article, final approval of the version to be published and agree to be accountable for all aspects of the study.

Competing interests. The authors declare that they have no competing interests.

Funding source. This study was not supported by any external sources of funding.

Consent for publication. Written consent was obtained from the patient for publication of relevant medical information within the manuscript.

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

Вклад авторов. Все авторы внесли существенный вклад в разработку концепции,

проведение исследования и подготовку статьи, прочли и одобрили финальную версию перед публикацией.

Конфликт интересов. Авторы декларируют отсутствие явных и потенциальных конфликтов интересов, связанных с публикацией настоящей статьи.

Источник финансирования. Авторы заявляют об отсутствии внешнего финансирования при проведении исследования.

Информированное согласие на публикацию. Авторы получили письменное согласие пациентов на публикацию медицинских данных.

REFERENCES

1. Valeyeva E.T., Akhmetshina V.T., Shaikhislamova E.R., Bakieva R.M., Distanova A.A. Analysis of selected indices of disability of adult population and health care workers of the Republic of Bashkortostan. *Zdravookhraneniye Rossiyskoy Federatsii*. 2021;65(3):191–197. DOI: 10.47470/0044-197X-2021-65-3-191-197. (In Russian).
2. Kalinkin D.E., Samoylova Yu.A., Takhaouov A.R., Milto I.V., Takhaouov R.M. Socio-economic cost of diseases of the circulatory system and malignant neoplasms among population of an industrial city. *Social'nye aspekty zdorov'a naselenia* [serial online]. 2023;69(6):4. DOI: 10.21045/2071-5021-2023-69-6-4. (In Russian).
3. Kontsevaya A.V., Myrzamatova A.O., Mukaneyeva D.K., Sapunova I.D., Balanova YU.A., Khudyakov M.B., Drapkina O.M. Economic damage from major chronic non-communicable diseases in the Russian Federation in 2016. *Russian Journal of Preventive Medicine*. 2019;22(6):18–23. DOI: 10.17116/profmed20192206118. (In Russian).
4. Kuznetsova P.O. Demographic and economic consequences of the smoking epidemic in Russia. *Russian Journal of Preventive Medicine*. 2020;23(6):43–49. DOI: 10.17116/profmed20202306143. (In Russian).
5. Lavrentyeva M.A., Krasnova N.A. Methods for calculating economic losses from child disability. *Economic development research journal*. 2021;2:44–54. (In Russian).
6. Murashko R.A., Shmatkova A.M. Primary disability of the adult population of the Krasnodar region due to malignant neoplasms. *Problems in oncology*. 2021;67(4):485–491. DOI 10.37469/0507-3758-2021-67-4-485-491. (In Russian).
7. Oynotkinova O.Sh., Larina V.N. Medical and social aspects of health security in the formation of public health. *City Health Journal*. 2022;3(3):67–76. DOI: 10.47619/2713-2617.zm.2022.v.3i3. (In Russian).

