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Primary incidence in the population of Saint Petersburg and Leningrad Region

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ABSTRACT. The analysis of primary morbidity of the population is an important aspect of public health care, allowing to assess the current state of public health and identify the main problems that require attention and measures to address them. The paper presents the results of the study of the peculiarities of primary morbidity of the population of Saint Petersburg and Leningrad Region in 2011–2022. In order to assess the peculiarities of primary morbidity, the statistical materials of the Ministry of Health of the Russian Federation were analyzed. It was found that the level of primary morbidity in Saint Petersburg for the entire period under the study was higher than the national average, while in Leningrad Region it was lower. Saint Petersburg showed higher levels of primary morbidity for most classes of diseases compared to the average for the Russian Federation, while in Leningrad Region — lower. Throughout the entire observation period (2011–2022), the dynamics of primary morbidity in Saint Petersburg and Leningrad Region were generally similar. In Saint Petersburg, the primary morbidity of all major classes of diseases increased over the analyzed period of time, except for the diseases of genitourinary system (–2.9%) and some infectious and parasitic diseases (–22.9%). Leningrad Region is characterized by multidirectional dynamics for many classes of diseases. In 2022, among all leading classes of diseases, only the primary morbidity rate of circulatory diseases in Saint Petersburg was below the national average. The opposite situation was observed in Leningrad Region — among the most significant classes of diseases only COVID-19 and diseases of the circulatory system demonstrate a higher level of primary morbidity of the entire population than in the Russian Federation as a whole.

KEYWORDS: primary incidence, incidence structure, population, Saint Petersburg, Leningrad Region

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Первичная заболеваемость населения Санкт-Петербурга и Ленинградской области

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РЕЗЮМЕ. Анализ первичной заболеваемости населения является важным аспектом общественного здравоохранения, позволяющим оценить текущее состояние здоровья населения и выявить основные проблемы, требующие внимания и принятия мер по их решению. Цель настоящего исследования — выявление особенностей первичной заболеваемости населения Санкт-Петербурга и Ленинградской области. В работе приведены результаты исследования особенностей первичной заболеваемости населения Санкт-Петербурга и Ленинградской области в 2011–2022 гг. Для достижения цели исследования проведен анализ статистических материалов Министерства здравоохранения Российской Федерации. Установлено, что уровень первичной заболеваемости населения в Санкт-Петербурге на протяжении всего исследуемого периода был выше средних показателей по стране, в Ленинградской области — ниже. В Санкт-Петербурге выявлены более высокие, по сравнению со средними по Российской Федерации, уровни первичной заболеваемости по большинству классов болезней, в Ленинградской области — более низкие. На протяжении всего периода наблюдения (2011–2022 гг.) динамика первичной заболеваемости населения в Санкт-Петербурге и Ленинградской области была в целом сходной. В Санкт-Петербурге за анализируемый период выросла первичная заболеваемость большинством основных классов болезней за исключением болезней мочеполовой системы (–2,9%) и некоторых инфекционных и паразитарных болезней (–22,9%). В Ленинградской области характерна разнонаправленная динамика для многих классов заболеваний. В 2022 г. среди всех ведущих классов болезней только первичная заболеваемость болезнями системы кровообращения в Санкт-Петербурге оказалась ниже средних показателей по стране. В Ленинградской области наблюдалась обратная ситуация — среди наиболее значимых классов болезней только COVID-19 и болезни системы кровообращения демонстрировали более высокий уровень первичной заболеваемости по сравнению со среднероссийскими показателями.

КЛЮЧЕВЫЕ СЛОВА: первичная заболеваемость, структура заболеваемости, население, Санкт-Петербург, Ленинградская область

INTRODUCTION

The state of health of the population of the Russian Federation depends on many factors that have both positive and negative effects on it. As positively influencing factors we can cite, for example, the implementation in the Russian Federation in recent decades of a number of national projects and state programs aimed at the development of the domestic health care system, such as the national projects "Health" and "Health Care", the state program "Health Care Development". Thus, the fleet of medical equipment was significantly modernized, which, in turn, had a positive impact on the quality of medical care. At the same time, in 2020–2021, the domestic healthcare system faced a new, unprecedented challenge — COVID-19 coronavirus infection. This situation required significant efforts and resources to overcome and adapt to new conditions.

Analysis of the primary morbidity of the population is an important aspect of public health, allowing to assess the current state of public health and identify the main problems that require attention and measures to address them. The study of the peculiarities of primary morbidity is one of the factors that determine the essence of recommendations to increase the effectiveness of therapeutic and preventive measures [1, 2].

