ST. PETERSBURG STATE PEDIATRIC MEDICAL UNIVERSITY

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IMPROVING THE ORGANIZATION OF SPECIALIZED MEDICAL CARE IN PATHOLOGIC PREGNANCY DEPARTMENTS

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INTRODUCTION

Relevance of the study

Currently, there is a progressive decrease in the birth rate in the Russian Federation against the background of an increase in mortality, which causes an increase in the unnatural population decline [12]. Such a situation in demography leads to the introduction of measures aimed at stimulating fertility and reducing mortality in all age groups [126, 164, 167]. President of the Russian Federation V.V. Putin in his message to the Federal Assembly identified the improvement of the demographic situation among the priorities [100]. The task of "saving people" is a priority in the Constitution of Russia and in the program "National Security Strategy of Russia" [62, 99]. The solution to this problem was the development and implementation of federal and regional social and economic programs aimed at improving the accessibility and quality of medical care to the population [119, 120]. The state pays special attention to the preservation of maternal and child health [8, 10, 31, 165]. In accordance with the highlighted vector in the state policy of our country, the years 2018-2027 were declared the Decade of Childhood by the Decree of the President of Russia, and 2024 was declared the Year of the Family [106]. Within the framework of these periods, the solution of demographic problems and the issues of comprehensive support of the system of maternal and child health care are among the necessary primary transformations of fundamental importance [2, 96, 98, 109, 160].

According to the Federal Law "On the Fundamentals of Health Protection of Citizens in the Russian Federation", the priority task of the maternity and child health care system is to ensure optimal conditions for women to realize their most important social function - giving birth and upbringing of healthy children [105]. Our country has achieved notable successes in obstetrics and perinatology, which is largely due to the formation of a three-level system of medical care for pregnant women, women in labor, new mothers and newborns. The activity of Level 3 obstetric hospitals – perinatal centers, which are at the head of maternal and child health care system in the subjects of the Russian Federation, has significantly reduced maternal, perinatal and infant

mortality [89, 150]. Routing of pregnant women plays an important role in reducing these indicators, which provides them with timely specialized, including high-tech, medical care and, as a result, reduces negative perinatal outcomes [127, 158, 162].

In our country, the organization of medical care for women during pregnancy, childbirth and the postpartum period is carried out in accordance with the current procedure for providing medical care in the field of obstetrics and gynecology, which enshrines the principles of phasing and continuity in its provision [107, 101, 116]. The priority task of the outpatient stage is prevention during the regular medical examination of pregnant women, including the allocation of women "risk groups" for the prevention and early detection of complications of pregnancy, labor and postpartum period [5, 158]. When a pregnant woman's condition requires round-the–clock monitoring and treatment, they are admitted to pathologic pregnancy departments of maternity hospitals and perinatal centers [8]. Their tasks are the detection and treatment of pregnancy failure, prevention of maternal mortality, preparation for labor, delivery, including by caesarean section, counseling and psychological support, etc. [116, 128].

PPDs activities are largely aimed at prolonging pregnancy in order to reduce premature births and the incidence of prematurity [2, 34]. The worst prognosis for life and disability are those born at gestational age of 22-25 weeks with a body weight of 500-750 g, of which only 30-50% of children survive, the majority of survivors are disabled according to peer-reviewed scientific publications [64, 130, 166]. The problem of relevance of improving the provision of specialized medical care to pregnant women in PPDs is caused by the general trends in the deterioration of health of the Russian population as a whole, an increase in the average age of women planning pregnancy, an increase in the number of children with malformations and developmental abnormalities, as well as a consistently high rate of pathological births [1, 11, 16, 26, 54, 80]. All of the above is largely due to the different levels of medical care provided to women in different regions of the country [48, 67, 71, 73, 76, 93]. Thus, given the importance of improving perinatal pregnancy outcomes for the demographic situation in Russia as a whole, both currently and in the future, an assessment of the organization of specialized medical care in PPDs and scientific

substantiation of methods for its improvement determines the relevance of the chosen topic of the research.

The degree of elaboration of the research topic

The work of Filimonchikova I.D. (2004) is devoted to the assessment of the quality of medical care and the development of measures to prevent maternal mortality [180]. The search for ways to improve the efficiency of obstetric and gynecological care to reduce reproductive losses was conducted by Oboskalova T.A. (2005) [108]. Medical and socio-demographic aspects of maternal mortality in Primorsky region were studied by Leshchankina S.N. (2006) [71]. The study of obstetric-gynecological and perinatal care was carried out by Vartapetova N.V. (2011) [18]. The creation of a regional system aimed at improving the organization of obstetric and neonatal care was carried out by Mysyakov V.B. (2012) [93]. The model of preventive measures to reduce perinatal pathology in a region with low population density was developed based on the results of the study by Stupak V.S. (2013) [7]. Ryzhova N.K. (2014) was engaged in the analysis of maternal losses and the study of the role of innovative technologies in the organization of obstetric and gynecological care in reducing maternal mortality [149]. The work of Torubarov S.F. (2014) is devoted to the creation of scientifically based practical recommendations for improving the efficiency of the obstetric care system aimed at reducing perinatal mortality [175]. Research work to assess the health of pregnant women, women in labor and new mothers in a large industrial center was conducted by Kabochkin A.A. (2014) [57]. The study by Magomedova A.M. (2014) is devoted to improving quality improvement measures in maternity care organizations in the Republic of Dagestan [73]. The assessment of the organization of specialized medical care for women with pregnancy failure, complications of childbirth, as well as in the postpartum period was performed by Vorykhanov A.V. (2017) [25]. The development of measures to improve obstetric care for pregnant women, women in labor and new mothers with acute cerebrovascular accidents of various etiologies was the basis of the work of Arustamyan R.R. (2017) [6]. Contemporary issues of therapeutic, diagnostic and preventive care for women with severe infectious-inflammatory and hemorrhagic complications of the late postpartum period are

considered in the study by Glukhov E.Yu. (2017) [29]. The work of Yaroslavsky K.V. (2019) is devoted to the modernization of obstetric care, which contributes to improving the quality of the activities of obstetric organizations [204]. The prediction of gestational complications in acute cerebrovascular disorders associated with pregnancy was performed by Shapovalova O.A. (2019) [190]. Optimization of the work of the regional perinatal center was the topic of research by Kharitonov A.K. (2019) [186]. Prediction and differential diagnosis of various types of preeclampsia was carried out by Pokusaeva K.B. (2020) [125]. Improvement of routing of pregnant women based on perinatal monitoring is the basis of the study by Kurbanismailov R.B. (2021) [69]. The assessment of the organization of medical care for newborns in obstetric hospitals was carried out by Moiseeva K.E. (2021) [83].

A significant amount of scientific research was conducted in certain regions of the Russian Federation on health issues and problems of providing specialized medical care to pregnant women. However, no work has been carried out before to improve the activities of PPDs, depending on the level of obstetric hospital in the megalopolis.

Aim and objectives of the research

The aim of the research is to develop and scientifically substantiate a set of measures aimed at improving the provision of specialized care in pathologic pregnancy departments based on the assessment of the state of health and the organization of medical care for pregnant women.

Research objectives:

1. To assess the incidence of women's morbidity that complicated pregnancy and childbirth and its impact on obstetrics and maternal mortality rates.

2. To study the main indicators of the performance of pathologic pregnancy departments in MHs and PCs.

3. To conduct a comparative assessment of the medical, social and anamnestic characteristics of the patients and to study the satisfaction of pregnant women with the provision of specialized medical care in obstetric hospitals of the 2nd and 3rd levels.

4. To develop evidence-based recommendations for improving the organization of specialized medical care in PPDs.

Scientific novelty of the study:

1. A comparative assessment of maternal mortality rates, frequency of complicated deliveries, frequency of cesarean section in labor, incidence of women of reproductive age with class XV diseases (Pregnancy, childbirth and postpartum period), incidence of women during pregnancy and childbirth of St. Petersburg with similar indicators in Russia and the North-Western Federal District for the period 2018-2022 was carried out.

2. The assessment of the main indicators of PPDs activity was carried out, including the provision of beds for the female population, monitoring of the indicators of the hospital bed usage in PPDs in St. Petersburg with similar indicators in the country and the North-Western Federal District in 2018-2022.

3. The structure of obstetric pathology was analyzed and the indicators of PPDs work were studied depending on the level of the obstetric hospital, including the routing of patients in the hospital, the distribution of PPD patients by type and method of delivery. The organization of medical councils on the issues of hospital admissions of pregnant women to the pathologic pregnancy departments of perinatal centers was assessed.

4. A comparative assessment of the characteristics of the contingent admitted to PPDs was carried out and the main reasons for patient dissatisfaction with the provision of specialized medical care in obstetric hospitals in the megalopolis depending on the level of the hospital were determined.

5. The expediency of a differentiated approach in the development of medical and organizational measures that will improve the provision of specialized medical care to women with pregnancy failure in obstetric organizations has been established.

Theoretical and practical significance of the research.

Theoretical significance of the research.

1. The use of a set of basic methods to study the health indicators of women during pregnancy and to assess the indicators characterizing the organization level of obstetric care in inpatient settings.

2. Statistically significant differences were found between the indicators of incidence of pregnant women, obstetrical care and the hospital bed usage in St. Petersburg PPDs and similar indicators in the Russian Federation.

3. The assessment made it possible to obtain new information about the contingent of admitted to PPDs and to identify negative trends in the provision of medical care to patients with detected pregnancy pathology at the inpatient stage.

4. The provisions are proved, which, based on the comprehensive assessment, allow to develop scientifically grounded practical recommendations to improve the provision of medical care in obstetric hospital PPDs.

Practical significance of the research.

1. The results obtained in the course of the study made it possible to develop practical recommendations that will improve the organization of medical care in MH and PC PPDs.

2. The results of the study were used in the development of the database "Medical and social characteristics of pregnant women in St. Petersburg receiving medical care in inpatient settings" and "Medical and social characteristics of pregnant women in St. Petersburg receiving medical care in outpatient settings" (Appendix 1 and 2).

3. The act of implementation of the research results in the activities of PPDs: SPb GBUZ "Maternity Hospital No. 9", SPb GBUZ "Maternity Hospital No. 16", "St. Petersburg State Pediatric Medical University" of the Ministry of Health of the Russian Federation (Appendix 3-5).

4. The results of the research and the main provisions contained in the thesis are used in the educational process of students of pediatric and dental faculties, faculties of "General Medicine" and "Medical and Preventive Medicine", masters of "Public Health" and clinical residents at the Department of Public Health and Public Health Care and clinical residents and trainees of the Department of Neonatology with courses of neurology and obstetrics and gynecology on the Faculty of Postgraduate and Further Professional Education of the Saint Petersburg State Pediatric Medical University of the Ministry of Health of the Russian Federation (Appendix 6-7).

Research methodology and methods

The regulatory and legal framework of the Russian Federation and numerous studies of Russian and foreign scientists in the field of maternal and child health, public health and the organization of obstetric and gynecological care served as a methodological basis for the thesis.

The following data collection methods were used: meta-analysis, epidemiological, statistical, analytical, graphical-analytical, sociological methods, retrospective and correlation analysis, continuous method and sampling. Pregnant women's health indicators, indicators characterizing obstetric care, and maternal mortality were assessed on the basis of data obtained from statistical compilations of the Federal State Budgetary Institution "Russian Research Institute of Health" of the Ministry of Health of the Russian Federation and statistical bulletins of the Federal State Statistics Service. An objective assessment of the organization of specialized medical care for pregnant women was carried out by analyzing the information obtained by copying data from the N003/u registration forms (1621 observation units in MHs and 644 OUs in PCs). Information from the PPD reports of four obstetric hospitals, three level 2 and one level 3, was also used. To assess the organization of medical councils, a copy of 515 accounting forms N113/u-20 and 515 conclusions of medical consultations was carried out. An anonymous sociological survey was conducted for subjective assessment of medical care delivery in PPDs, with coverage of 580 and 388 observation units in MHs and PCs, respectively.

The research calculated and analyzed all types of values used in statistics, including quantitative values; extensive and intensive indicators; ratio and visibility indicators; arithmetic mean and its standard error. The groups were compared with each other by determining Student's T-test or Mann-Whitney U-test. Creation, statistical processing and analysis of the information database followed by visualization of the results obtained in this research were carried out using Microsoft Office Excel 2019 (Word, Excel) and Statistica 10.0 (StatSoft Inc., USA).

The basic provisions for the thesis defence:

1. The higher than the national average level of complicated births and maternal mortality in St. Petersburg is largely due to the high prevalence of extragenital pathology and diseases of pregnant women that complicated the course of childbirth.

2. Optimal use of the hospital beds in the metropolis is achieved through rational routing of pregnant women, women in labor and women in labor in obstetric organizations in accordance with the type and severity of obstetric pathology, which requires a differentiated approach to its improvement.

3. With a high level of satisfaction with the provision of specialized medical care in maternity organizations in St. Petersburg, significant differences in the medical, social and anamnestic characteristics of patients in the 2nd and 3rd levels of obstetric hospitals create the need to develop various directions for its improvement.

4. A set of practical recommendations of a medical and organizational nature aimed at improving the organization of specialized medical care in the emergency department is submitted for defense.

The main scientific results

This thesis study was conducted using epidemiological, sociological, graph-analytical and sociological methods for the period of 2018-2022. The statistical population formation was carried out by a continuous method and sampling.

The conducted copying of information from primary medical documentation formed the basis of the databases "Medical and social characteristics of pregnant women in St. Petersburg receiving medical care in outpatient settings" and "Medical and social characteristics of pregnant women in St. Petersburg receiving medical care in inpatient settings" [3, 13, 77, 78].

The results of the patient survey and excerpts from the primary accounting and reporting medical documentation made it possible to identify the main problems in the provision of specialized medical care to pregnant women in obstetric hospitals and to develop management solutions to improve the efficiency, accessibility and quality of medical care in obstetric hospitals in the megalopolis.

The obtained research results are used in the process of teaching students of pediatric and medical faculties, clinical residents at the departments of Public Health and Public Health Care, neonatology with courses in neurology and obstetrics and Gynecology of the Federal State-Funded Educational Institution of Higher Education "Saint Petersburg State Pediatric Medical University" of the Ministry of Health of the Russian Federation [50, 51, 52, 63, 65, 77, 78, 84, 85, 87, 89, 91, 92].

The practical recommendations proposed based on the results of the research, aimed at improving the organization of specialized medical care in PPDs, were implemented in the practical activities of obstetric organizations of St. Petersburg (Appendix 3-5).

The main results and provisions of the scientific research are presented:

1. Moiseeva K.E., Alekseeva A.V., Shevtsova K.G., Zastupova A.A., Sokolova V.V., Kharbedia Sh.D., Sergienko O.I., Kuzmin A.N. High birth weight as a risk factor for childbirth. Standardization issues in healthcare. 2024. No. 1-2. Pp. 38-48 [85].

2. Krot I.F., Rukhlyada N.N., Romanova L.A., Reznik V.A., Sergienko O.I., Chikhladze V.U., Vartanyan R.A. Myomectomy during cesarean section. Obstetrics and gynecology. 2024. No. 2. Pp. 72-78 [65].

3. Moiseeva K.E., Alekseeva A.V., Kharbediya Sh.D., Sergienko O.I., Zastupova A.A., Karaylanov M.G., Khvedelidze M.G., Baksheeva L.I. Influence of morbidity of women during pregnancy, childbirth and postpartum period on the indicators of hospital bed usage in pathologic pregnancy departments. Health care manager. 2024. No. 2. Pp. 35-43 [84].

4. Rukhlyada N.N., Tsechoeva L.Sh., Dudova K.A., Sergienko O.I., Kwekveskiri E.N., Abdaladze N.S., Kuzmina A.S. The effect of vaginal microflora on pregnancy. Educational and methodical manual for students and clinical residents / St. Petersburg, 2024, 24 p. [148].

5. Ivanov D.O., Moiseeva K.E., Mezhidov K.S., Yuryev V.K., Shevtsova K.G., Alekseeva A.V., Glushchenko V.A., Kharbedia Sh.D., Belokhov N.V., Zastupova A.A., Sergienko O.I. The role of obstetric risk factors and resource provision of

obstetric services in reducing infant mortality. Modern issues of healthcare and medical statistics. 2024. No.1. Pp. 726-746 [50].

6. Zastupova A.A., Sergienko O.I., Moiseeva K.E. Evaluation of the use of cesarean section in maternity care organizations. In the collection: Current aspects of medical activity in the youth environment. Collection of articles of the III Scientific and practical conference with international participation. Kirov, 2023. Pp. 133-137 [47].

7. Sergienko O.I. Assessment of the contingent of pregnant women admitted to the Department of Pregnancy Pathology of the Level 3B perinatal center. In the collection: Issues of urban health. Collection of scientific papers. Edited by N.I. Vishnyakov. St. Petersburg, 2023. Pp. 258-263 [153].

8. Moiseeva K.E., Ivanov D.O., Alekseeva A.V., Kharbedia Sh.D., Berezkina E.N., Zastupova A.A., Sergienko O.I. Incidence of pregnant women in the megalopolis. Bulletin of the Ivanovo Medical Academy. 2023. Vol. 28. No. 1. Pp. 5-11 [87].

9. Korgozha M.A., Evmenenko A.O., Sergienko O.I. Perinatal anxiety and its predictors: an empirical study in women with their first pregnancy. The azimuth of scientific research: pedagogy and psychology. 2023. Vol. 12. No. 3 (44). Pp. 128-132 [63].

10. Moiseeva K.E., Glushchenko V.A., Alekseeva A.V., Kharbediya Sh.D., Berezkina E.N., Yakovlev A.V., Levadneva M.I., Sergienko O.I., Zastupova A.A., Khvedelidze M.G., Simonova O.V., Gazheva A.A. Organization of medical care for newborns in a perinatal center: condition, advantages and problems. Medicine and healthcare organization. 2023. Vol. 8. No. 3. Pp. 112-123 [89].