8. Vasilyeva E.V. The concept of active longevity: possibilities and limitations of implementation in Russia. Ekaterinburg: Institut ekonomiki UrO RAN; 2022. (In Russian).
9. Krivykh E.A. Analysis of the structure of initial disability in the Khanty-Mansiysk Autonomous Okrug-Ugra for 2015–2020. *Medicine. Sociology. Philosophy. Applied research.* 2022;3:180–184. (In Russian).
10. Lipatov G.Ya., Adrianovskiy V.I., Naritsyna Yu.N., Samylkin A.A., Zlygosteva N.V., Gogoleva O.I., Guselnikov S.R. Morbidity with temporal disability in workers engaged in refined copper production. *Hygiene and Sanitation.* 2023;102(12):1321–1326. DOI: 10.47470/0016-9900-2023-102-12-1321-1326. EDN: hlyybi.
11. Vazhenina A.A., Shastin A.S., Trankovskaya L.V., Anisshchenko E.B., Ivanova I.L., Gazimova V.G., Tsepilova T.M., Sheparev A.A., Kovalchuk V.K. Morbidity of the working population in the Far Eastern Federal District in 2005–2020. *Pacific Medical Journal.* 2022;4:35–42. DOI: 10.34215/1609-1175-2022-4-35-42. (In Russian).
12. Vechorko V.I., Kitsul I.S., Zakharova E.G., Borovova E.V. Morbidity with temporary disability of employees of a medical institutions under a new coronavirus infection. *Health Care of the Russian Federation, Russian journal.* 2021;65(1):5–11. DOI: 10.47470/0044-197X-2021-65-1-5-11. (In Russian).
13. Kovalev S.P., Yashina E.R., Ushakov I.B., Turzin P.S., Lukichev K.E., Yakovleva T.P. Features of temporary disability of various categories of employees. *Russian Journal of Occupational Health and Industrial Ecology.* 2021;61(12):815–821. DOI: 10.31089/1026-9428-2021-61-12-815-821. (In Russian).
14. Kovrizhnykh Yu.A., Zaparyi N.S., Kovrizhnykh M.V. The analysis of primary disability due to malignant neoplasms among persons of retirement age in Moscow in 2012–2018. *Zdorov'ye naseleniya i sreda obitaniya.* 2020;7:4–7. DOI: 10.35627/2219-5238/2020-328-7-4-7. (In Russian).
15. Maksimov G.I., Ivanova A.A., Potapov A.F. Results of medical evaluation for assessing disability in children at the age group 0-17 years in the Sakha Republic (Yakutia) in 2016–2020. *Far Eastern medical journal.* 2022;3:61–67. DOI: 10.35177/1994-5191-2022-3-10. (In Russian).
16. Puzin S.N., Shurgaya M.A., Dmitriyeva N.V., Pogoyan G.E., Lyalina I.V., Mammarayeva A.M., Ivanova T.A., Idrisova L.S. Epidemiology of Disability of Adult Population in the Russian Federation. *Epidemiology and Vaccinal Prevention.* 2019;18(5):14–23. DOI: 10.31631/2073-3046-2019-18-5-14-23. (In Russian).
17. Samusenko A.G., Zaparyi N.S. Retrospective analysis of primary disability for persons of a working age due to the nervous system diseases during the 2014–2018 period in Moscow. *Public Health and Life Environment.* 2019;6:7–10. (In Russian).
18. Tarasova T.N., Suslin S.A., Barinova Zh.V., Bochkareva M.N. Morbidity with temporary disability among the working population of the Samara region: status and structure analysis. *Science and innovations in medicine.* 2019;4(2):53–57. DOI: 10.35693/2500-1388-2019-4-2-53-57. (In Russian).
19. Shastin A.S., Gazimova V.G., Gagarina M.S., Malykh O.L., Guselnikov S.R. Diseases with temporary disability: analytic tools as available to private companies. *Russian Journal of Preventive Medicine.* 2019;22(2-4):12–16. DOI: 10.17116/profmed20192204212. (In Russian).
20. Shastin A.S., Gazimova V.G., Malykh O.L., Ustyugova T.S., Tsepilova T.M. Some issues of morbidity with temporary incapacity for work in the Ural Federal District. *Public Health and Life Environment.* 2021;29(11):37–44. DOI: 10.35627/2219-5238/2021-29-11-37-44. (In Russian).
21. Yakushin S.S., Filippov E.V. Economic burden of cardiovascular diseases in Ryazan region. *Russian Journal of Cardiology.* 2014;9:26–30. (In Russian).
22. Yeregin S.A., Dvoryanchikov V.V., Ryazantsev S.V., Pavlova S.S., Sitnikov S.I. Patterns of pathogenetic antibacterial therapy concerning ENT organs in modern conditions. *Russian Medical Journal.* 2023;1:32–37. (In Russian).
23. Krivopalov A.A., Moroz N.V., Artyushkin S.A., Shamkina P.A., Zakharova G.P. Assessment of prevalence of chronic rhinosinusitis. *Rossiyskaya otorinolaringologiya.* 2022;21(5):91–98. DOI: 10.18692/1810-4800-2022-5-91-98. (In Russian).
24. Shardanov Z.N., Artyushkin S.A., Krivopalov A.A., Shnyder N.A., Shcherbuk A.Yu., Shcherbuk Yu.A., Krasikova A.I. Inflammatory diseases of ENT organs and purulent-septic intracranial complications associated with them in the Kabardino-Balkarian Republic. *Medical Council.* 2019;20:121–126. DOI: 10.21518/2079-701X-2019-20-121-126. (In Russian).
25. Prikaz Ministerstva ekonomicheskogo razvitiya Rossiyskoy Federatsii N 192, Ministerstva zdavookhraneniya i sotsial'nogo razvitiya Rossiyskoy Federatsii ot 10.04.2012 g. N 323n, Ministerstva finansov Rossiyskoy Federatsii ot 10.04.2012 g. N 45n, Federal'noy sluzhby gosudarstvennoy statistiki ot 10.04.2012 g. N 113 "Ob utverzhdenii metodologii rascheta ekonomicheskikh poter' ot smertnosti, zabolovayemosti i invalidizatsii naseleniya" (Zareg. v Minyuste Rossii 28.04.2012 g. N 23983). Available at: <https://docs.cntd.ru/document/902344829> (accessed: 21.02.23). (In Russian).