For St. Petersburg and the Leningrad Region, the comparative analysis of primary morbidity is of interest due to the differences in socioal and economical aspects, provision of medical care, accompanied by a common geographical location.

AIM

To identify the peculiarities of primary morbidity in the population of St. Petersburg and Leningrad region.

MATERIALS AND METHODS

When performing this study, we analyzed the statistical materials "Morbidity of the entire population of Russia (Part I)" of the Federal State Budgetary Institution "Central Research Institute of Health Care Organization and Informatization" of the Ministry of Health of the Russian Federation [3–14]. Primary morbidity was analyzed for the period from 2011 to 2022 years. For the analysis, 10 classes of diseases according to ICD-10 were selected, which make the main contribution to the primary morbidity in St. Petersburg, the Leningrad Region and the Russian Federation. Statistical processing of the results and data analysis were performed using Microsoft Excel and STATISTICA 10.0 computer programs.

RESULTS AND DISCUSSION

In 2022 the level of primary morbidity of the whole population amounted to 126,789.5 in St. Petersburg and 76,520.4 per 100,000 people in the Leningrad Region. In the structure of primary morbidity, the first and second places in both subjects coincided: respiratory diseases occupied the first place with a significant preponderance, the second place was occupied by COVID-19. They accounted for 61.1% in St. Petersburg and 60.8% in Leningrad Region (Table 1). The third place in the structure of primary morbidity in St. Petersburg was occupied by injuries, poisonings and some other consequences of external causes, and in the Leningrad Region — by diseases of the circulatory system. In St. Petersburg, diseases of the genitourinary system, diseases of the musculoskeletal system and connective tissue of the skin and subcutaneous tissue, diseases of the ear and mastoid process, diseases of the blood, hematopoietic organs and certain disorders involving the immune mechanism, diseases of the endocrine system, nutritional and metabolic disorders were next in descending order. The share of other classes of diseases in the morbidity structure was 10.2%. In the Leningrad Region, the fourth place belonged to the class of diseases "injuries, poisonings and some other consequences of external causes", the fifth to diseases of the digestive organs, followed by diseases of the genitourinary system, diseases of the musculoskeletal system and connective tissue, diseases of the ear and mastoid process, diseases of the eye and its apparatus, some infectious and parasitic diseases. Other classes of diseases had a specific weight of 10.7%.

In the Russian Federation, the list of the top 10 ICD-10 classes of diseases in terms of contribution to primary morbidity coincides with those in St. Petersburg and Leningrad Region. In the structure of primary morbidity, the first four places in the Russian Federation and St. Petersburg coincided.

Table 1

Structure of primary incidence among population in the Russian Federation, Saint Petersburg and Leningrad Region in 2022 (in %)

Таблица 1

Структура первичной заболеваемости населения Российской Федерации в целом, Санкт-Петербурга и Ленинградской области в 2022 г. (в %)

Класс болезней по МКБ-10 / Class of diseases according to ICD-10	Санкт-Петербург / Saint Petersburg		Ленинградская область / Leningrad Region		Российская Федерация / Russian Federation	
	Удельный вес / Specific gravity	Ранговое место / Rank place	Удельный вес / Specific gravity	Ранговое место / Rank place	Удельный вес / Specific gravity	Ранговое место / Rank place
Болезни органов дыхания / Diseases of respiratory system	47,6	1	48,1	1	47,5	1
COVID-19	13,5	2	12,7	2	9,6	2–3
Травмы, отравления и некоторые другие последствия воздействия внешних причин / Injury, poisoning and some other consequences of external causes	9,6	3	5,4	4	9,6	2–3
Болезни мочеполовой системы / Diseases of genitourinary system	3,9	4	4,0	6	4,2	4
Болезни костно-мышечной системы и соединительной ткани / Diseases of musculoskeletal system and connective tissue	2,9	5	3,0	7	3,2	6
Болезни уха и сосцевидного отростка / Diseases of ear and mastoid process	2,5	6–8	2,4	8	2,5	9
Некоторые инфекционные и паразитарные болезни / Certain infectious and parasitic diseases	2,5	6–8	1,8	10	2,4	10
Болезни органов пищеварения / Diseases of digestive system	2,5	6–8	4,4	5	3,1	7
Болезни системы кровообращения / Diseases of circulatory system	2,4	9–10	5,5	3	3,8	5
Болезни глаза и его придаточного аппарата / Diseases of eye and adnexa	2,4	9–10	2,1	9	2,8	8
Прочие / Other	10,2	–	10,7	–	11,3	–
Итого / Total	100,0	–	100,0	–	100,0	–