11. Ivanov D.O., Moiseeva K.E., Yuryev V.K., Mezhidov K.S., Shevtsova K.G., Alekseeva A.V., Yakovlev A.V., Kharbedia Sh.D., Karaylanov M.G., Sergienko O.I., Zastupova A.A. The role of the quality of dispensary follow-up during pregnancy in reducing infant mortality. Medicine and healthcare organization. 2023. Vol. 8. No. 4. Pp. 4-15 [51].

12. Moiseeva K.E., Ivanov D.O., Alekseeva A.V., Berezkina E.N., Sergienko O.I., Zastupova A.A. Resource provision of the St. Petersburg obstetric service with beds and medical personnel. Metropolitan health. 2023. Vol. 4. No. 4. Pp. 98-111 [91].

13. Ivanov D.O., Kharbedia Sh.D., Zastupova A.A., Sergienko O.I., Moiseeva K.E., Yuriev V.K., Reznik V.A. "Medical and social characteristics of pregnant women in St. Petersburg receiving medical care in outpatient settings" database. Database registration certificate RU 2023624962 dated 25.12.2023. Application dated 08.12.2023. [77]

14. Ivanov D.O., Kharbedia Sh.D., Zastupova A.A., Sergeenko O.I., Moiseeva K.E., Yuriev V.K., Reznik V.A. "Medical and social characteristics of pregnant women in St. Petersburg receiving medical care in inpatient settings" database. Database registration certificate RU 2023624873 dated 21.12.2023. Application dated 06.12.2023. [78]

14. Moiseeva K.E., Berezkina E.N., Sergienko O.I. Dynamics of the share of obstetric care and delivery organizations in obstetric hospitals in the Russian Federation and the North-Western Federal District in 2013-2019. In the collection: Issues of urban health. Collection of scientific papers. St. Petersburg, 2022. Pp. 181-183 [86].

15. Moiseeva K.E., Sergienko O.I., Berezkina E.N., Glushchenko V.A. Assessment of the dynamics of childbirth in obstetric hospitals of individual subjects of the North-Western Federal District in 2013-2019. In the collection: Issues of urban health. Collection of scientific papers. St. Petersburg, 2022. Pp. 184-187 [90].

16. Moiseeva K.E., Zastupova A.A., Sergienko O.I. Some issues of studying the influence of risk factors of the course of pregnancy on the health of children in the perinatal period. In the book: VI week of education at the Elizabethan Hospital. Collection of abstracts of the multidisciplinary medical forum. Moscow, 2022. Pp. 23-25 [88].

17. Moiseeva K.E., Mikhailova Yu.P., Alekseeva A.V., Kharbediya Sh.D., Sergienko O.I., Myznikova I.V. Formation, current state and main problems of the

organization of outpatient obstetric and gynecological care in Russia. Medicine and healthcare organization. 2022. Vol. 7. No. 2. Pp. 89-99 [92].

18. Ivanov D.O., Moiseeva K.E., Berezkina E.N., Sergienko O.I., Zastupova A.A. A comparative assessment of the obstetric history of mothers of children born sick and ill, and healthy newborns. Medicine and healthcare organization. 2022. Vol. 7. No. 3. Pp. 4-11 [52].

19. Zastupova A.A., Berezkina E.N., Sergienko O.I. Some features of medical and social characteristics and course of pregnancy in mothers of healthy and sick newborn children. Forcipe. 2022. Vol. 5. No. S2. Pp. 213-214 [46].

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21. Baranova N.A., Brzhesky V.V., Diskalenko O.V., Efimova E.L., Zertsalova M.A., Ivanov D.O., Ivanova S.V., Konikova O.A., Kuleva S.A., Prisich N.V., Sadovnikova N.N., Sergienko O.I., Strupeneva U.A., Chistyakova M.H. Neonatal ophthalmology. A guide for doctors / Moscow, 2021, 288 p. [13].

22. Alekseeva A.V., Moiseeva K.E., Sergienko O.I. The discrepancy between the timing of neonatal screening and the timing of discharge of children from maternity care organizations. Medical law: theory and practice. 2021. Vol. 7. No. 2 (14). Pp. 16-22 [3].

The degree of reliability and approbation of the research results

The degree of reliability of the results obtained during the research is confirmed by the use of a sufficiently large representative database. The following were analyzed: 12 forms of reporting medical documentation; 5 statistical materials of Rosstat; 25 statistical materials of Russian research Institute of Health; 968 questionnaire forms and 3295 excerpt cards from medical records. Statistical analysis was carried out using modern parametric and non-parametric methods of analysis. The total number of information units is 4305.

Approbation of the results of the research was carried out in three PPDs of obstetrics organizations in St. Petersburg and in the educational process in St.

Petersburg State Pediatric Medical University, which is confirmed by the Acts of implementation of the results of the thesis "Improving the organization of specialized medical care in pathologic pregnancy departments" (Appendix 3-7). Approbation of the results of the thesis was carried out and discussed at the following scientific and practical events: Congress with international participation "Healthy children – the future of the country" (St. Petersburg, 2021), Congress with international participation "Healthy children – the future of the country" (St. Petersburg, 2022), Multidisciplinary forum "VI Week of Education". "Some issues of studying the influence of risk factors of the course of pregnancy on the health of children in the perinatal period" (St. Petersburg, 2022), All-Russian Scientific and Practical Conference with international participation "Preventive Medicine – 2022" (St. Petersburg, 2022), Multidisciplinary Forum "VI Week of Education" (St. Petersburg, 2023), V International Scientific and Practical Conference "Modern achievements and prospects for the development of public health protection" (Tashkent, 2023), VIII International Scientific and Practical Conference of the Caspian States "Relevant Issues of Modern Medicine" (Astrakhan, 2023), XIII Baltic Congress of Pediatric Neurology with international participation (St. Petersburg, 2023), Congress with international participation "Healthy Children – the Future of the Country" (St. Petersburg, 2023), All-Russian Scientific and Practical Conference "Relevant Issues of Maternal and Child Health Care: Priority on Prevention" (Moscow, 2023), II extramural scientific-practical conference with international participation "Relevant aspects of medical activity in the youth environment" (Kirov, 2023), International scientific-practical conference "Health and Environment" (Minsk, 2023), XIV Baltic Congress on pediatric neurology with international participation (St. Petersburg, 2024), All-Russian scientific-practical conference "Relevant issues of maternal and child health care" (St. Petersburg, 2024), All-Russian Scientific and Practical Conference "Relevant issues of Maternity and Childhood Protection: Focus on the Family" (Moscow, 2024), Congress with International Participation "Healthy Children – the Future of the Country" (St. Petersburg, 2024).

Publications. 22 scientific papers were published on the topic of the thesis, including 10 in peer-reviewed scientific journals recommended by the State Commission for Academic Degrees and Titles of the Ministry of Education and Science of Russia, 1 in scientific journal indexed in the international database Scopus, 2 Certificates of database registration.

Personal contribution of the author. The author independently analyzed literary sources on the topic of the study, developed the research design, carried out statistical processing and analysis of the data obtained, formulated conclusions and developed practical recommendations. A sociological survey of female PPD patients, copying of information from forms N003/u, N113/u-20 and conclusions of medical councils were conducted by the author.

The structure and scope of the thesis. The thesis is presented on 160 pages of typewritten text and consists of an introduction, a review of the literature, three chapters of the results of the author's own research, conclusion, findings, practical recommendations, prospects for further development of the topic, a list of references and 7 appendices. The list of references includes 232 sources, including 204 of domestic and 28 of foreign authors. The work is illustrated with 29 figures and 43 tables.

Chapter 1. CURRENT PROBLEMS OF ORGANIZATION OF OBSTETRIC AND GYNECOLOGICAL CARE IN INPATIENT SETTINGS (LITERATURE REVIEW)

1.1. Regulatory and legal support and organization of specialized medical care for pregnant women

Taking care of the health of citizens of the Russian Federation [62] is one of the most important tasks of the state. Article 41 of the Constitution of the Russian Federation enshrines the right of every citizen of our country to health protection and free medical care. The state finances federal programs aimed at health promotion and protection, and actively participates in the development of all health care systems. It appreciates programs aimed at improving the health of its citizens.

In modern conditions, when the birth rate in our country has fallen, special attention is paid to the health of girls and women of childbearing age. In the federal law "On the Fundamentals of Health Protection of Citizens in the Russian Federation" [105], chapter No. 6 is devoted to the health of mother and child, family issues and reproductive health. Special attention should be paid to article 52 "Rights of pregnant women and mothers in the field of health protection", which contains information that motherhood is protected and encouraged by the state; medical care during pregnancy, childbirth and the postpartum period is provided free of charge; pregnant women who carry out natural feeding, as well as children under the age of three years are provided with full-fledged nutrition. Article 55 deals with the use of assisted reproductive technologies in families suffering from infertility. This article notes that both married and unmarried couples, as well as single women with their informed voluntary consent, are entitled to this type of medical care.

In the concept of demographic policy of the Russian Federation for the period until 2025 [106], in addition to such fundamental tasks as improving public health, reducing mortality, increasing life expectancy, reducing incidence, improving the provision of medical care, much attention is paid to solving the tasks of increasing the birth rate in the country. Measures to address the task of increasing the birth rate include increasing state support for families with children (birth and child-rearing

allowances, provision of maternity capital, increased construction of affordable housing for families with children, provision of mortgage loans for the purchase of affordable housing for young families, targeted material assistance to low-income families with children), as well as increasing the use of flexible forms of employment for women coming off maternity leave, strengthening the institution of the family, the implementation of modern measures to further reduce the rate of premature termination of pregnancy (abortion), etc. By 2025, the total fertility rate is expected to increase by 1.5 times compared to 2006.

It should be noted that the Labor Code of the Russian Federation contains a large number of legal regulations governing the legal protection of pregnant women [176]. If we evaluate this legal act from the point of view of maternity and child protection, it can be noted that pregnant women and women with children are endowed with a wide range of rights in the field of labor and social protection.

The Family Code of the Russian Federation [152] states that a husband during his wife's pregnancy and within one year after the birth of the child has no right, without the woman's consent, to file a divorce case (Article 17).

However, the legal guarantees provided by the state in the field of maternal and child protection cannot always be implemented without a woman's own responsibility for her own health and the health of her child [76].

The organization of specialized medical care for the female population is regulated by the order of the Ministry of Health of the Russian Federation No. 1130-n "On approval of the Procedure for providing medical care in the profile "Obstetrics and gynecology" [107]. This order states that specialized obstetric and gynecological care for women is provided in the following medical organizations:

- in small settlements, primary pre-hospital medical and sanitary care for pregnant women is provided in feldsher-midwife stations and feldsher health centers, and primary medical and sanitary care is provided in offices of general practitioners (family physicians);

- primary specialized medical and sanitary care is provided in women's clinics;

- obstetric care units are organized for early prenatal hospital admission of pregnant women from distant places of residence from obstetric hospitals;

- day care hospitals provide medical assistance to women with a gestational period of up to 22 weeks and to women in the postpartum period without round-the-clock observation;

- obstetric hospitals (maternity hospitals) are designed to provide specialized medical care to women during childbirth and the postpartum period, as well as to newborns. They come in three levels: Level 1 – obstetric hospitals without round-the-clock work of an obstetrician-gynecologist, neonatologist and anesthesiologist with an emergency delivery room; Level 2 – obstetric hospitals (maternity hospitals, departments) with intensive care units (anesthesiology-intensive care departments) for women and intensive care units for newborns. In addition, Level 2 includes inter-district perinatal centers with these structural units; Level 3A – obstetric hospitals that have an anesthesiology-reanimation department for women, a neonatal intensive care unit, an obstetric remote consultation center with on-site emergency medical teams for anesthesiology-reanimation, units of the 2nd stage of nursing newborns; Level 3B – obstetric hospitals of federal subordination, which provide all specialized medical care for women and newborns;

- PC is a medical organization that provides consultative, diagnostic and therapeutic assistance to pregnant women, women in labor and new mothers, as well as newborns who need intensive care, including high–tech, as well as women with reproductive problems;

- the purpose of the urgent delivery room is to provide emergency or urgent care to women during pregnancy, childbirth and the postpartum period, as well as newborns, in settlements of less than 100 people, if it is impossible to evacuate them to obstetric hospitals of the 2nd and 3rd levels;

- Maternal and Child Health Center is designed to provide medical care to women during pregnancy, childbirth and the postpartum period, to preserve and restore reproductive function in gynecological patients, as well as to children (including newborns) [92, 107].

Pathologic pregnancy department is the most important specialized structural unit of an obstetric hospital. This department provides assistance to women who have any complications or diseases during pregnancy.

The main number of women with detected pathologic pregnancy, if necessary, are admitted to this department from the 22nd week of gestation, in case of premature birth, however, women with a high risk of early termination of pregnancy due to the detected pathology are admitted to the department earlier for the so-called "preservation" [115].

The main functions of this department are the diagnosis, treatment and prevention of those pathological conditions that may occur or have already occurred in a pregnant woman. In this regard, the PPD should be equipped with modern diagnostic equipment for various examinations and diagnostics.

Thus, the main tasks of this department are:

- timely diagnosis and treatment of pathological conditions that occur in women during pregnancy;

- constant monitoring of the development of the fetus in order to detect adverse changes in its condition in a timely manner and, if necessary, provide it with the necessary assistance;

- carrying out special preparation of the pregnant woman for childbirth and, if necessary, providing additional medical care directly during childbirth.

It is important to note that PPD is in constant interaction with other MH departments. Such an interaction allows for comprehensive, coordinated and continuity of care for women with pregnancy failure. Timely consultations with gynecologists, neonatologists and other specialists make it possible to provide effective medical care to both the pregnant woman and her unborn child.

An important function of this department is to provide emotional support to women with pregnancy failure, which allows them to cope with their anxiety and sometimes stress related to the detected pathological course of pregnancy [116, 117].

1.2. Reproductive health and problems of medical care for pregnant women with pregnancy failure

The health of the population is the basic wealth of society. Its well-being, economic and cultural development, and the country's defense capability depend on it [165].

Back in 1995, the World Health Organization defined the concept of reproductive health: "Reproductive health is a state of complete physical, mental and social well-being, and not just the absence of diseases and ailments in all matters related to the reproductive system, its functions and processes, including reproduction and harmony in psychosocial relationships in the family". Thus, reproductive health has a great impact on both public health and the social well-being of the country, the quality of life of both an individual and the entire population largely depends on it [16].

However, since the end of the 20th century, there has been a constant deterioration of demographic indicators in our country [12, 24, 94, 121].

Works of many domestic scientists indicate a deterioration in the health of the population, which is primarily expressed in high mortality of the working-age population, increasing incidence and low fertility [163, 165].

A large number of scientific publications note that women of fertile age deserve special attention, since their health is the reproductive potential of the country [21, 57, 58, 96, 126, 150, 177, 187, 191, 199].

Scientists note significant losses from spontaneous miscarriages during pregnancy up to 22 weeks of gestation and losses from fertility disorders. The level of infertility among the female population remains quite high. A survey of the population in the Irkutsk region revealed infertility in almost 20% of women [49, 72].

Some scientists have noted a reduction in the fertile period of women, which is associated with postponement of childbearing to an older age, and by the age of 40 only half of them remain fertile [97].

Numerous factors, such as the socio-economic background of the state, the level of obstetric and gynecological care, and national characteristics and traditions affect reproductive health and fertility.[7].

Currently, the younger generation is experiencing a reorientation of family values. They put welfare, career and professional growth in the main places, and only then motherhood follows. An anonymous survey showed that three-quarters of the girls surveyed consider career growth to be the main thing, not motherhood. They plan to have a child after the age of 30 [15, 193].

Despite the fact that in modern society the trend towards families with a small number of children prevails, in regions that preserve their national traditions and traditional family way of life the birth rate is higher than in families living in urban areas, especially in the megalopolis [48, 60, 75, 179, 193].

Many authors point out that the beginning of the 21st century is characterized by an unfavorable impact on the demographic situation, both in our country and abroad. Such changes as an early sexual life, the erosion of sexual morality, the breaking of gender foundations, the setting for a later birth of a child and lack of children adversely affect the reproductive health of women [151, 183]. Studies have shown that the age of girls' entry into sexual relations ranges from 15.8 to 16.2 years, both in Russia and abroad [33, 181, 215, 223].

According to many authors, low health literacy in sexuality, especially among adolescents and young adults, often results in unwanted pregnancies, which most often end in induced abortion, and a high risk of sexually transmitted infections. A study conducted among girls in the Moscow region revealed not only their increased sexual activity, and with more than one partner, but also the lack of knowledge of contraceptive methods in 70% of them. These data indicate the need for targeted counseling of adolescents and youth on contraception, and especially family planning [1, 27, 32].

The results of a number of studies indicate that during pregnancy, which occurred against the background of immature reproductive function, complications are often observed that lead to adverse consequences, both directly for the mother and for her child [68, 83].

Many authors note the great harm caused to women's reproductive health and reproductive potential from induced abortion. According to the Ministry of Health, the

number of abortions in our country is steadily decreasing and in 2023 amounted to 300 thousand. However, Sergei Chesnokov, demographer, the head of the organizing committee of the project “Demographic Platform of the Russian Federation”, the member of the coordinating council of the Public Chamber of the Russian Federation on national projects and people's saving, the coordinator of the all-Russian public movement in defense of children before birth and family values “For Life!”, expresses the view that in Russia the number of real abortions exceeds the data of official statistics five times and their number is approaching one and a half million per year. Such a situation, according to the authors, is largely due to insufficient use of modern contraceptives. Studies have shown that less than a third of respondents used combined oral contraceptives and intrauterine devices [20, 36, 129, 182].

According to domestic and foreign authors, the incidence of sexually transmitted infections, including socially significant ones (syphilis, gonorrhea, HIV infection), does not decrease, negatively affecting reproductive health and creating an undesirable socio-medical problem [131, 213].

Endometriosis and inflammatory diseases of the pelvic organs often cause infertility and miscarriage. It has been observed that 80% of women surveyed between the ages of 20 and 45 years were found to have chronic endometritis [45].