ЛИТЕРАТУРА

1. Валеева Э.Т., Ахметшина В.Т., Шайхлисламова Э.Р., Бакиева Р.М., Дистанова А.А. Анализ отдельных пока-

- зателей инвалидности взрослого населения и работников здравоохранения Республики Башкортостан. Здравоохранение Российской Федерации. 2021;65(3):191–197. DOI: 10.47470/0044-197X-2021-65-3-191-197.
2. Калинин Д.Е., Самойлова Ю.А., Тахауов А.Р., Мильто И.В., Тахауов Р.М. Социально-экономические потери среди населения промышленного города вследствие болезней системы кровообращения и злокачественных новообразований. Социальные аспекты здоровья населения [сетевое издание]. 2023;69(6):4. DOI: 10.21045/2071-5021-2023-69-6-4.
 3. Концевая А.В., Мырзаматова А.О., Муканеева Д.К., Сапунова И.Д., Баланова Ю.А., Худяков М.Б., Драпкина О.М. Экономический ущерб от основных хронических неинфекционных заболеваний в Российской Федерации в 2016 году. Профилактическая медицина. 2019;22(6):18–23. DOI: 10.17116/profmed20192206118.
 4. Кузнецова П.О. Демографические и экономические последствия эпидемии курения в России. Профилактическая медицина. 2020;23(6):43–49. DOI: 10.17116/profmed20202306143.
 5. Лаврентьева М.А., Краснова Н.А. Аналитический обзор методик расчетов экономических потерь от детской инвалидности. Экономические исследования и разработки. 2021;2:44–54.
 6. Мурашко Р.А., Шматкова А.М. Первичная инвалидность взрослого населения Краснодарского края вследствие злокачественных новообразований. Вопросы онкологии. 2021;67(4):485–491. DOI: 10.37469/0507-3758-2021-67-4-485-491.
 7. Ойноткинова О.Ш., Ларина В.Н. Современные медико-социальные аспекты безопасности здоровья в формировании общественного здравоохранения. Здоровье мегаполиса. 2022;3(3):67–76. DOI: 10.47619/2713-2617.zm.2022.v.3i3.
 8. Васильева Е.В. Концепция активного долголетия: возможности и ограничения реализации в России. Екатеринбург: Институт экономики УрО РАН; 2022.
 9. Кривых Е.А. Анализ структуры первичного выхода на инвалидность в Ханты-Мансийском автономном округе-Югре за 2015–2020 года. Медицина. Социология. Философия. Прикладные исследования. 2022;3:180–184.
 10. Липатов Г.Я., Адриановский В.И., Наричина Ю.Н., Самылкин А.А., Злыгостева Н.В., Гоголева О.И., Гусельников С.Р. Заболеваемость с временной утратой трудоспособности рабочих, занятых в производстве рафинированной меди. Гигиена и санитария. 2023;102(12):1321–1326. DOI: 10.47470/0016-9900-2023-102-12-1321-1326. EDN: hlyybi.
 11. Важенина А.А., Шастин А.С., Транковская Л.В., Анищенко Е.Б., Иванова И.Л., Газимова В.Г., Цепилова Т.М., Шепарев А.А., Ковальчук В.К. Характеристика заболеваемости работающего населения в Дальневосточном федеральном округе за 2005–2020 гг. Тихоокеанский медицинский журнал. 2022;4:35–42. DOI: 10.34215/1609-1175-2022-4-35-42.
 12. Вечорко В.И., Кицул И.С., Захарова Е.Г., Боровова Е.В. Заболеваемость с временной утратой трудоспособности сотрудников медицинской организации при новой коронавирусной инфекции. Здравоохранение Российской Федерации. 2021;65(1):5–11. DOI: 10.47470/0044-197X-2021-65-1-5-11.
 13. Ковалев С.П., Яшина Е.Р., Ушаков И.Б., Турзин П.С., Лукичев К.Е., Яковлева Т.П. Особенности временной нетрудоспособности различных категорий работников. Медицина труда и промышленная экология. 2021;61(12):815–821. DOI: 10.31089/1026-9428-2021-61-12-815-821.
 14. Коврижных Ю.А., Запарий Н.С., Коврижных М.В. Анализ первичной инвалидности среди лиц пенсионного возраста вследствие злокачественных новообразований в г. Москве в период 2012–2018 гг. Здоровье населения и среда обитания. 2020;7:4–7. DOI: 10.35627/2219-5238/2020-328-7-4-7.
 15. Максимов Г.И., Иванова А.А., Потапов А.Ф. Результаты медико-социальной экспертизы по установлению инвалидности у детей в возрасте 0–17 лет в Республике Саха (Якутия) за период 2016–2020 гг. Дальневосточный медицинский журнал. 2022;3:61–67. DOI: 10.35177/1994-5191-2022-3-10.
 16. Пузин С.Н., Шургая М.А., Дмитриева Н.В., Погосян Г.Э., Лялина И.В., Маммарасева А.М., Иванова Т.А., Идрисова Л.С. Эпидемиология инвалидности взрослого населения в Российской Федерации. Эпидемиология и Вакцинопрофилактика. 2019;18(5):14–23. DOI: 10.31631/2073-3046-2019-18-5-14-23.
 17. Самусенко А.Г., Запарий Н.С. Ретроспективный анализ первичной инвалидности лиц трудоспособного возраста вследствие болезней нервной системы в г. Москве за 2014–2018 гг. Здоровье населения и среда обитания. 2019;6:7–10.
 18. Тарасова Т.Н., Суслин С.А., Барина Ж.В., Бочкарева М.Н. Анализ состояния и структуры заболеваемости с временной утратой трудоспособности среди работающего населения Самарской области. Наука и инновации в медицине. 2019;4(2):53–57. DOI: 10.35693/2500-1388-2019-4-2-53-57.
 19. Шастин А.С., Газимова В.Г., Гагарина М.С., Малых О.Л., Гусельников С.Р. Возможности анализа заболеваемости с временной утратой трудоспособности субъектов предпринимательской деятельности. Профилактическая медицина. 2019;22(2-4):12–16. DOI: 10.17116/profmed20192204212.