Analysis of the dynamics of primary morbidity of the entire population showed that throughout the entire observation period (2011–2022) the level of this indicator in St. Petersburg was higher, and in the Leningrad Region lower than the average values for the country (Fig. 1). In St. Petersburg and the Leningrad Region, the dynamics of the indicator was generally similar: stable level in 2011–2012, a slight decrease in the incidence in St. Petersburg in 2013–2014, a slight decrease in the incidence in the Leningrad Region in 2012–2013, a rise in St. Petersburg in 2014–2016, in the Leningrad Region in 2013–2016, a stable level until 2019 and a rise until 2022, with a rise in the Leningrad Region in 2019 and a decrease there in 2020 with further growth. Over the entire observation period, the ratio of primary morbidity rates of the total population in St. Petersburg to the national average increased from 1.1 to 1.4 times, in the Leningrad Region it increased from 0.69 to 0.86 times.

In 2022 St. Petersburg demonstrated higher levels of primary morbidity of the population than the Russian Federation for almost all major classes (Table 2). Thus, the primary morbidity

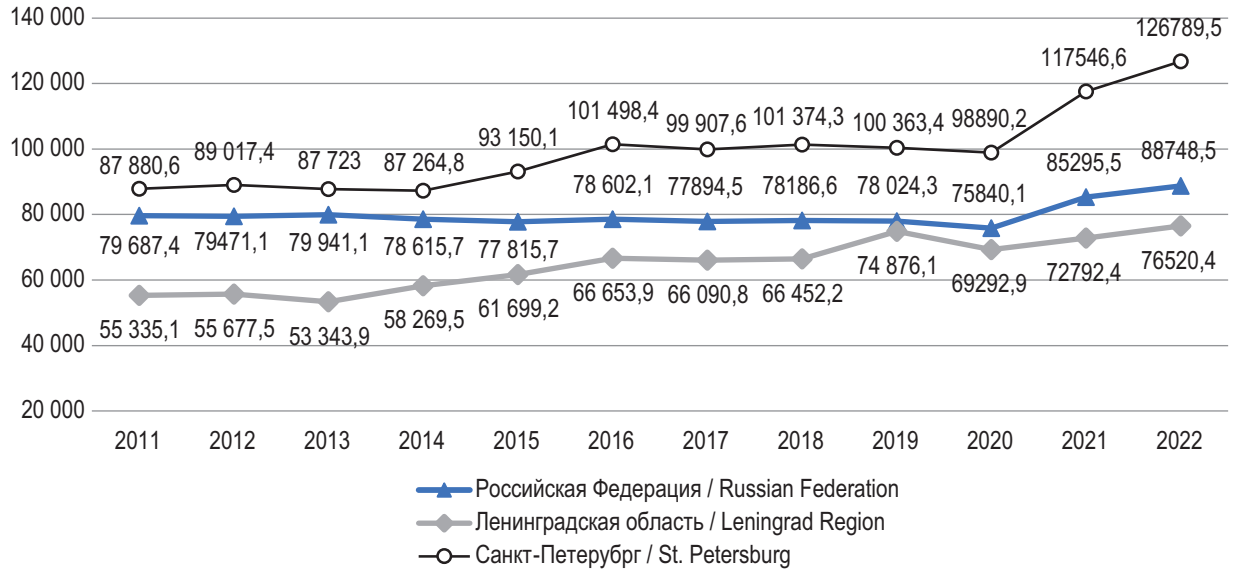

Fig. 1. Dynamics of primary morbidity among population of the Russian Federation, Saint Petersburg and Leningrad Region (per 100 000 people)

Рис. 1. Динамика первичной заболеваемости населения Российской Федерации, Санкт-Петербурга и Ленинградской области (на 100 000 человек)

Table 2

Primary morbidity of certain classes of diseases in the population of the Russian Federation, Saint Petersburg and Leningrad Region (per 100 000 people) in 2022 and the difference of indicators (times)

Таблица 2

Первичная заболеваемость отдельными классами болезней населения Российской Федерации, Санкт-Петербурга и Ленинградской области (на 100 000 человек) в 2022 г. и разница показателей (разы)