Special attention needs to be paid to early diagnosis and prevention of cancer in the reproductive sphere. The timely detection of precancerous conditions and early oncology, and the implementation of vaccine therapy aimed at the human papillomavirus have allowed the countries of Western Europe and the United States to achieve a significant reduction in incidence and mortality from this pathology. In Russia, this issue has not yet been resolved. Every year, up to 15 thousand new diseases are diagnosed with cervical cancer alone. In the structure of all oncological diseases of women, ovarian, body and cervical cancers account for more than a third [168].

It should be noted that there are a number of researches where the authors claim that the deterioration of the physical development of the current generation of adolescents (asthenization, gracialization, chronic energy deficiency in girls) leads to reproductive health disorders and menstrual function disorders [28, 33, 185].

Obesity in adolescence also negatively affects reproductive health. With obesity, there is a violation of the menstrual cycle, the risk of miscarriage and infertility increases [82].

It is important to point out that the reduction of reproductive potential is also influenced by children with abnormalities in the development of the sexual sphere and impaired sex formation. The number of such children increased 4 times in boys and 3.3 times in girls in the first decades of this century [162].

One of the difficult problems in maintaining and improving reproductive health, especially in the current demographic situation in the Russian Federation, is the problem of miscarriage [25, 34].

Worldwide, there are up to 13 million births per year that occur prematurely and the prevalence of miscarriage is extremely high [9, 14, 38, 123, 156, 229].

At the same time, the authors note that multiple pregnancies increase the risk of miscarriage [232].

The proportion of miscarriage is one fifth of the number of desired pregnancies, with the main number of miscarriages occurring in the first trimester of pregnancy (85%). In the second half of pregnancy, habitual miscarriage leads to the birth of premature babies, which are the most difficult group in predicting disability. Neurological pathology is often detected in such children [30].

The criteria for evaluating the work of maternity institutions are maternal and perinatal mortality. In Russia, serious foundations for the provision of obstetric and gynecological care to pregnant women have been created, however, indicators focusing on the factors of this complication and the prevention of this pathology are used insufficiently, when organizing assistance to women with habitual miscarriage [167].

In this regard, the results of the study, which was carried out on the basis of the maternity complex of the State Budgetary Institution “M.P. Konchalovsky State Clinical Hospital of the Moscow City Health Department”, deserve special attention. A sociological survey of women who had a history of miscarriage allowed us to identify a number of factors that can have a significant impact on the outcome of this pregnancy. The study was conducted using expert assessment methods and among the

experts were the heads of medical organizations and structural divisions of medical organizations that provide assistance to women diagnosed with habitual miscarriage.

Based on the results of the study, all risk factors were divided into two groups: preventable and non-preventable. A group of factors that can be controlled and managed has aroused the greatest interest of experts. All factors were subject to a ranking distribution according to a point system that considered their significance. Organizational risk factors were ranked first in terms of their importance and contribution to the provision of medical care to this category of patients (average score 4.46). The second ranking belonged to medical risk factors (average score 3.51). Psychological factors are in the third place (average score 3.37). Social risk factors, according to experts, were only in last place (average score 3.0).

Genetic and extragenital diseases, hemostasis system disorders acquire the greatest importance among risk factors, which are very difficult to prevent. Factors such as ecology and living conditions, according to the degree of impact on primary miscarriage, are the least significant among uncontrollable causes [34].

The above data indicate that premature delivery, premature birth, miscarriage and stillbirth constitute a significant proportion of reproductive losses [66, 184].

According to a number of scientists, since a large number of different factors influence the reproductive health, it is necessary to optimize the interdepartmental approach to this problem [17, 197].

In his message to the Federal Assembly in May 2006, the President of the Russian Federation explicitly stated that the current demographic situation in the country is one of the leading problems of Russia [100].

In accordance with the "Concept of Demographic Policy of the Russian Federation for the period up to 2025" approved in 2007, it was noted that against the background of a falling birth rate, the problem of reproductive health protection is one of the most priority areas of state policy [5, 106].

According to many authors, the level of maternal and perinatal mortality largely depends on the reproductive and somatic health of women at the time of pregnancy and childbirth [196, 206, 219, 231].

Numerous scientific papers indicate that in the structure of maternal mortality among the causes indirectly related to obstetric causes the first place is occupied by circulatory system diseases [18, 53, 164, 170, 171, 196].

According to a large number of authors, hypertension is very common in pregnant women [81, 192, 212, 220, 225].

Arterial hypertension can lead to stroke, with more than one-third of cases occurring in women of fertile age [210, 217].

Premature birth and antenatal fetal death are more common in pregnant women suffering from hypertension [188].

According to the results of a study by foreign authors, hypertensive conditions and gestational diabetes mellitus are more frequently observed in age-matched pregnant women [221].

The problem of high prevalence of anemia, especially iron deficiency, which accounts for up to 80% of all anemia in pregnant women, is extremely important. The authors focus on the fact that by the end of pregnancy, almost all women develop iron deficiency conditions. Anemic pregnant women have a higher incidence of obstetric complications [22, 35, 61, 147, 154, 173, 178, 194, 207, 208, 222, 228].

Also, one of the relevant problems is the effect of endocrine disorders on the development of pregnancy complications. Diabetes mellitus can cause fetoplacental insufficiency and, without timely correction, lead to perinatal complications and sometimes death [37, 59].

Excess body weight negatively affects the course of pregnancy and labor and increases the threat of precocious termination of pregnancy. Such women are more likely to have a weakness in labor activity. The higher the degree of obesity, the greater the severity of complications [4].

Many scientists note that almost 80.0% of pregnant women suffer from somatic diseases and this negatively affects their reproductive health [31, 54, 189]. These data indicate that more careful attention should be paid to the health of children and the population of childbearing age [56].

Many authors also indicate that the cause of many preterm births is preeclampsia, which negatively affects the health of the woman and her child and, together with eclampsia, is one of the causes of maternal mortality [23, 74, 79, 155, 157, 159, 169, 172, 174, 195, 196, 205, 209, 211, 216, 218, 224, 226, 227, 230].

The World Health Organization, as well as several other authors, indicate that the second half of pregnancy accounts for up to 8% of preeclampsia cases [158, 165, 214].

The authors note that eclampsia and preeclampsia have a negative impact on the entire female body, affecting the brain [157, 209].

We have identified the most significant causes leading to the pathology of pregnancy and maternal mortality, but they also allow us to conclude the importance of timely examination of pregnant women in order to purposefully prevent both obstetric causes and somatic pathology that cause complications during pregnancy. The main burden of solving these problems falls on women's care centers and PPDs.

Currently, in order to preserve the reproductive health of the population, attention is paid not only to the female part of it, but also to the male. To implement these measures, the Ministry of Health of the Russian Federation in 2024 sent a Letter to the health authorities "On the direction of methodological recommendations for the medical examination of men and women of reproductive age in order to assess reproductive health" (Letter from the Ministry of Health of the Russian Federation No. 17-6/I/2-6434 dated April 8, 2024) [98].

At the moment, Russia has a three-level system of perinatal care. The first level includes maternity wards and maternity hospitals of a municipal district, the second level includes maternity wards or maternity hospitals of interdistrict centers, and the third level includes PCs [10, 67].

The implementation of such a system makes it possible to improve the quality of perinatal care, at the same time reduces perinatal losses and leads to optimization of the hospital bed usage in maternity institutions [69, 122].

According to the order of the Ministry of Health of the Russian Federation No. 1130-n, pregnant women with extragenital diseases requiring hospital admission,

irrespective of the gestational age, are referred for treatment to specialized departments of medical organizations with joint supervision by a doctor of the department and an obstetrician-gynaecologist. If a woman has obstetric complications of pregnancy, she needs to be admitted to an obstetric hospital. If a woman has both a pregnancy complication and extragenital pathology, such a pregnant woman is referred to the hospital of a medical organization that specializes in the treatment of this disease. In such a hospital, the severity of the condition is determined and further management tactics are developed for this patient [107].

The most common indications for hospital admission of women with pregnancy complications are severe early toxicosis, gestosis (preeclampsia), low hemoglobin, pain in the lower back and lower abdomen, bloody discharge, increased uterine tone, pyelonephritis, and chronic diseases [124, 160].

It should be noted that pregnant women with the most severe complications of pregnancy should be referred to the perinatal center pathologic pregnancy department. This category of pregnant women has a wider range of indications for hospital admission compared to a regular Level 2 maternity hospital. First of all, these include premature rupture of membranes, with gestational age less than 35 weeks; preterm labor; placenta previa; severe preeclampsia, eclampsia; cholestasis, hepatosis of pregnant women; history of CS in the presence of signs of uterine scar failure; multiple pregnancy; overpregnancy; placental insufficiency, chronic fetal hypoxia [128].

There are practically no researches on the organization and optimization of the work of PPDs for the last 15 years. We have noted only one work on the integration of obstetric care facilities into multidisciplinary medical institutions [26]. The main number of scientific papers is devoted to the identification of risk factors for pregnancy complications, medical and social characteristics of women with this pathology and clinical studies [8, 19, 55, 64, 95, 109, 127, 161].

A review of domestic and foreign literature makes it possible to emphasize the need to preserve and maintain women's reproductive health. Specialized assistance to women with pregnancy failure in the system of obstetric and gynecological care is extremely important and relevant. A large share of this assistance falls on PPDs. Not

only the birth rate depends on their activities, but also the health of the mother and child. This research is devoted to the organization and optimization of the work of these departments.

Chapter 2. MATERIALS AND METHODS

This thesis was carried out in the Federal State Budgetary Educational Institution "St. Petersburg Pediatric Medical University" (SPbSPMU) of the Ministry of Health of Russia at the Department of Public Health and Public Health Care in accordance with the departmental topic, which has the state registration number AAAA-A16-116031710019.

To fulfill the established aim and objectives, a system-logical framework (research design) was created. The research stages are detailed in a summary table (Table 2.1).

Table 2.1 – Stages of scientific research

Scientific research stage	Implementation
Stage 1 (preparatory)	
At this stage, the purpose and objectives were defined, the research design was developed, methods of selecting units and collecting statistical information were determined, and a regulatory assessment of the current system of organization of specialized medical care for pregnant women at the present stage was carried out	To achieve this goal, a meta-analysis of domestic and foreign literature sources on the issues of organizing specialized care for pregnant women was carried out
Stage 2	
Medical and social characteristics	To achieve this goal, an anonymous sociological survey of pregnant women was conducted, and data were copied from record forms N003/u and N113/u-20 of the reports of the pathologic pregnancy departments of obstetric hospitals, conclusions of medical councils, statistical bulletins and collections
Stage 3	
Study of the health indicators of pregnant women and assessment of the organization of specialized medical care for them in PPDs	The health status of pregnant women was studied; objective and subjective assessment of the organization of specialized medical care in PPDs was carried out; statistical analysis and graphical representation of the obtained results were performed.
Stage 4	
Development of practical recommendations	Analysis and interpretation of the obtained data

Guided by the rules of medical and social research, this study included 4 consecutive stages. As a result of this gradation, it became possible not only to evaluate the organization of medical care for pregnant women, but also to develop a set of measures aimed at the development of specialized care in pathologic pregnancy departments of obstetric hospitals in the megalopolis and other regions of Russia.

The thesis research was carried out in St. Petersburg, which, after Moscow, is the second megalopolis in terms of population and is of federal importance. St. Petersburg is also an integral part of the North-Western Federal District.

Four state budget-funded obstetrics institutions in St. Petersburg, which fully provide medical services during pregnancy, childbirth, and the postpartum period and whose combined share of births from the total number of births in the city amounted to 36.4%, were selected as the research base: Maternity Hospital No. 9 (11.7%); Maternity Hospital No. 10 (12.8%); Maternity Hospital No. 16 (8.0%); and SPbSPMU Pediatric Hospital (3.9%). The choice of these institutions was determined not only by their role in the volume of medical care, but also by the differentiation of these institutions by type of pathology.

The subject of the study is the assessment of the organization of specialized medical care in PPDs of obstetric hospitals in St. Petersburg. The object of the study is a pregnant women receiving specialized medical care in MH and PC PPDs. The unit of observation was a patient in a pathologic pregnancy department of an obstetric hospital.

The information used was obtained from statistical bulletins and compilations of Rosstat and RIH [39, 40–44, 110–114, 132–146]. The total number of information units in the study was 4305. The developed system-logical scheme (research design) is presented in Table 2.2.

Table 2.2 – System-logical scheme of the study (study design)

The aim of the research is to develop and scientifically substantiate a set of measures aimed at improving the provision of specialized care in pathologic pregnancy departments based on the assessment of the state of health and the organization of medical care for pregnant women.			
1	2	3	4
No.	Task	Methods	Accounting and reporting documents (scope of observations)
I	To assess the incidence of women's morbidity that complicated pregnancy and childbirth and its impact on obstetrics and maternal mortality rates	Epidemiological Statistical Retrospective Analytical	Statistical bulletins of Rosstat "Natural movement of the population of the Russian Federation" (N=5) Statistical collections of the Russian research Institute of Health for 2019-2023 The main indicators of maternal and child health, the activities of the child protection and maternity services in the Russian Federation (N=5) Incidence of the Russian adult population diagnosed for the first time in life (N=5)
II	To study the main indicators of the performance of MH and PC PPDs	Statistical Analytical	Statistical collections of the Russian research Institute of Health for 2019-2023 Resources and activities of healthcare organizations, part 3 Bedspace (number and provision of the population with beds of various profiles) (N=5) Resources and activities of healthcare organizations, part 4 Bedspace (average use and average length of stay in a bed per year) (N=5) Resources and activities of healthcare organizations, part 5 Bedspace (bed turnover and mortality) (N=5) PPD reports for 2020-2022 (N=12) Form N113/u-20 "Exchange card of a pregnant woman, a woman in labor and new mothers" (N=515) Conclusions of medical councils (N=515)

Continuation of Table 2.2

III	To conduct a comparative assessment of the medical, social and anamnestic characteristics of the patients and to study the satisfaction of pregnant women with the provision of specialized medical care in obstetric hospitals of the 2nd and 3rd levels	Statistical, Sociological Analytical	"PPD Patient Questionnaire" (N=968) Form N003/u "Medical record of a patient receiving medical care in inpatient settings, in day hospital" (N=2265)
IV	To develop evidence-based recommendations for improving the organization of specialized medical care in PPDs	Analytical	Materials and results of the conducted research

In order to determine the required minimum number of observation units to ensure the representativeness of the study, the sample size was calculated using Formula 1:

$$n_p = \frac{N \cdot t^2 \bar{p}(1-\bar{p})}{N \cdot \Delta_{\bar{p}}{}^2 + t^2 \bar{p}(1-\bar{p})},$$ where:

N – general population (number of births in 2022 in MHs – 39558, in PCs – 10312);

$\overline{p}$ – the approximate frequency (fraction) is unknown, so we consider it 0.5;

t – critical value of Student's criterion (min - 95%, respectively t=1.96).

$\Delta\ \overline{p}$ – desired maximal error of frequency (fraction) (we consider it 5% (0.05)).

It was determined that for the study, which included a sociological survey and copy of information from medical records, the sample size in MHs should be at least 380 OUs and in PCs – at least 370 OUs. In our thesis research, the amount of questionnaire and data copying in MHs amounted to 588 OUs and 1621 OUs, respectively. In PCs, the sample size in the questionnaire was 388 OUs, data copies from forms N003/u and N113/u-20 – 644 OUs and 515 OUs, respectively. An additional check of representativeness was carried out according to the methodology of Otdelnova K.A. [118], according to which for studies of average accuracy with a desired accuracy of 0.2 and t= 3.0, the required number of OUs for socio-hygienic

studies is 225.

To solve ***the first task*** set in the thesis research, the following were used and studied:

- data from official statistics of Rosstat and RIH;
- maternal mortality rates;
- indicators to assess obstetric care;
- incidence rates of women XV class of diseases according to ICD-10 as a whole and individual nosologic forms, based on their significance on the course of pregnancy and childbirth.

The first stage in solving the task was to analyze maternal mortality both in Russia and in all federal districts, which made it possible to identify the NWFD as the leading district in terms of high mortality of women during pregnancy, childbirth and 42 days after the end of pregnancy (starting from 2020), as well as the district that had the highest maternal mortality rate on average over the last five years. It was found that, on average, for 2018-2022, the share of St. Petersburg's deceased mothers among all deceased mothers in the NWFD was almost half, and the level of the average maternal mortality rate in the megalopolis was significantly higher compared to Russia and the NWFD. Based on the fact that maternal mortality is one of the main indicators used to assess the state of maternal and child health care system, and considering the contribution of St. Petersburg to maternal mortality, not only in the NWFD but also in the Russian Federation, the megalopolis was chosen as the region for research and its obstetric care organizations served as the base for the present study.

Next, the following indicators characterizing maternity care in the period 2018-2022 were calculated and analyzed:

- the share of births in federal districts in the total number of births in the Russian Federation;
- the share of deliveries, obstructed labor and CS deliveries in St. Petersburg in the total number of deliveries, complicated deliveries and CS deliveries in the NWFD;
- the average rates of obstructed labor in Russia, federal districts and St.

Petersburg over the analyzed five years;

- frequency of obstructed labor in Russia, federal districts and St. Petersburg;
- the average rates of CS deliveries in Russia, federal districts and St. Petersburg over the analyzed five years;
- frequency of CS deliveries in Russia, federal districts and St. Petersburg;

Correlation coefficients were calculated between the incidence of obstructed labor and maternal mortality, as well as between the CS incidence and the incidence of obstructed labor in the country as a whole and in St. Petersburg.

The incidence of women complicating the course of pregnancy and childbirth was analyzed by calculating and then comparing the following indicators in 2018-2022:

- the share of diseases of women 15-49 years with XV class diseases in federal districts in the total number of diseases of women of this age group with this class of diseases in Russia;
- five-year average incidence rate of XV class diseases among women in Russia, federal districts and St. Petersburg;
- incidence of women with XV class diseases in Russia, federal districts and St. Petersburg;
- the share of women of fertile age with XV class diseases of St. Petersburg in the total number of diseases of women 15-49 years old with this class of diseases in the NWFD.