20. Шастин А.С., Газимова В.Г., Малых О.Л., Устюгова Т.С., Цепилова Т.М. Некоторые вопросы заболеваемости с временной утратой трудоспособности в Уральском федеральном округе. Здоровье населения и среда обитания. 2021;29(11):37–44. DOI: 10.35627/2219-5238/2021-29-11-37-44.
21. Якушин С.С., Филиппов Е.В. Экономическое бремя сердечно-сосудистых заболеваний в Рязанском регионе. Российский кардиологический журнал. 2014;9:26–30.
22. Еремин С.А., Дворянчиков В.В., Рязанцев С.В., Павлова С.С., Ситников С.И. Особенности патогенетической антибактериальной терапии ЛОР-органов в современных условиях. Русский медицинский журнал. 2023;1:32–37.
23. Кривопапов А.А., Мороз Н.В., Артюшкин С.А., Шамкина П.А., Захарова Г.П. Оценка распространенности хронического риносинусита. Российская оториноларингология. 2022;21(5):91–98. DOI: 10.18692/1810-4800-2022-5-91-98.
24. Шарданов З.Н., Артюшкин С.А., Кривопапов А.А., Шнайдер Н.А., Щербук А.Ю., Щербук Ю.А., Красикова А.И. Воспалительные заболевания ЛОР-органов и ассоциированные с ними гнойно-септические внутричерепные осложнения в Кабардино-Балкарской Республике. Медицинский совет. 2019;20:121–126. DOI: 10.21518/2079-701X-2019-20-121-126.
25. Приказ Министерства экономического развития Российской Федерации № 192, Министерства здравоохранения и социального развития Российской Федерации от 10.04.2012 г. № 323н, Министерства финансов Российской Федерации от 10.04.2012 г. № 45н, Федеральной службы государственной статистики от 10.04.2012 г. № 113 “Об утверждении методологии расчета экономических потерь от смертности, заболеваемости и инвалидизации населения” (Зарег. в Минюсте России 28.04.2012 г. № 23983). Доступен по: <https://docs.cntd.ru/document/902344829> (дата обращения: 21.02.23).