Класс болезней по МКБ-10 / Class of diseases according to ICD-10	**Санкт-Петербург (СПб) / Saint Petersburg (SPb)**	**Российская Федерация (РФ) / Russian Federation (RF)**	**СПб/РФ / SPb/RF**	**Ленинградская область (ЛО) / Leningrad Region (LR)**	**Российская Федерация (РФ) / Russian Federation (RF)**	**ЛО/РФ / LR/RF**
Болезни органов дыхания / Diseases of respiratory system	60 394,8	42 127,3	+1,4	36 773,5	42 127,3	–0,9
COVID-19	17 146,9	8538	+2,0	9739	8538	+1,1
Травмы, отравления и некоторые другие последствия воздействия внешних причин / Injury, poisoning and some other consequences of external causes	12 169,6	8540,9	+1,4	4162,4	8540,9	–2,1
Болезни мочеполовой системы / Diseases of genitourinary system	4940,1	3761,9	+1,3	3081,4	3761,9	–1,2
Болезни костно-мышечной системы и соединительной ткани / Diseases of musculoskeletal system and connective tissue	3666,5	2864,2	+1,3	2288	2864,2	–1,3
Болезни уха и сосцевидного отростка / Diseases of ear and mastoid process	3122,7	2222,2	+1,4	1804,8	2222,2	–1,2
Некоторые инфекционные и паразитарные болезни / Certain infectious and parasitic diseases	3248,5	2261,8	+1,4	1653,1	2261,8	–1,4
Болезни органов пищеварения / Diseases of digestive system	3216,7	2711,7	+1,2	3334,7	2711,7	–0,8
Болезни системы кровообращения / Diseases of circulatory system	3048,6	3353,3	–1,1	4175,1	3353,3	+1,2
Болезни глаза и его придаточного аппарата / Diseases of eye and adnexa	3025,8	25 031	+1,2	1630,6	2503,1	–1,5

of COVID-19, respiratory diseases, injuries, poisonings and some other consequences of external causes was higher than the Russian average by 2.0 and 1.4 times, respectively. Among all leading classes of diseases, only the primary morbidity rate of circulatory diseases in St. Petersburg was below the national average (–1.1). The opposite situation was observed in the Leningrad Region — among the most significant classes of diseases only COVID-19 (+1.1) and diseases of the circulatory system (+1.2) demonstrate a higher level of primary morbidity of the entire population than in the Russian Federation as a whole.

A comparative analysis of the dynamics of the primary morbidity rates for certain classes of diseases in the period from 2011 to 2022 showed that in St. Petersburg and the Leningrad Region a parallel decrease or increase in the primary morbidity rate was observed for 6 out of 10 major classes of diseases. The increase in morbidity in both studied regions was characteristic of respiratory diseases, digestive diseases, diseases of the circulatory system, as well as diseases of the eye and its apparatus. In both regions, the incidence of diseases of the genitourinary system and some infectious and parasitic diseases decreased.

In St. Petersburg and the Russian Federation as a whole, in the period from 2011 to 2022, a parallel decrease or increase in the primary morbidity rate was observed only for three major classes of diseases: respiratory diseases, some infectious and parasitic diseases, and diseases of the circulatory system. In the Leningrad Region, only two classes of diseases — diseases of the digestive organs and diseases of the eye and its appendage apparatus — did not show a decrease or increase in primary morbidity rates in parallel with the national average.

In St. Petersburg during the analyzed period, the primary morbidity rate increased in most of the main classes of diseases except for diseases of the urogenital system (–2.9%) and some infectious and parasitic diseases (–22.9%) (Table 3). The most significant growth in St. Petersburg was shown by respiratory diseases (+50.6%) and digestive diseases (+42.0%). Leningrad Region is characterized by multidirectional dynamics for many classes of diseases. For example, the incidence of diseases of the circulatory system (+71.1%), respiratory diseases (+42.2%) and digestive diseases (+49.6%) increased. At the same time, the incidence of some infectious and parasitic diseases decreased most significantly (–27.8%).

The level of primary morbidity in St. Petersburg and Leningrad Region is influenced by a number of factors, such as the organization of the health care system and the environmental situation. Higher levels of primary morbidity in St. Petersburg compared to the Leningrad Region may be related to the degree of urbanization of the regions. St. Petersburg is the second most populous city in the Russian Federation with a population of 5,600,000 at the end of 2022. The population of the Leningrad Region is 2023.8 thousand people at the end of 2022, of which 666.5 thousand people live in rural settlements. At the same time, a significant part of urban residents of the Leningrad Region live in settlements — satellites of St. Petersburg (Murino, Kudrovo, Devyatkino, etc.).

St. Petersburg is characterized by a higher accessibility of medical care than in the Leningrad Region, which stimulates access to medical care and thus increases the detection of diseases in the population. St. Petersburg has a concentration of medical organizations of various levels and subordination. Thus, in 2020 there were 707 outpatient and polyclinic organizations in St. Petersburg, and 302 in the Leningrad Region [15, 16]. At the same time, a number of large hospitals in the Leningrad Region, such as the Leningrad Regional Clinical Hospital and the Children's Clinical Hospital, are located in St. Petersburg and are used by its residents to receive medical care. Staffing is also higher in St. Petersburg. There were 35.8 doctors per 10,000 people in 2022 in the Leningrad Region and 89.1 in St. Petersburg [15, 16].