Correlation coefficients were calculated between the incidence rates of class XV diseases and the incidence of obstructed labor, as well as the incidence rates and the CS deliveries incidence. In addition, a comparative assessment of the individual forms of diseases that complicated the course of pregnancy and childbirth was carried out, including the incidence of preterm labor, GDM, genitourinary and endocrine system diseases, venous events, anemia, CSD, moderate and severe preeclampsia, eclampsia, placenta previa with and without hemorrhage, premature detachment of normally located placenta, labor disorders, obstructed labor, uterine rupture, including out-of-hospital, in the dynamics for 2018-2022.

In order to implement ***the second task*** of the study, based on official statistical data, copies from the "PPD reports" of MHs and PCs for 2020-2022, forms N113/u-20 and conclusions of medical councils of PCs, indicators of the availability of pathologic pregnancy beds, hospital bed usage were studied and the structure of obstetric pathology and the performance indicators of obstetric hospital PPDs at different levels of obstetric hospitals was assessed. The comparative assessment of the availability of pathologic pregnancy beds for the female population of St. Petersburg was carried out with similar indicators for Russia and the North-Western Federal District in dynamics over five years. The following indicators were evaluated:

- PPD bed provision.
- the share of pathologic pregnancy beds in the total number of obstetric beds in the Russian Federation, NWFD and St. Petersburg.
- the share of pathologic pregnancy beds in St. Petersburg in the total number of pathologic pregnancy beds in the NWFD.

Bedspace indicators were monitored using statistical analysis and comparison with the national and the NWFD average values of average bed occupancy per year (bed operation or function), average bed length of stay, average bed downtime and bed turnover.

The study calculated correlation coefficients between incidence of women of fertile age (XV class diseases according to ICD-10) and hospital bed usage in PPDs. The study analyzed the efficiency of bed usage in obstetric hospitals of the 2nd and 3rd levels of St. Petersburg in terms of the following indicators: hospital bed usage, average length of stay, bed turnover and bed downtime.

To fulfill the second task of the study, the following performance indicators of Level 2 and Level 3 obstetric hospital PPDs were also comparatively assessed:

- structure of obstetric pathology of female patients.
- movement of patients.
- indicators of external and internal routing.
- distribution of patients by type and form of delivery.

Considering that the perinatal center functions include timely routing of pregnant

women with severe complications of the gestational process, fetal malformations and extragenital pathology, the organization of medical councils and their role in providing specialized medical care to pregnant women were studied, which included a comparative assessment depending on age according to the following indicators: distribution of pregnant women by place of residence; distribution of pregnant women according to the period of pregnancy; distribution of pregnant women by the presence of fetal defects; structure of fetal pathologies in pregnant women; distribution of pregnant women according to the prognosis for life and for fetal health; distribution of pregnant women by routing and according to the recommendations received for delivery and treatment of the child after childbirth. For the evaluation of medical councils, the sample was randomly generated (the assessment of the representativeness of the sample is given above).

To solve the ***third task***, the characteristics of the contingent of pregnant women admitted to PPDs were studied. To assess the medical, social and anamnestic characteristics, information obtained by copying data from the N003/y form was used. In a comparative analysis of the medical and social characteristics of MH and PC patients, the indicators of the distribution of patients by age; marital status; education; availability of employment and source of payment for medical care were studied. Anamnestic characteristics of PPD patients were formed on the basis of: distribution of patients by form of hospital admission; method of hospital admission; number of pregnancies and deliveries; presence of diseases; dispensary registration and gynecological surgeries in the anamnesis; by the method of onset of this pregnancy and the outcome of previous pregnancies and deliveries; by the presence of pregravid preparation and type of pregnancy, as well as by the presence of obstetric risk in this pregnancy. In addition, a comparative assessment of the structure of somatic pathology, hereditary diseases and gynecological incidence in the anamnesis was carried out.

To assess the satisfaction of PPD patients with the provision of specialized medical care, the results of their anonymous questionnaire were used. According to the questionnaire forms specially developed for this study, which included 15 questions,

968 patients were randomly surveyed, of which 580 respondents in MHs and 388 in PCs. The consent to participate in the study was to fill out a questionnaire form. The results of the anonymous questionnaire survey allowed a comparative assessment of the satisfaction of PPD patients by the following indicators: distribution of patients depending on the waiting period for hospital admission, number of people in the ward, satisfaction and reasons for dissatisfaction with the conditions of stay in the department, assessment of human qualities and activities of doctors and nursing personnel, assessment of the organization of medical care in PPDs and in the medical organization as a whole. In addition, an open-ended question on the questionnaire form asked female respondents to give recommendations that would, in their opinion, improve the performance of the obstetric facility's PPD. The patients were also asked to evaluate the possibility of recommending specific PPD and medical organization for providing medical care to pregnant women in an obstetric hospital.

Fulfillment of ***the fourth task***, which consisted in the development of scientifically based recommendations for improving the organization of specialized medical care in PPDs, was based on the obtained materials and the results of the study.

A set of basic and modern statistical methods and techniques were used in this study. The statistical population was formed by continuous and selective methods. All types of values used in statistics, including quantitative values; extensive and intensive indicators; ratio and visibility indicators; arithmetic mean and its standard error were calculated and analyzed. The groups were compared with each other by determining Student's T-test or Mann-Whitney U-test. Creation, statistical processing and analysis of the information database followed by visualization of the results obtained in this research were carried out using Microsoft Office Excel 2019 (Word, Excel) and Statistica 10.0 (StatSoft Inc., USA).

Chapter 3. ASSESSMENT OF PREGNANT WOMEN'S HEALTH STATUS IN TERMS OF ITS IMPACT ON OBSTETRICS AND MATERNAL MORTALITY

3.1. Maternal mortality and obstetric care in obstetric hospitals

The priority task of modern healthcare is to improve the accessibility and quality of medical care for pregnant women, women in labor, new mothers and newborns. Maternal mortality is the leading indicator reflecting the state of the maternal and child health system in the region. Despite the fact that it does not have such an obvious impact on the demographic situation, maternal mortality is among the most important demographic indicators that characterize the state of medical care for women during pregnancy, childbirth and the postpartum period.

Maternal mortality is defined by WHO as "a death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes".

It is well known that the majority of maternal deaths are preventable or conditionally preventable, that is, mostly caused by medical care. Accordingly, timely prolongation of pregnancy, treatment of extragenital pathology and choice of delivery tactics have a direct impact on the life and health of mother and child, which is impossible without the competent work of pathologic pregnancy departments (antenatal departments) of obstetric hospitals. Given the importance of the maternal mortality rate in assessing the performance of obstetric care organizations in the country, a comparative analysis of women's mortality in the Russian Federation and its federal districts was carried out (Table 3.1). It was found that, both in Russia as a whole and in all federal districts separately, the maternal mortality rate increased in 2018-2022. The most significant increase in indicators was observed in the North-Western Federal District (+52.7%) and the Far Eastern Federal District (+38.2%), and the least significant - in the Volga Federal District (+7.2%) and the Central Federal District (+17.4%). The study revealed that the rise in indicators in the country and districts was

observed just a year after the start of the COVID-19 pandemic in 2021, when the maternal mortality rate in the Russian Federation as a whole reached 34.5‰, while the most significant increase in the indicator was in the North-Western Federal District (52.9‰).

Table 3.1 – Maternal mortality in the Russian Federation and its federal districts in 2018-2022 (per 100 000 live births)

Ter. Units	2018	2019	2020	2021	2022	Difference between 2018 and 2022 (%)
RF	9.1	9.0	11.2	34.5	13.0	+30.0
CFD	9.5	10.1	10.4	30.2	11.5	+17.4
NWFD	9.6	12.0	18.9	52.9	20.3	+52.7
SFD (Southern)	6.3	8.7	11.5	42.0	9.9	+36.4
NCFD	7.1	8.9	4.4	8.4	10.0	+29.0
VFD	9.0	5.7	11.9	42.3	9.7	+7.2
UFD	6.8	6.7	7.6	22.5	9.1	+25.3
SFD (Siberian)	12.2	7.9	10.6	37.6	20.8	+41.3
FEFD	12.3	17.6	17.8	39.6	19.9	+38.2

To level the influence of environmental factors on maternal mortality in Russia and its federal districts, the average maternal mortality over a five-year period was analyzed. The data of the conducted study allowed us to establish (Figure 3.1) that the five-year average in Russia amounted to 15.4‰. The highest average maternal mortality was observed in the North-Western Federal District (22.7‰) and in the Far Eastern Federal District (21.4‰), and the lowest in the North Caucasian Federal District (7.8‰) and the Ural Federal District (10.5‰). And in such districts as the Southern Federal District and the Volga Federal District, the differences between the indicators did not exceed 1.9% or 0.3‰ in absolute terms.

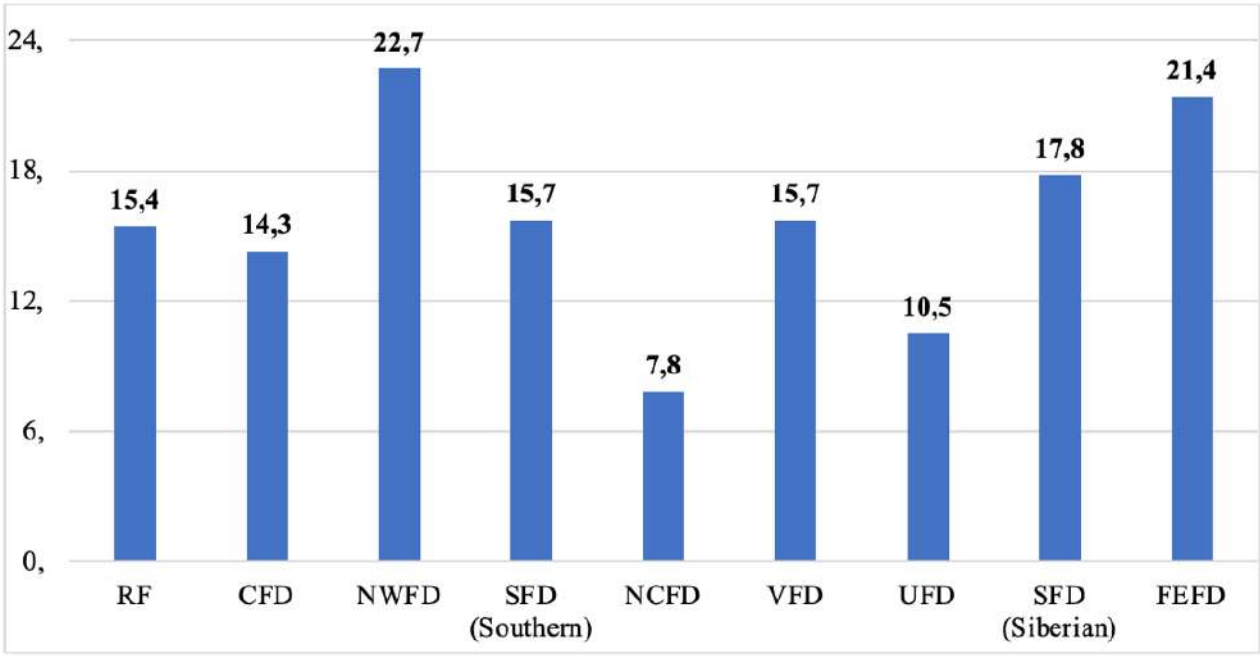

Figure 3.1 – Average maternal mortality in the Russian Federation and its federal districts in 2018-2022 (per 100 000 live births)

Thus, in the North-Western Federal District the highest maternal mortality rate was observed over the past five years, with the highest increase in it. To assess the contribution of individual regions to the district's maternal mortality, the average maternal mortality in the constituent entities of the Russian Federation that are part of the NWFD was carried out (Figure 3.2). The lowest rate was observed in the Novgorod region, where 3.4 women per 100 000 live births died during pregnancy, childbirth and within 42 days after the end of pregnancy. The highest level of this indicator was in Pskov (46.6‰), Leningrad (29.6‰) and Kaliningrad regions (27.1‰), as well as in St. Petersburg (24.9‰). However, due to the peculiarities of calculating indicators, it is not always possible to judge the components and size of the phenomenon as a whole. For this purpose, it is advisable to assess not only intensive, but also extensive indicators – the share of deceased mothers in the NWFD regions in the total number of deceased mothers in the federal district (Figure 3.3).

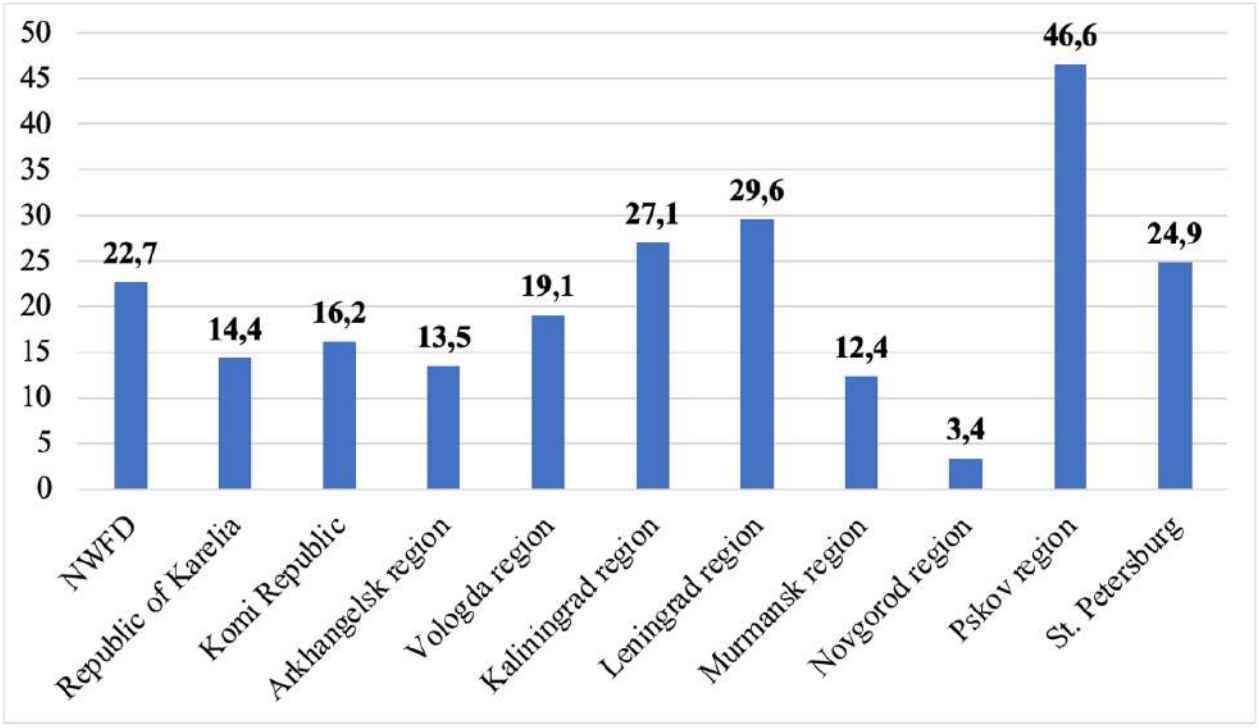

Figure 3.2 – Average maternal mortality in the North-Western Federal District and its subjects in 2018-2022 (per 100 000 live births)

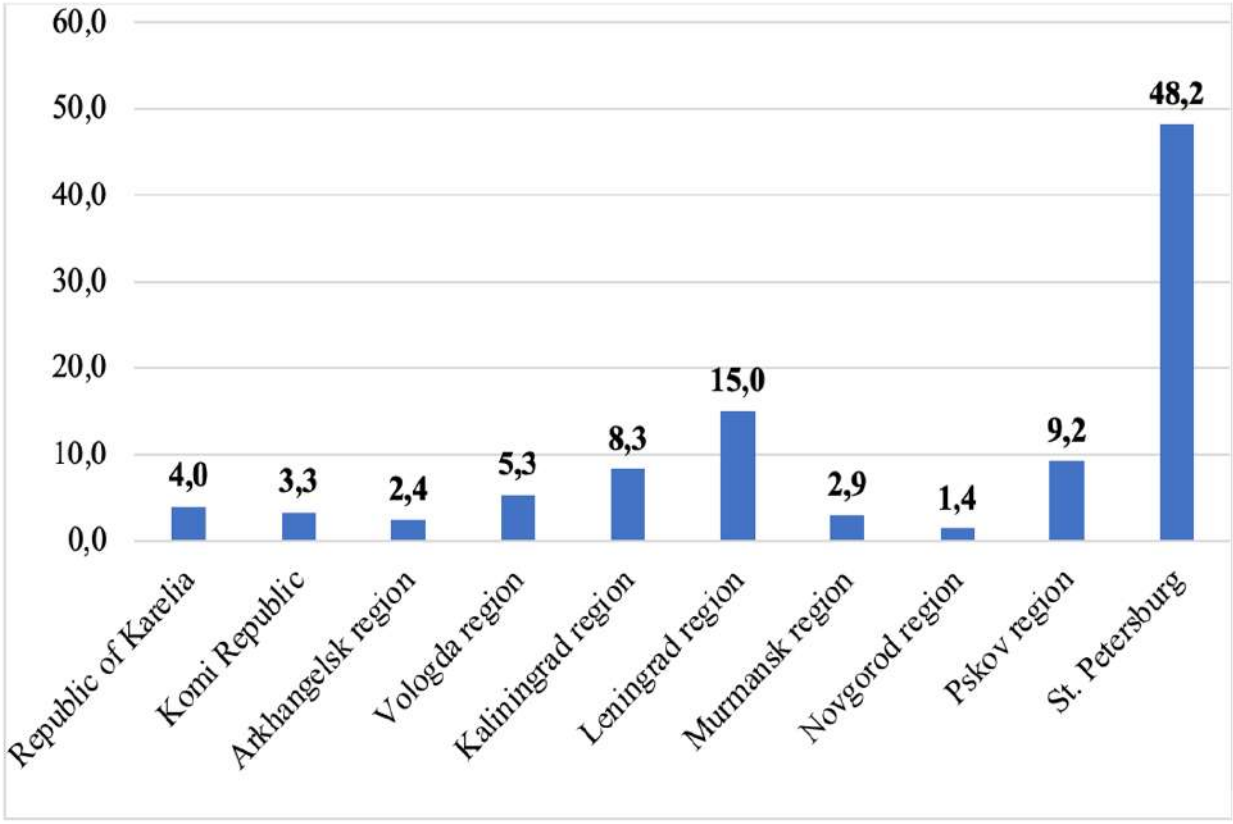

Figure 3.3 – Average share of deceased mothers in the NWFD regions in the total number of deceased mothers in the federal district in 2018-2022 (%)

As Figure 3.3 shows, St. Petersburg accounted for an average of 48.2% of deceased mothers in the NWFD. At the same time, this indicator was consistently high throughout the entire of 2018-2022 and amounted to 42.9%-54.2%, and over the five years studied, the absolute increase in the proportion of maternal mortality of the megalopolis amounted to +4.9%. The share of deceased mothers of St. Petersburg in the total number of deceased mothers of the North-Western Federal District in 2018-2022 is shown in Figure 3.4.

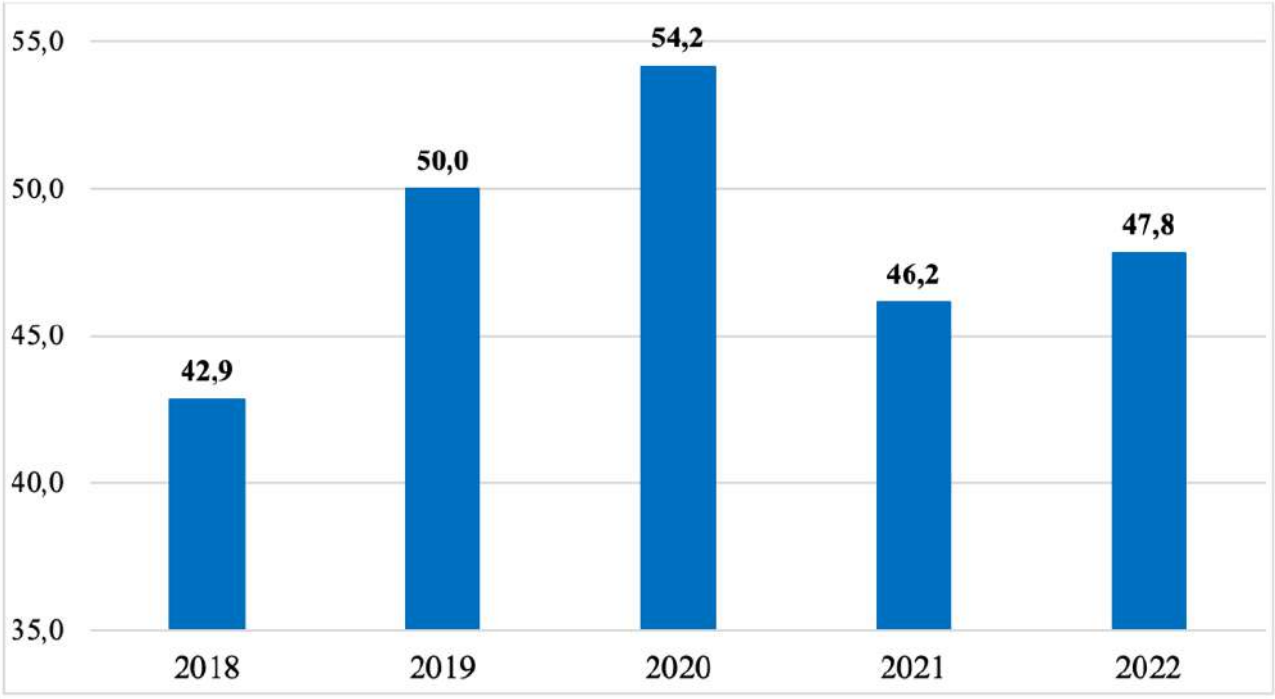

Figure 3.4 – Share of deceased mothers of St. Petersburg in the total number of deceased mothers of the NWFD in 2018-2022 (%)

The calculation of the average share of deceased mothers of the megalopolis in the total number of deaths of mothers of the Russian Federation revealed that the contribution of the city amounted to 6.2%. Based on such a significant specific weight in the country indicators, a comparative assessment of maternal mortality in St. Petersburg with the Russian Federation indicators in dynamics for 2018-2022 was carried out (Figure 3.5). It was found that during the entire period under study, maternal mortality in the city was higher than in Russia on average by 1.6 times (by 38.2%). At the same time, it had the most significant differences in 2020 and 2021, when the COVID-19 pandemic was declared in the country (12.3‰ and 21.7‰). However, despite the increase in maternal mortality, both in Russia and in the megalopolis

(+30.0% and 56.9%), the assessment of the difference between the indicators of 2018 and 2022 did not reveal significant differences, as evidenced by the low approximation coefficient (R^2=0.31).

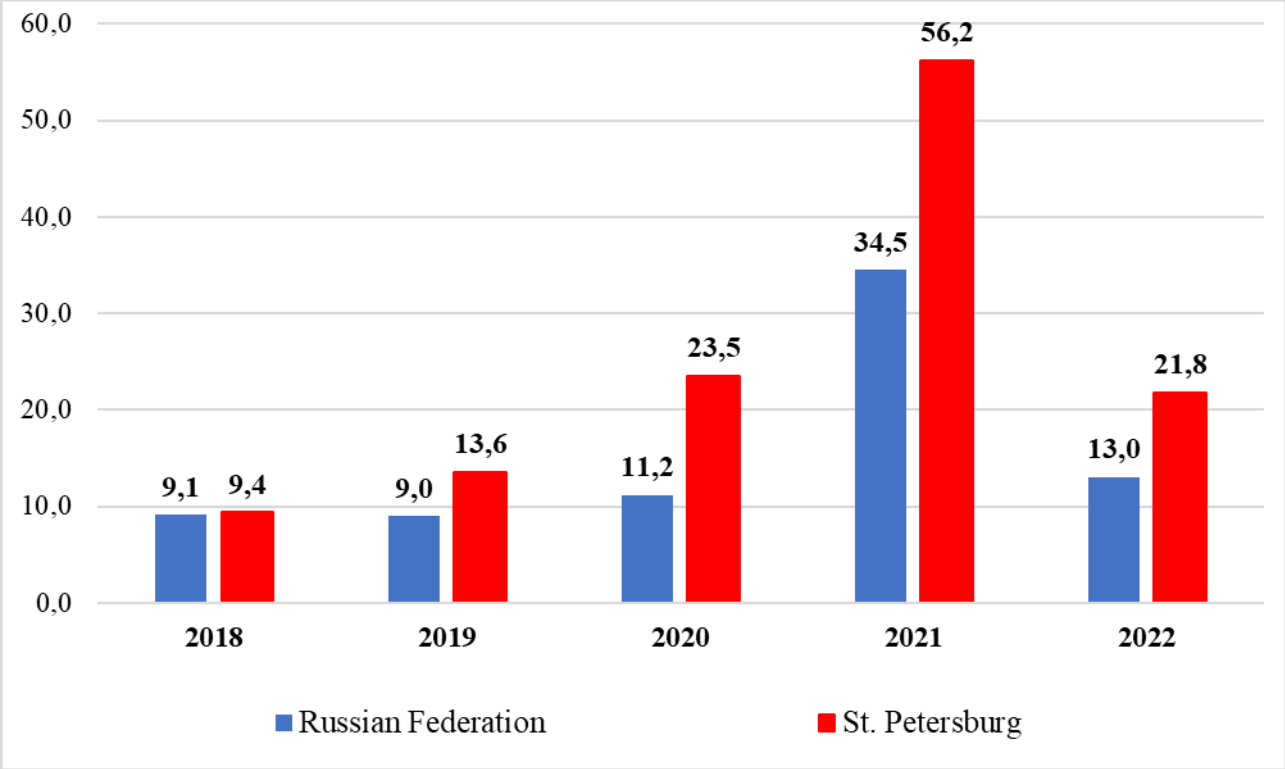

Figure 3.5 – Dynamics of maternal mortality in the Russian Federation and St. Petersburg in 2018-2022 (per 1000 births)

When assessing maternal mortality, an analysis of indicators for the periods of women's death (pregnancy, childbirth, postpartum period) is carried out, therefore, for a comprehensive assessment it is advisable to study both the course of pregnancy and childbirth. To assess the impact of obstetric care on maternal mortality, the incidence of obstructed labor and the CS incidence were calculated and evaluated. However, first it is advisable to study the contribution of all federal districts to the total number of births in the Russian Federation.

According to the analysis and assessment of the share of births in the number of births in federal districts of the Russian Federation, it can be seen that the contribution of the North-Western Federal District, along with the Far Eastern Federal District, to the total number of births is one of the lowest (Figure 3.6). In other words, the lowest proportion of births in the country (on average 8.7% and 6.3%, respectively) falls on federal districts with the highest maternal mortality. At the same time, the highest

proportion of births was revealed in federal districts, where the least significant increase in maternal mortality over five years was observed in the Central Federal District and the Volga Federal District (on average 24.5% and 18.7%, respectively).

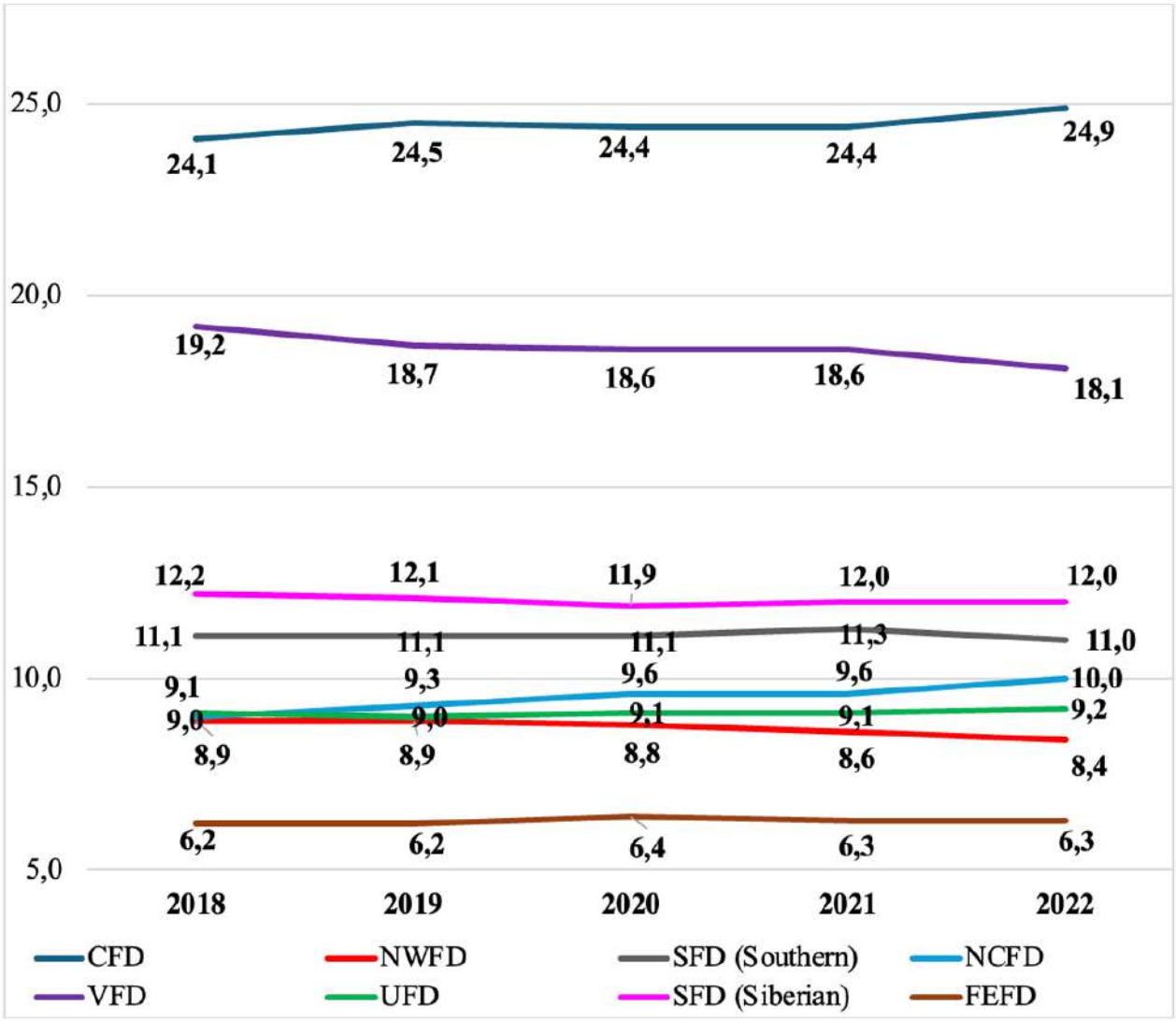

Figure 3.6 – Share of births in federal districts in the total number of births in the Russian Federation in 2018-2022 (%)

The assessment of the share of megalopolis births in the total number of births in the North-Western Federal District showed (Figure 3.7) that in 2018-2022 it amounted to 42.9-43.9% (on average 43.4%) and over five years it decreased slightly (-1.0%). The share of obstructed labor in the total number of the North-Western Federal District was 44.8-46.8% (on average 45.7%) and it increased slightly during the study period (+1.9%) [88].

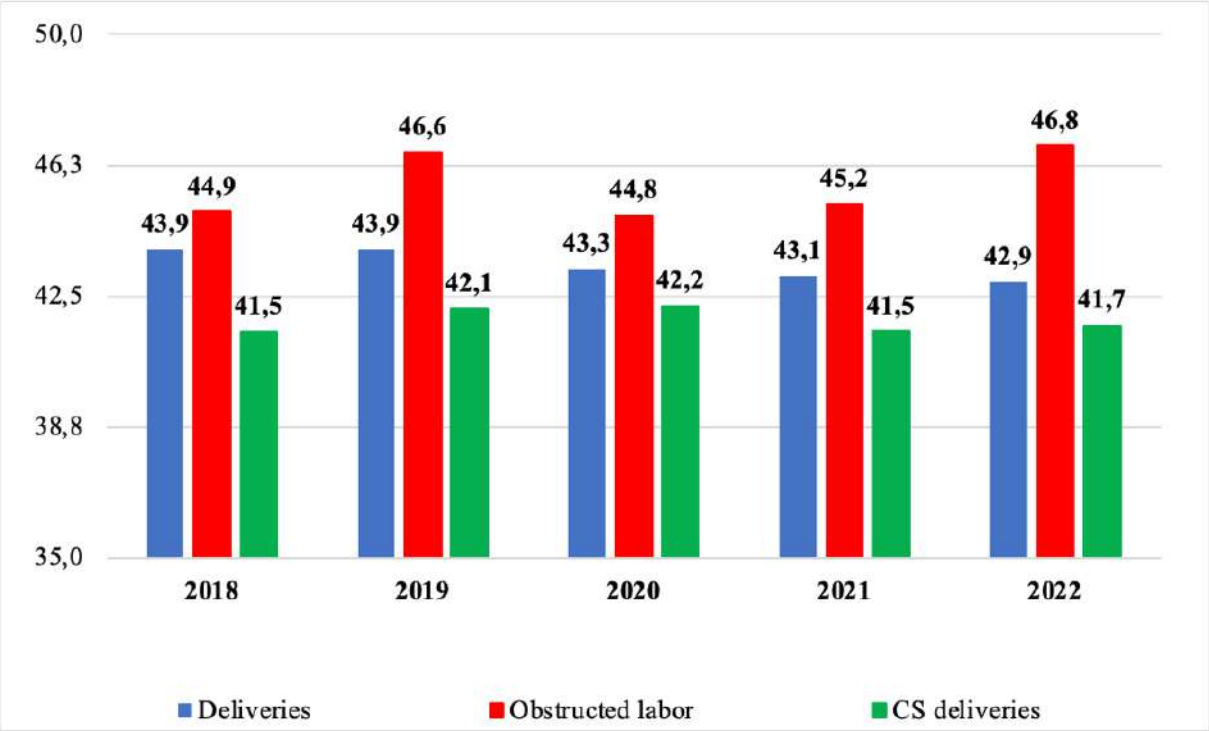

Figure 3.7 – Share of deliveries, obstructed labor and CS deliveries in St. Petersburg in the total number of deliveries, obstructed labor and CS deliveries in the North-Western Federal District in 2018-2022 (%)

It was revealed (Figure 3.8) that over five years, the highest incidence of obstructed labor in all federal districts of Russia was in the North-Western Federal District (672.81%) and the Siberian Federal District (674.17%), and the lowest in the Southern Federal District (599.07%) and the North Caucasian Federal District (591.88%). The assessment of the dynamics of indicators revealed that both in the country as a whole and in its federal districts, in 2018-2022, there was an increase in the incidence of obstructed labor, although not large, but negative dynamics was observed: in the Russian Federation – by 1.8%, in the Central Federal District – by 0.6%, in the North-Western Federal District – by 2.9%, in the Southern Federal District – by 2.3%, in the North Caucasian Federal District – by 6.9%, in the Volga Federal District – by 2.9%, in the Ural Federal District – by 1.1%, in the Siberian Federal District – by 4.4% and in the Far Eastern Federal District – 3.1%. At the same time, both in the country and in all its districts, except for the Central Federal District, the decrease in indicators in 2022 to the level of 2018 was statistically significant ($t=3.1$-16.2; $p<0.05$). The study also revealed a significant difference between the average

indicators in the Russian Federation and in its federal districts, which shows the presence of high variability of indicators (t=4.6-29.1; p<0,01) [85, 86, 90].