Among other things, the environmental situation in the Leningrad Region is generally better than in St. Petersburg [17, 18]. St. Petersburg is characterized by an increased level of atmospheric air pollution according to the criteria of SanPiN (sanitary-epidemiologic rules and norms) 1.2.3685–21, for Leningrad Regionis characterized by the low level of air pollution. This is due to the developed industry and a large number of motor vehicles in St. Petersburg. This fact also affects the higher level of primary morbidity in St. Petersburg compared to the Leningrad Region.

Table 3

Dynamics of growth/decrease of primary morbidity of certain classes of diseases in the population of the Russian Federation as a whole, Saint Petersburg and Leningrad Region (per 100000 people) in the period from 2011 to 2022 (in %)

Таблица 3

Динамика роста/снижения первичной заболеваемости отдельными классами болезней населения Российской Федерации в целом, Санкт-Петербурга и Ленинградской области (на 100 000 человек) в период с 2011 по 2022 гг. (в %)

Класс болезней по МКБ-10 / Class of diseases according to ICD-10	**Санкт-Петербург / Saint Petersburg**		**Динамика, % / Dynamics , %**	**Ленинградская область / Leningrad Region**		**Динамика, % / Dynamics, %**	**Российская Федерация / Russian Federation**		**Динамика, % / Dynamics, %**
	2011	**2022**		**2011**	**2022**		**2011**	**2022**	
Болезни органов дыхания / Diseases of digestive system	40 114,1	60 394,8	+50,6	25 868,2	36 773,5	+42,2	33 881,1	42 127,3	+24,3
Травмы, отравления и некоторые другие последствия воздействия внешних причин / Injury, poisoning and some other consequences of external causes	11 755,8	12 169,6	+3,5	4775,0	4162,4	–12,8	9276,2	8540,9	–7,9
Болезни мочеполовой системы / Diseases of genitourinary system	5086,3	4940,1	–2,9	3309,1	3081,4	–6,9	4931,5	3761,9	–23,7
Болезни костно-мышечной системы и соединительной ткани / Diseases of musculo-skeletal system and connective tissue	2776,3	3666,5	+32,1	2540,4	2288,0	–9,9	3363,8	2864,2	–14,9
Болезни уха и сосцевидного отростка / Diseases of ear and mastoid process	2763,4	3122,7	+13,0	1886,7	1804,8	–4,3	2780,6	2222,2	–20,1
Некоторые инфекционные и паразитарные болезни / Certain infectious and parasitic diseases	4213,5	3248,5	–22,9	2290,8	1653,1	–27,8	3235,9	2261,8	–30,1
Болезни органов пищеварения / Diseases of digestive system	2264,6	3216,7	+42,0	2228,7	3334,7	+49,6	3334,4	2711,7	–18,7
Болезни системы кровообращения / Diseases of circulatory system	2457,8	3048,6	+24,0	2439,1	4175,1	+71,1	2660,6	3353,3	+26,0
Болезни глаза и его придаточного аппарата / Diseases of eye and adnexa	2812,5	3025,8	+7,6	1594,7	1630,6	+2,3	3327,9	2503,1	–24,8

CONCLUSION

1. The level of primary morbidity in St. Petersburg during 2011–2022 was higher than the national average, in Leningrad Region — lower.

2. Each studied subject is characterized by the presence of peculiarities in the structure of primary morbidity. St. Petersburg showed higher levels of primary morbidity for most classes of diseases compared to the average for the Russian Federation, while in the Leningrad Region — lower.

3. Throughout the entire observation period (2011–2022), the dynamics of primary morbidity in St. Petersburg and Leningrad Region was generally similar.

4. In St. Petersburg during the analyzed period, primary morbidity increased in most major classes of diseases, except for diseases of the genitourinary system (–2.9%) and some infectious and parasitic diseases (–22.9%). Leningrad Region is characterized by multidirectional dynamics for many classes of diseases.

5. In 2022, among all leading classes of diseases, only the primary morbidity of circulatory system diseases in St. Petersburg was below the national average. In the Leningrad Region, among the most significant classes of diseases, only the primary morbidity of the entire population with COVID-19 and circulatory system diseases is higher than in the Russian Federation as a whole.

6. Among the factors that account for the higher level of primary morbidity in St. Petersburg compared to the Leningrad Region, the greater accessibility of medical care, as well as the negative impact of environmental factors of anthropogenic nature can be emphasized.

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 was agreed to be accountable for all aspects of the study.

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

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

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