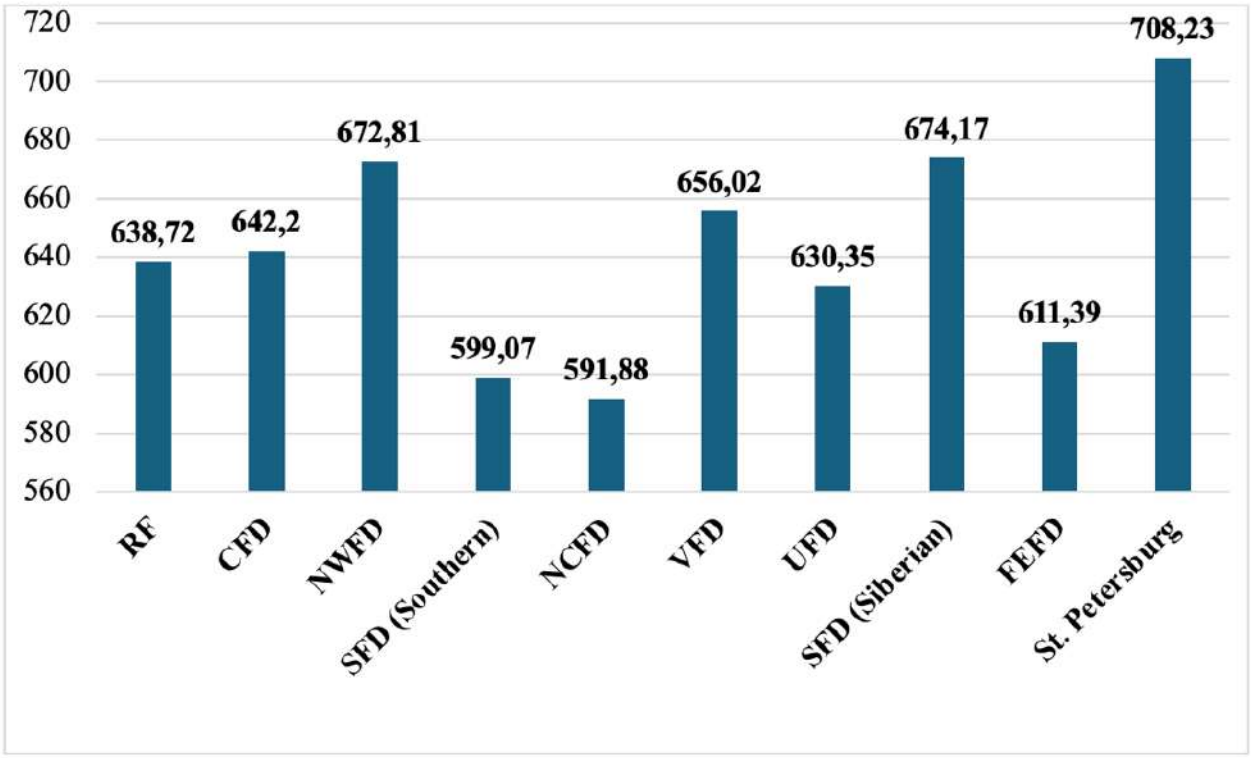

Figure 3.8 – Average rates of obstructed labor in the Russian Federation, its federal districts and in St. Petersburg in 2018-2022 (per 1000 births)

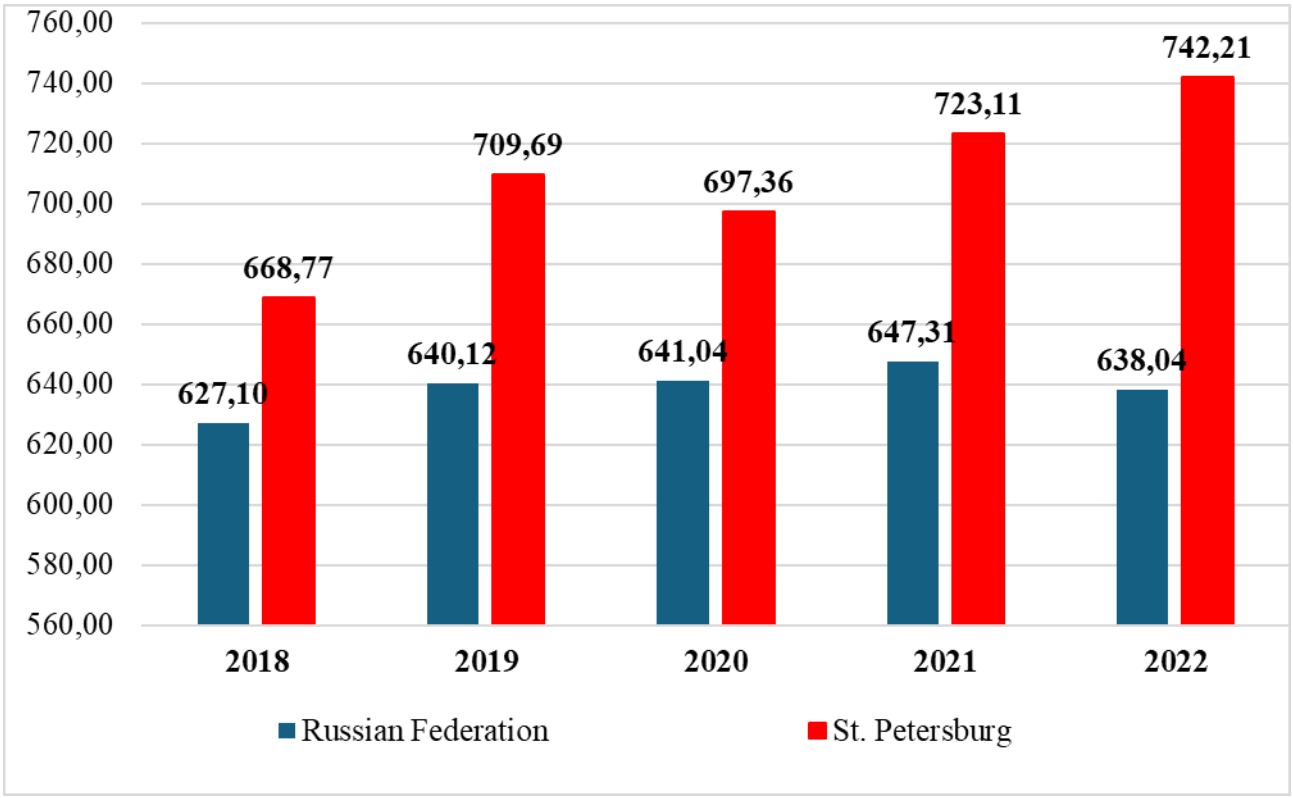

Figure 3.9 – Frequency of obstructed labor in the Russian Federation and St. Petersburg in 2018-2022 (per 1000 births)

As follows from Figure 3.9, the incidence of obstructed labor in the megalopolis was significantly higher than in Russia as a whole. In some years of the study period, the difference amounted to 1.1-1.2 times (6.3-14.9%) and was statistically significant (t=16.7-29.1; p<0.01). In 2018-2022, the rates of obstructed labor in St. Petersburg had a similar growth trend to Russia and its federal districts (+5.5%), which is confirmed by the high value of the approximation coefficient (R^2=0.84).

Analysis of the results of the study shows that there is a direct moderate correlation (r_{xy}=0.68 and r_{xy}=0.47, respectively) between the incidence of obstructed labor and maternal mortality in the Russian Federation and St. Petersburg, and a strong direct correlation (r_{xy}=0.86) in the NWFD. Thus, the increase in the incidence of obstructed labor may have a pronounced impact on the increase in maternal mortality in the NWFD, while in the Russian Federation and the megalopolis its impact is moderately pronounced and may be due to the influence of other factors.

A large number of complications fall on birth canal anomalies, they occupy one of the leading places in the structure of indications for CS and are one of the causes of perinatal and maternal complications, including those leading to the death of the child and mother [2, 130]. The assessment of CS deliveries showed (Figure 3.10) that the highest level of these indicators was in the FEFD and the VFD (average 331.30‰ and 323.86‰, respectively), and the lowest in the NWFD (average 278.40‰). It was found that there were reliable differences of the average Russian level with all average district indicators (at t=3.2-12.0; p<0.05). At the same time, in 2018-2022 there was an annual increase in the indicators, which in 2022 by the level of 2022 amounted to: in Russia – 3.7%, in the CFD – 2.4%, in the NWFD – 2.2%, in the Southern Federal District – 3.1%, in the NCFD – 14.2%, in the VFD – 2.8%, in the UFD – 1.4%, in the Siberian Federal District – 5.1% and in the FEFD – 0.6%. Statistical analysis revealed the presence of reliable differences in the dynamics of CS frequency in Russia, CFD, SFD (Southern), NCFD, VFD and SFD (Siberian) (with t=3.4-12.8; p<0.05). At the same time, the growth of indicators in the FEFD, UFD and NWFD had no statistically significant difference (t=0.5-1.8; p>0.05) [47, 65].

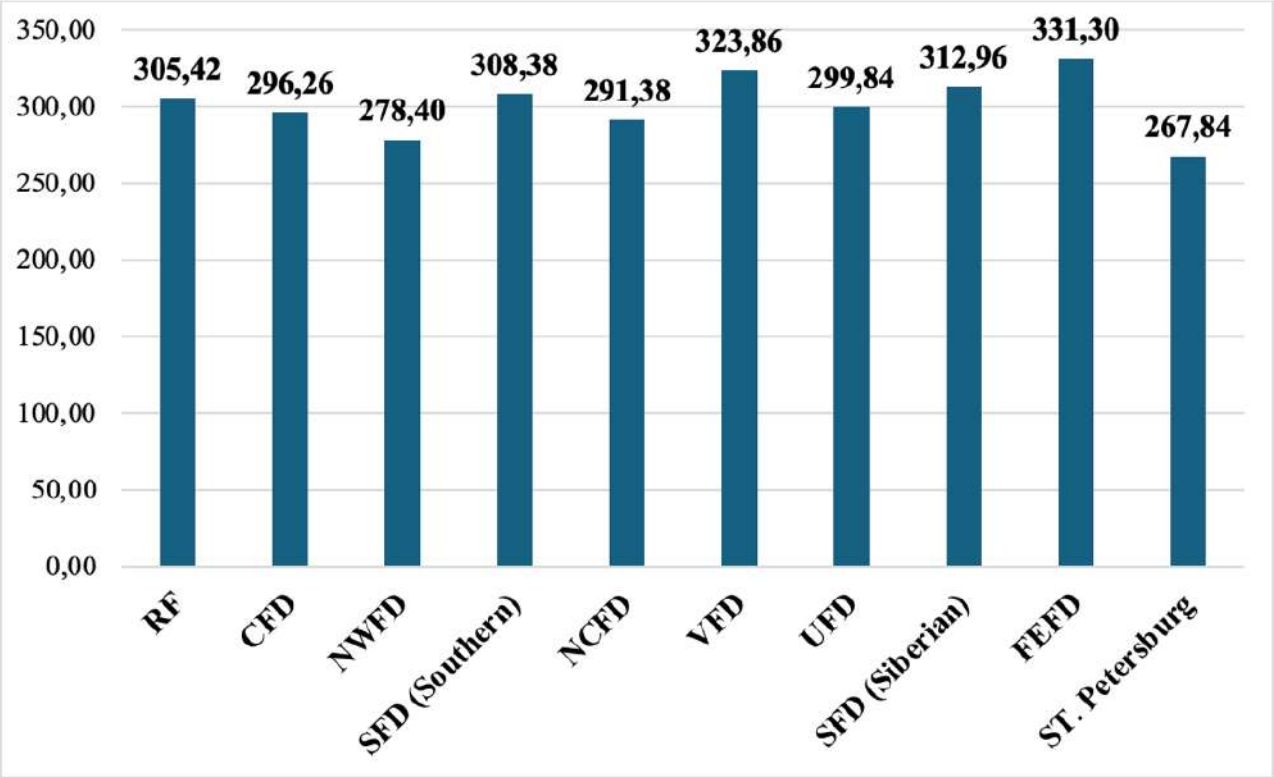

Figure 3.10 – Average rates of CS frequency in the Russian Federation, its federal districts and St. Petersburg in 2018-2022 (per 1000 births)

The share of CS deliveries in St. Petersburg in the total number of deliveries in the NWFD in 2018-2022 amounted to 41.5-42.8% and, like the share of obstructed labor, increased by only 1.0% over five years (Figure 3.7). As can be seen from Figure 3.10, the five-year average of CS frequency in childbirth in the megalopolis was lower than the national average by 37.58% or 12.3%. In all the years studied, the indicators were significantly higher than the national average ($t=11.3\text{-}13.8$; $p>0.01$). However, in contrast to the NWFD, the growth of the indicator in 2022 to the level of 2018 was significant ($t=2.3\text{-}13.8$; $p>0.05$), which is confirmed by the high value of the approximation coefficient ($R^2=0.82$). The dynamics of CS frequency in St. Petersburg is presented in Figure 3.11.

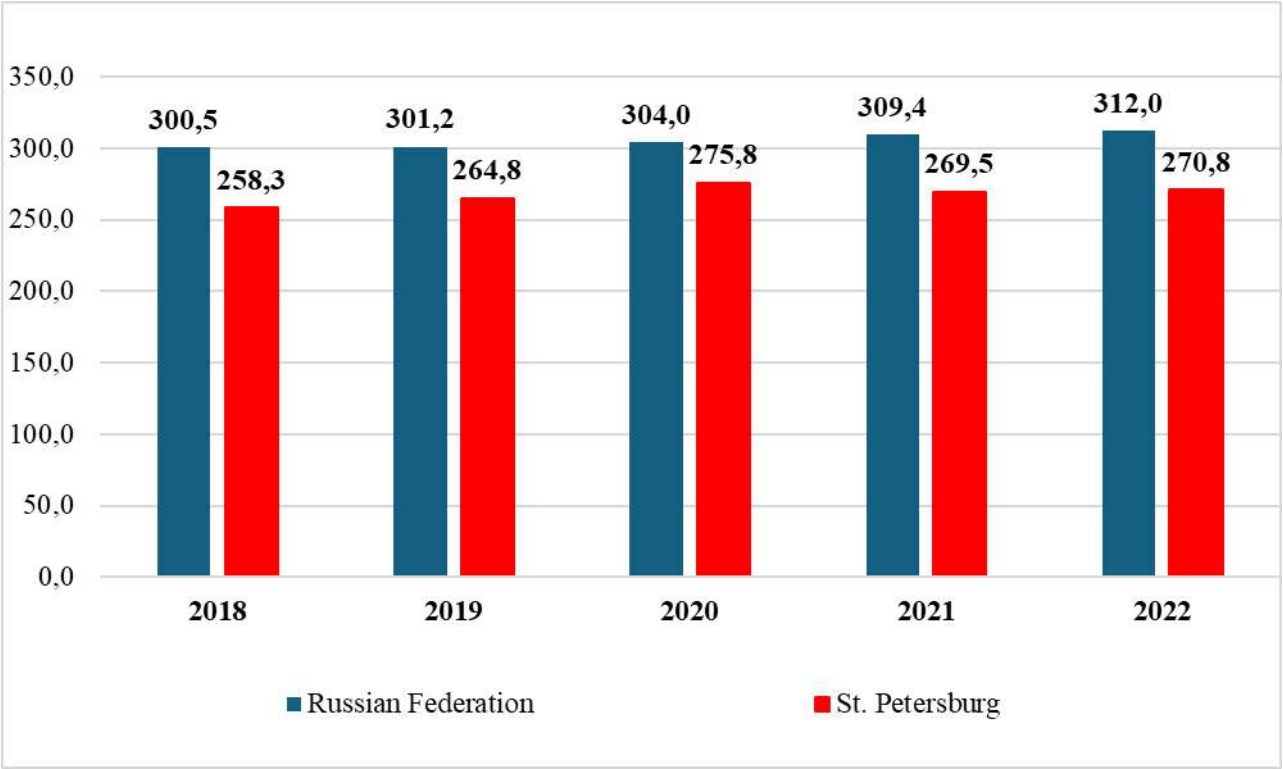

Figure 3.11 – Dynamics of the caesarean section frequency in the Russian Federation and St. Petersburg in 2018-2022 (per 1000 births)

There was a direct moderate correlation between the CS frequency and the frequency of obstructed labor in the Russian Federation and St. Petersburg (r_{xy}=0.52 and r_{xy}=0.55, respectively), and in the North-Western Federal District it was a strong direct correlation (r_{xy}=0.71). Accordingly, the increased use of CS in the country and the megalopolis may be moderately associated with an increased incidence of obstructed labor. At the same time, in the North-Western Federal District, an increase in the incidence of obstructed labor has a greater impact on the use of operative delivery in labor.

Thus, in 2018-2022, the NWFD had the highest maternal mortality and the frequency of obstructed labor in the country with the lowest rates of CS deliveries. The value of these indicators was significantly influenced by the level of these indicators in the megalopolis, which is part of the NWFD. This is due to the fact that the share of maternal deaths, deliveries, obstructed labor and CS deliveries in St. Petersburg in the total number of maternal deaths, deliveries, obstructed labor and CS deliveries in the federal district was more than 40%. Though, the state of the maternity protection

system of the megalopolis has a significant impact on the state of the maternity and childhood protection system of the district as a whole.

3.2. Incidence of women complicating the course of pregnancy and childbirth

The unfavorable health status of a pregnant woman and new mother is fundamental to the occurrence of any uterine contractile dysfunction. In this regard, a comprehensive approach to the study of not only the characteristics of the labor process, but also the entire course of pregnancy is advisable. To this end, a necessary task for improving the organization of obstetric care in obstetric facilities is to assess the health of pregnant women in the context of its impact on obstetric care.

The maternal mortality is influenced by a significant number of factors, of which the course of pregnancy and childbirth are of particular importance. The study revealed (Figure 3.12) that the proportion of women aged 15-49 years with class XV disease Pregnancy, childbirth and the postpartum period (O00-O99) of federal districts in the total number of women of fertile age with this class of diseases in the Russian Federation in 2018-2022 was the highest in the districts with the highest proportion of births in the country – in the Central Federal District and the Volga Federal District (on average 23.9% and 21.5%, respectively). And the lowest proportion of women with class XV disease (O00-O99) was in the Far Eastern Federal District and the North Caucasian Federal District (on average 5.7% and 7.8%, respectively). The study showed that with one of the lowest contributions of the NWFD to the total number of births in the country, this district occupies an average position in the number of diseases of women of fertile age by the class of diseases Pregnancy, childbirth and the postpartum period (on average 9.8%). At the same time, the share of the megalopolis in the total number of diseases (O00-O99) averaged 4.0% over five years [84, 87].

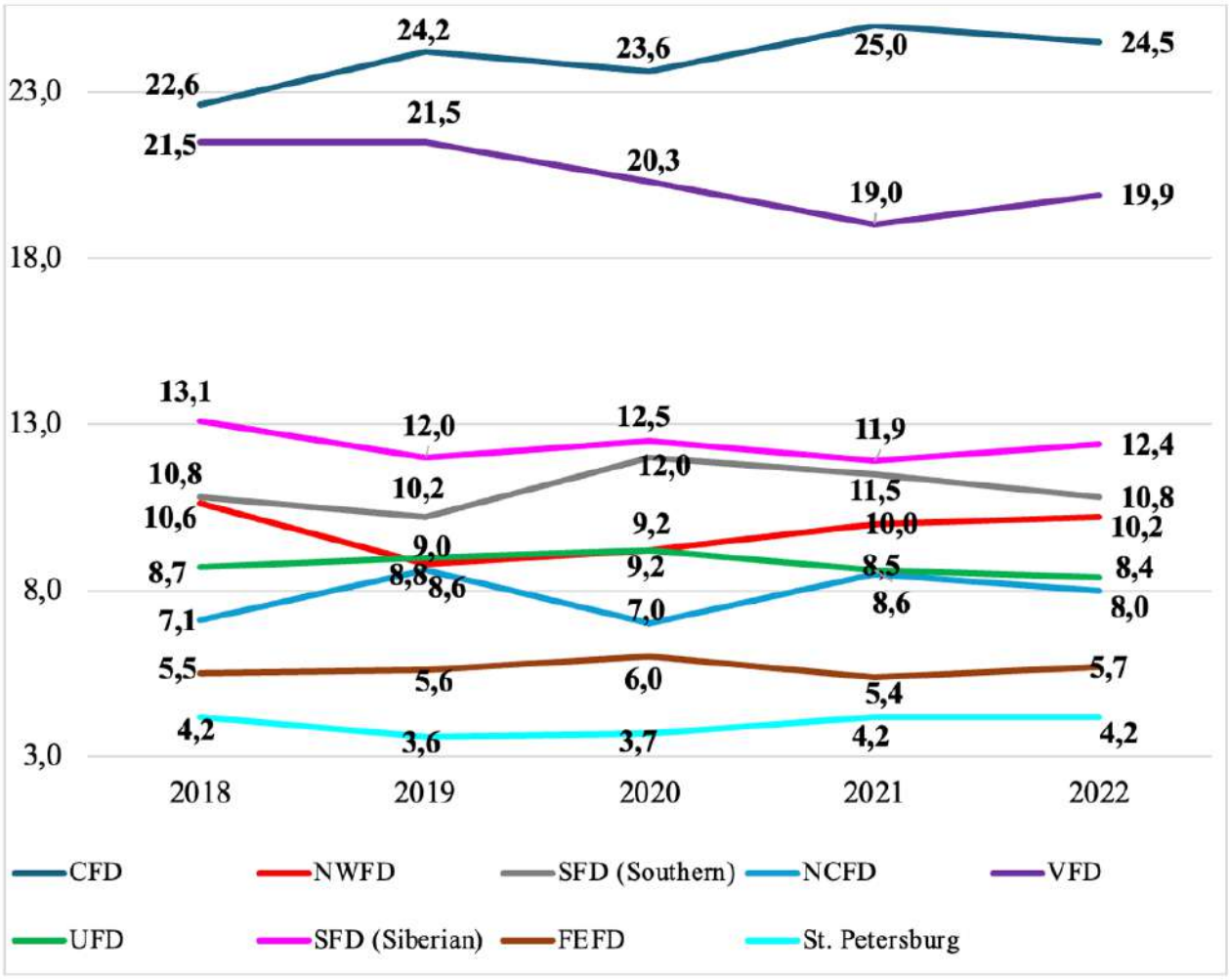

Figure 3.12 – Share of diseases of women aged 15-49 years with class XV diseases Pregnancy, childbirth and postpartum period of federal districts in the total number of diseases of women aged 15-49 years with this class of diseases in the Russian Federation in 2018-2022 (%).

It was found (Figure 3.13) that in 2018-2022, the highest incidence of women with the class of diseases Pregnancy, childbirth and postpartum period was in the VFD and NCFD (65.60‰, 64.64‰ and 64.63‰, respectively), and the lowest in the CFD and the FEFD (54.87‰ and 62.72‰, respectively). In the NWFD, the incidence rate (O00-O99) was average and exceeded the values in Russia by 1.28% or 2.0%. It was revealed that, except for the FEFD, there was a significant difference between the average values of indicators in the Russian Federation and those in its federal districts ($t=2.2\text{-}18.9$; $p<0.05$). Assessment of the dynamics of indicators revealed that both in the country as a whole and in its federal districts, during the period under study, there was a decrease in the incidence of pregnant women, women in labor and new mothers: in Russia – by 16.5%, in the Central Federal District – by 10.9%, in the North-Western

Federal District – by 21.4%, in the Southern Federal District – by 6.5%, in the North Caucasian Federal District – 14.5%, in the Volga Federal District – 20.4%, in the Ural Federal District – 18.3%, in the Siberian federal District – 19.0% and in the Far Eastern federal District – 12.9%. At the same time, both in the whole country and in all its districts, the decrease in indicators in 2022 to the level of 2018 was statistically significant ($t=7.8\text{-}27.6$; $p<0.01$).

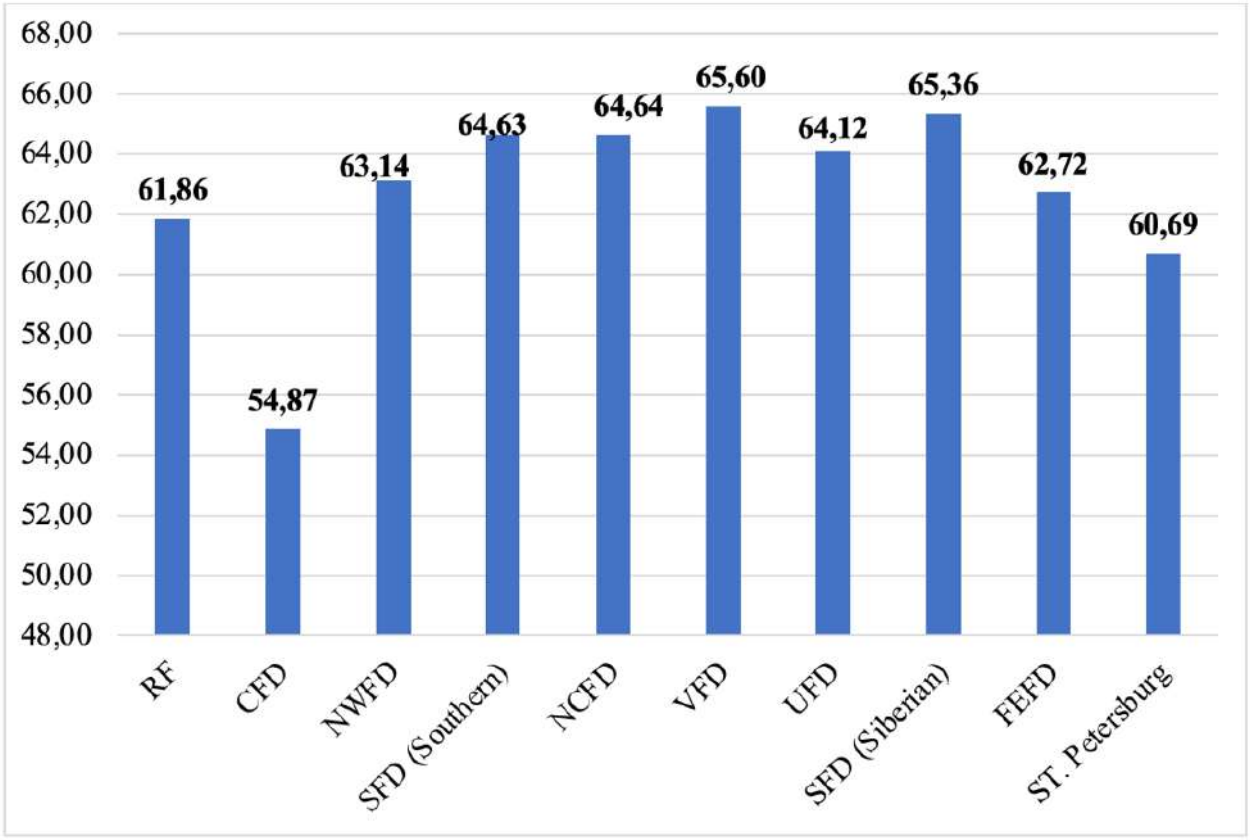

Figure 3.13 – Average incidence of women of fertile age of disease class XV Pregnancy, childbirth and postpartum period in the Russian Federation, its federal districts and St. Petersburg in 2018-2022 (per 1000 births).

In the megalopolis, the incidence of pregnant, women in labor and new mothers was lower not only than the national average, but also lower the district average (60.69‰ vs. 61.86‰ and 63.14‰, respectively). The comparative assessment showed that the five-year average incidence (O00-O99) in St. Petersburg had statistically significant differences with the national average ($t=2.1$; $p>0.05$) and with the federal district ($t=2.6$; $p<0.05$). Evaluation of the dynamics of indicators in the city allowed to establish that unlike in the Russian Federation, where there was a steady downward trend ($R^2=0.96$), in St. Petersburg this trend was less pronounced ($R^2=0.68$), but the

decrease in incidence in 2022 to the level of 2018 was more tangible and amounted to 25.2% (against 16.5% in Russia). The average incidence of women of fertile age with class XV diseases in the Russian Federation, its federal districts and St. Petersburg in 2018-2022 is shown in Figure 3.14.

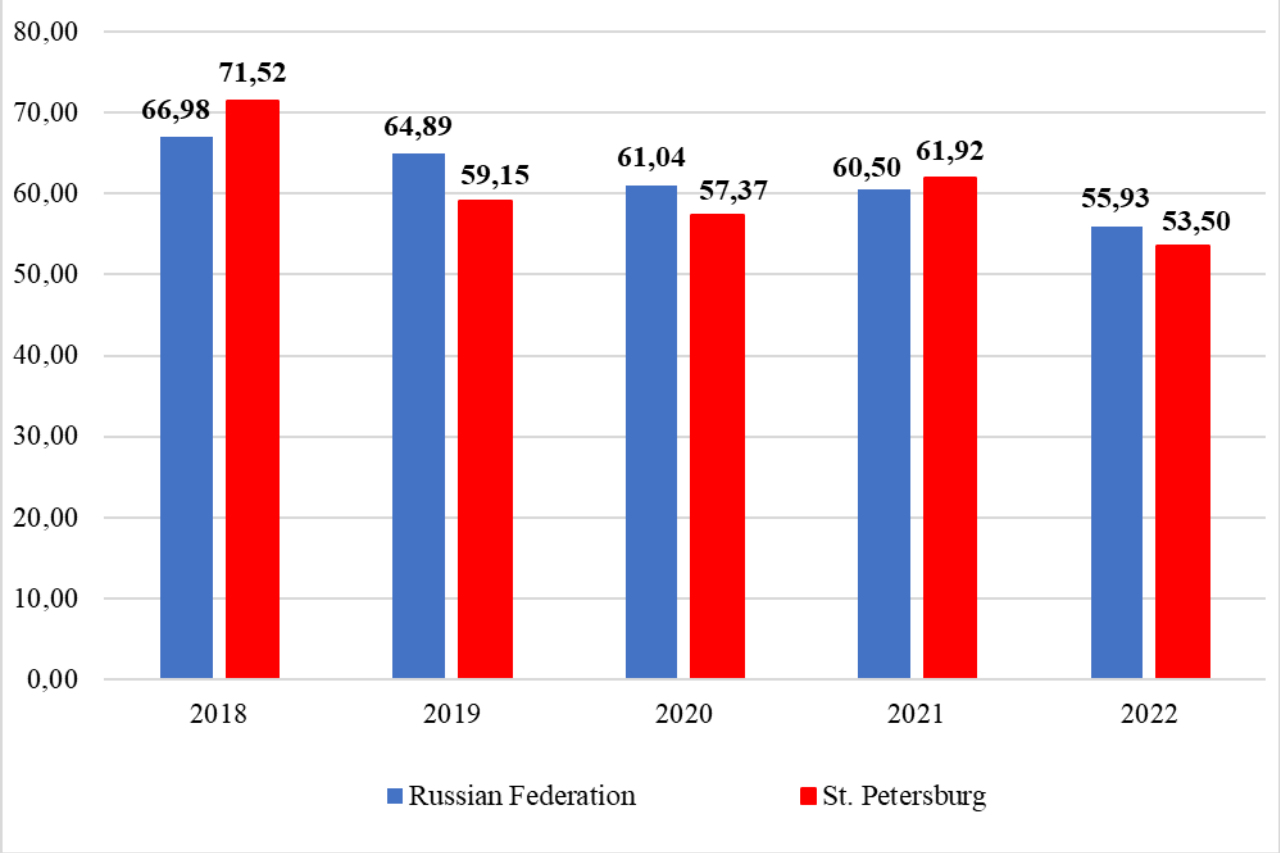

Figure 3.14 – Frequency of incidence of women of fertile age of disease class XV diseases Pregnancy, childbirth and postpartum period in the Russian Federation and St. Petersburg in 2018-2022 (per 1000 births).

Evaluation of the share of women of fertile age in St. Petersburg with class XV diseases in the total number of women of fertile age with this class of diseases in the NWFD revealed that in the period 2018-2022 it amounted to 39.4-42.4% (average 40.7%). Over the five years under study, the absolute increase of the indicator in the megalopolis was insignificant and amounted to only 1.7%. The level and dynamics of the proportion of women of fertile age with class XV diseases in St. Petersburg over a five-year time interval are shown in detail in Figure 3.15.

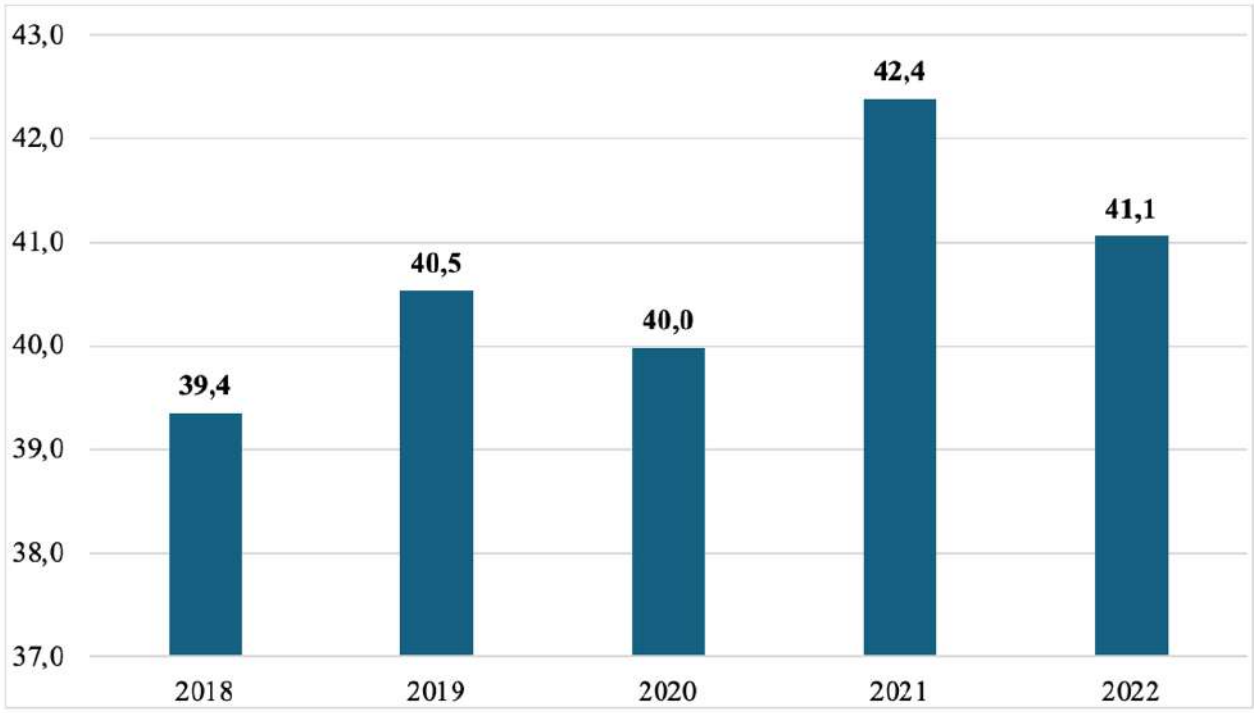

Figure 3.15 – Share of diseases of women of fertile age with the disease class XV diseases Pregnancy, childbirth and postpartum period of St. Petersburg in the total number of diseases of women aged 15-49 years with this class of diseases in the NWFD in 2018-2022 (%).

The study analyzed the impact of the incidence level of pregnant women, women in labor and new mothers on the incidence of obstructed labor and the use of CS. There is an inverse moderate correlation between the incidence of class XV diseases and the frequency of obstructed labor in the Russian Federation and the North-Western Federal District (r_{xy}=-0.52 and r_{xy}=-0.66, respectively), and in St. Petersburg there is an inverse strong correlation (r_{xy}=-0.82). There was also an inverse strong correlation between the incidence and the frequency of CS in the Russian Federation, the North-Western Federal District and St. Petersburg (r_{xy}=-0.94, r_{xy}=-0.75 and r_{xy}=-0.80, respectively). Thus, in St. Petersburg, the decreasing incidence of women of fertile age of class XV diseases Pregnancy, childbirth and postpartum period may not be related to the improvement of women's health, but is most likely the result of worsening diagnosis of diseases in pregnant women, which in turn leads to an increase in the incidence of complications in childbirth and the use of CS ($p<0.05$).

The assessment of the incidence of women complicating the course of pregnancy revealed that per 100 women who completed pregnancy, the incidence of threatened preterm labor in St. Petersburg, on average over the five years studied, was 6.0% lower

than in the country as a whole (t=1.4; p>0.05) and the federal district (t=1.7; p>0.05) and tended to decrease slightly by 3.7% (Table 3.2) [13].

Table 3.2 – Frequency of detection of threat of preterm labor, GDM, GSD and ESD complicating the course of pregnancy in the Russian Federation, NWFD and St. Petersburg in 2018-2022 (per 100 women who have completed pregnancy).

Class of diseases	Ter. Units	2018	2019	2020	2021	2022	Average for five years	Difference between 2018 and 2022 (%)	Difference between 2018 and 2022 (p)
Premature delivery	RF	12.7	12.9	11.4	10.5	10.5	11.6	-17.3	19.5 (<0.01)
	NWFD	14.6	13.4	11.0	9.7	9.1	11.6	-20.8	14.3 (<0.01)
	SPb	11.3	11.7	10.6	10.8	10.0	10.9	-3.7	2.2 (<0.05)
GSD	RF	16.6	16.9	16.3	15.8	16.1	16.3	-1.8	4.5 (<0.01)
	NWFD	25.3	22.1	22.6	22.3	22.0	22.9	-13.0	9.2 (<0.01)
	SPb	21.2	19.6	20.2	20.3	19.6	20.1	-7.5	2.9 (<0.05)
GDM	RF	5.84	7.21	7.76	9.01	10.45	8.1	+44.1	40.2 (<0.01)
	NWFD	9.37	10.64	10.92	12.25	14.23	11.5	+18.5	12.7 (<0.01)
	SPb	11.67	13.30	13.61	15.70	17.71	14.4	+34.1	10.6 (<0.01)
ESD	RF	8.42	9.29	9.54	10.18	11.14	9.7	+24.4	23.9 (<0.01)
	NWFD	13.3	13.67	13.96	14.19	14.83	14.0	+10.3	4.0 (<0.05)
	SPb	16.0	16.57	17.3	17.7	17.17	16.9	+6.8	2.1 (<0.05)

In the megalopolis during the studied period GSD decreased (-7.7%), the level of which was higher than the average in the Russian Federation by 18.8% (t=9.4; p<0.01), but lower than the average in the NWFD by 12.2% (t=6.0; p<0.01) [148]. At the same time, GDM incidence of pregnant women in the city exceeded the values in Russia by 43.8% (t=15.5; p<0.01) and for the county by 20.1% (t=6.0; p<0.01), and in 2018-2022 it increased by 34.1% in the city. It was found that in general, over five years in the Russian Federation, the North-Western Federal District and St. Petersburg the entire incidence of pregnant women with diseases of the endocrine system increased, but in the megalopolis the increase was less significant and amounted to 6.8%. The incidence of pregnant women in St. Petersburg with this class of diseases

exceeded the national average by 42.7% (t=17.9; p<0.01), and in the North-Western Federal District – by 17.8% (t=6.2; p<0.01).

The study showed (Table 3.3) that in St. Petersburg, while the incidence of CSD in pregnant women decreased (-4.6%), the incidence of venous events (+11.0%) and anemia (+14.4%) in women during pregnancy increased significantly. At the same time, the frequency of venous events exceeded the values in Russia by 2.2 times (t=17.9; p<0.01), and in the district by 1.4 times (t=7.9; p<0.01), and the incidence of CSD was 1.5 times higher than the national average (t=7.9; p<0.01) and in the district by 1.2 times (t=4.1; p<0.01). The incidence of anemia in pregnant women in the megalopolis was 4.4% higher than the national average (t=4.6; p<0.01) and 2.8% higher than the federal district (t=2.3; p<0.05).

Table 3.3 – Frequency of detection of venous events, anemia and CSD complicating the course of pregnancy in the Russian Federation, NWFD and St. Petersburg in 2018-2022 (per 100 women who have completed pregnancy).

Class of diseases	Ter. Units	2018	2019	2020	2021	2022	Average for five years	Difference between 2018 and 2022 (%)	Difference between 2018 and 2022 (p)
Venous event	RF	5.8	6.5	6.1	6.4	6.7	6.3	+7.9	7.8 (<0.01)
	NWFD	9.4	9.9	9.5	9.9	10.2	9.8	+7.8	2.1 (<0.05)
	SPb	12.9	13.2	13.4	14.3	14.5	13.7	+11.0	2.8 (<0.05)
Anemia	RF	35.6	36.0	35.5	35.4	34.6	35.4	-2.8	10.4 (<0.01)
	NWFD	37.3	38.5	37.9	37.9	38.5	38.0	+3.1	3.7 (<0.05)
	SPb	33.9	36.8	37.5	37.4	39.6	37.0	+14.4	11.6 (<0.01)
CSD	RF	7.59	7.38	6.64	6.19	5.93	6.7	-21.9	14.4 (<0.01)
	NWFD	8.95	8.92	7.92	7.17	7.34	8.1	-18.0	4.1 (>0.05)
	SPb	10.37	10.76	10.04	9.17	9.91	10.1	-4.6	0.8 (>0.1)

Of all the extragenital pathology in obstetrics, a special role is assigned to hypertension (pre-existing hypertension that complicates pregnancy, childbirth and the postpartum period), which is associated with a high risk to the life of the mother and child in the presence of this pathology. AH can complicate the course of pregnancy with such conditions as placental insufficiency, antenatal and perinatal fetal death or fetal growth retardation syndrome, premature detachment of the normally located placenta, obstetric hemorrhage, eclampsia, etc. It was revealed (Table 3.4) that in St.

Petersburg in 2018-2022, this type of extragenital pathology was 7.3% and 8.0% higher than the average in the Russian Federation (t=11.5; p<0.01) and the North-Western Federal District (t=9.9; p<0.01) and tended to decrease (-13.6%). At the same time, the incidence of moderate and severe preeclampsia significantly exceeded the national and federal district averages.

Table 3.4 – Incidence of pregnant women with AH, preeclampsia and eclampsia complicating the course of labor in the Russian Federation, NWFD and St. Petersburg in 2018-2022 (per 1000 births).

Class of diseases	Ter. Units	2018	2019	2020	2021	2022	Average for five years	Difference between 2018 and 2022 (%)	Difference between 2018 and 2022 (p)
AH	RF	47.9	47.9	46.4	46.3	48.0	47.3	-0.2	1.1 (>0.05)
	NWFD	46.5	46.5	45.5	48.8	50.8	47.6	+8.5	14.7 (<0.01)
	SPb	47.8	47.8	39.4	42.6	41.3	43.8	-13.6	14.0 (<0.01)
Moderate preeclampsia	RF	30.5	30.5	28.4	29.4	28.0	29.4	-8.2	24.8 (<0.01)
	NWFD	38.4	38.4	40.6	38.9	36.5	38.6	+4.9	5.9 (<0.01)
	SPb	50.6	50.6	53.9	52.2	50.0	51.5	+1.2	1.4 (>0.05)
Severe preeclampsia	RF	9.4	9.4	9.3	9.3	9.0	9.3	-4.3	3.5 (<0.05)
	NWFD	13.4	13.4	14.1	12.0	12.9	13.2	-3.7	1.9 (>0.05)
	SPb	19.4	19.4	18.8	15.2	18.3	18.2	-5.7	2.0 (<0.05)
Eclampsia during pregnancy	RF	0.13	0.13	0.13	0.13	0.16	0.10	-18.8	0.3 (>0.1)
	NWFD	0.11	0.11	0.15	0.13	0.29	0.20	+62.1	0.4 (>0.1)
	SPb	0.12	0.12	0.11	0.10	0.20	0.10	-40.0	0.1 (>0.1)

Table 3.4 shows that the incidence of moderate preeclampsia in the megalopolis was 1.8 times higher than the national average (t=66.4; p<0.01) and 1.3 times higher than the district average (t=35.0; p<0.01) and increased by 1.2% in 2022 to the 2018 level. The incidence of severe preeclampsia in St. Petersburg was 2.0 times higher than the Russian average (t=22.2; p<0.01), while in the NWFD it was 1.4 times higher (t=10.9; p<0.01) and decreased by 5.7%. There was also a decrease in eclampsia during pregnancy, however, it was not statistically significant, and its frequency had no significant differences from the national and district averages.

The study analyzed the incidence of placenta previa and premature placental abruption in pregnant women (Table 3.5)

Table 3.5 – Incidence of placenta previa and premature placental abruption complicating the course of labor in the Russian Federation, NWFD and St. Petersburg in 2018-2022 (per 1000 births)

Class of diseases	Ter. Units	2018	2019	2020	2021	2022	Average for five years	Difference between 2018 and 2022 (%)	Difference between 2018 and 2022 (p)
Placenta previa with hemorrhage	RF	1.85	1.85	1.66	1.60	1.71	1.7	-7.6	1.2 (>0.05)
	NWFD	1.92	1.92	1.69	1.99	2.54	2.0	+4.0	1.5 (>0.05)
	SPb	1.94	1.94	1.67	2.11	3.66	2.3	+15.7	2.8 (<0.05)
Placenta previa without hemorrhage	RF	4.31	4.31	4.33	1.60	1.71	3.3	-26.2	22.0 (<0.01)
	NWFD	4.47	4.47	4.72	1.99	2.54	3.6	-19.4	4.8 (<0.01)
	SPb	6.62	6.62	7.24	2.11	3.66	5.3	-19.9	4.8 (<0.01)
Premature detachment of the normally located placenta	RF	9.3	9.3	9.1	9.1	9.2	9.2	-1.1	0.9 (>0.1)
	NWFD	9.4	9.4	10.2	9.9	9.1	9.6	-2.1	0.8 (>0.1)
	SPb	8.2	8.2	9.6	8.4	7.7	8.4	-2.4	0.8 (>0.1)

It was found that placenta previa with and without hemorrhage was diagnosed in pregnant and new mothers in the megalopolis significantly more often than the national and county average. The incidence of placenta previa without hemorrhage was 1.6 times higher than the national average ($t=4.6$; $p<0.01$) and 1.5 times higher than the federal district average ($t=3.4$; $p<0.05$) and decreased by 19.9% over five years. Although the incidence of placenta previa with hemorrhage was 1.4 times higher than the national average and 1.2 times higher than the federal district average, these differences were not statistically significant ($t=1.4$ and 0.6; $p>0.05$). In the city there was an increase in the detection of placenta previa with hemorrhage, which amounted to 15.7%. Evaluation of the incidence of premature detachment of the normally located placenta showed that in St. Petersburg in 2018-2022 it was 8.7% ($t=2.0$; $p<0.05$) below the district average and 12.5% ($t=2.4$; $p<0.05$) below the national average and its incidence increased by 2022.

One of the main functions of pathologic pregnancy departments is to prolong pregnancy and determine the tactics of labor management in order to minimize the risk to the mother and her child. Given that the frequency of obstructed labor exceeds the average values for the Russian Federation and the NWFD, we studied the frequency of

labor violations (weakness of labor, rapid labor, discoordination of labor, etc.), obstructed labor and uterine ruptures (Table 3.6).

Table 3.6 – Frequency of obstructed labor, obstetrical disorders and uterine ruptures in the Russian Federation, NWFD and St. Petersburg in 2018-2022 (per 1000 births)

Class of diseases	Ter. Units	2018	2019	2020	2021	2022	Average for five years	Difference between 2018 and 2022 (%)	Difference between 2018 and 2022 (p)
Labor violations	RF	77.2	77.2	76.0	68.1	68.6	73.4	-11.1	136.8 (<0.01)
	NWFD	89.2	89.2	86.4	78.8	83.7	85.5	-6.2	36.1 (<0.01)
	SPb	58.4	58.4	58.7	54.2	64.3	58.8	+9.2	15.4 (<0.01)
Dystocia	RF	60.9	60.9	59.6	54.4	51.5	57.5	-15.4	118.0 (<0.01)
	NWFD	71.7	71.7	62.3	66.6	53.0	65.1	-26.1	73.4 (<0.01)
	SPb	52.5	52.5	52.4	43.4	47.8	49.7	-9.0	10.7 (<0.01)
Rupture of uterus	RF	0.18	0.18	0.18	0.18	0.19	0.2	+5.3	0.1 (>0.1)
	NWFD	0.27	0.27	0.33	0.33	0.38	0.3	+28.9	0.3 (>0.1)
	SPb	0.34	0.34	0.38	0.50	0.55	0.4	+38.2	0.3 (>0.1)

The conducted research allowed us to establish that during the study period in St. Petersburg the frequency of labor disorders was significantly less frequent than the average in the Russian Federation by 1.2 times ($t=51.8$; $p<0.01$) and in the NWFD by 1.5 times ($t=89.3$; $p<0.01$). In contrast to the country and the district as a whole, the incidence of obstructed labor in the megalopolis tended to increase (+9.2%). Evaluation of the incidence of obstructed labor revealed that the rate in St. Petersburg was on average 1.2 and 1.3 times lower than the national average ($t=89.3$; $p<0.01$) and the district average ($t=89.3$; $p<0.01$) for the five years studied, respectively. The frequency of obstructed labor in the city in 2022 decreased by 9.0% compared to the level of 2018.

As a rule, uterine ruptures are a consequence of the uterine scar inconsistency, which arose as a result of previous surgical interventions on it. Among them, the most common cause of uterine scarring is the use of CS in previous births. An assessment of the incidence of uterine rupture in 2018-2022 in St. Petersburg revealed that for every 1000 births, the incidence of this complication was on average 0.4 cases and increased 1.6 times in 2022 compared to 2018 levels (Figure 3.16). Despite the fact that the incidence of uterine rupture during the study period in the megalopolis was

higher than the national and federal district averages, these differences were not statistically significant (p>0.1).

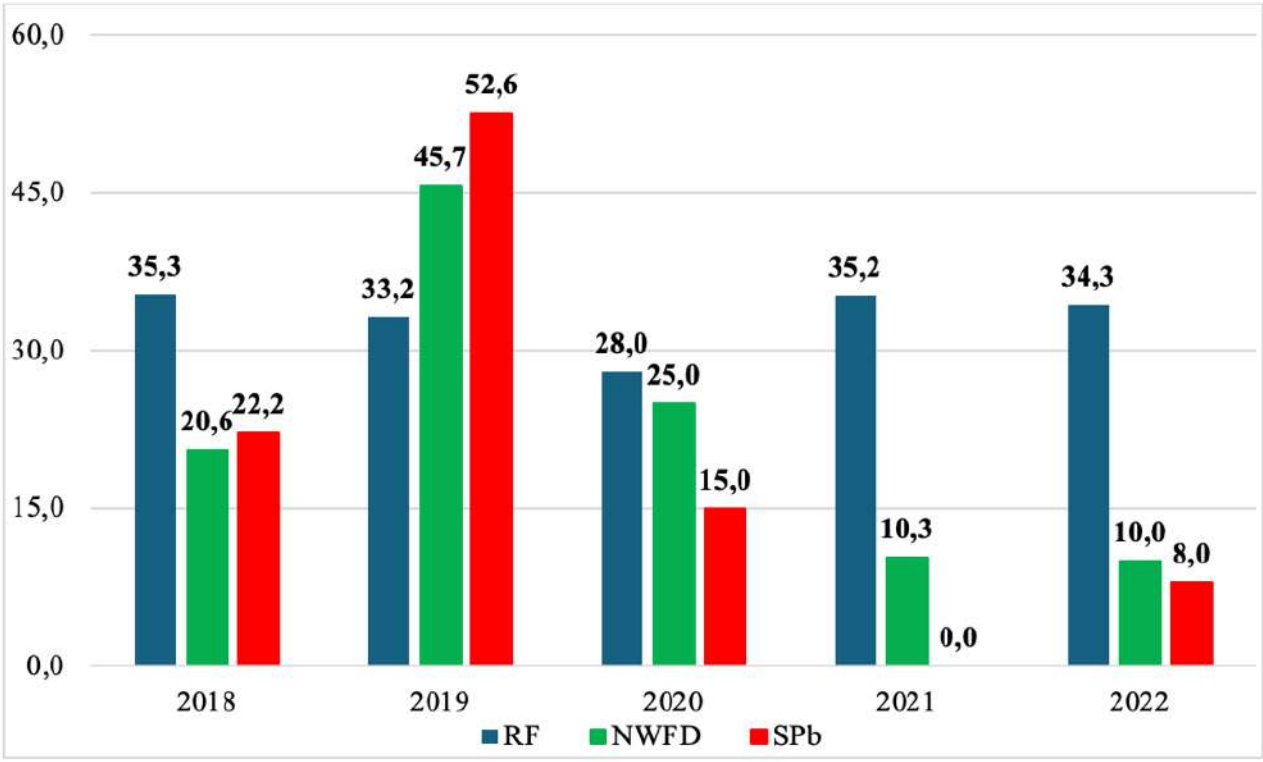

Figure 3.16 – Share of out-of-hospital uterine ruptures in the total number of uterine ruptures in the Russian Federation, NWFD and St. Petersburg in 2018-2022 (%)

The share of out-of-hospital uterine ruptures from the total number of uterine ruptures is an indicator that characterizes timeliness of medical care for new mothers in obstetric hospitals. It was found that except for 2019, the proportion of out-of-hospital uterine ruptures in St. Petersburg was significantly lower than in the Russian Federation and the NWFD (19.6% vs. 33.2% and 22.3%, respectively). In 2022, the share of out-of-hospital uterine ruptures from the total number of uterine ruptures in St. Petersburg decreased by 2.8 times by the 2018 level. At the same time, in 2021, this indicator in the megalopolis reached zero.

Thus, the study showed that with a lower incidence of pregnant women and new mothers , which tends to decrease, in the megalopolis there is a higher compared to the average Russian level, incidence of GSD and ESD (by 18.8% and 42.7%, respectively), GDM (by 43.8%), CSD (by 33.7%), venous events (by 54.0%), anemia (by 4.4%), moderate (by 42.5%) and severe (by 48.9%) preeclampsia, placenta previa with hemorrhage (by 26.1%) and frequency of uterine ruptures (by 50.0%). At the same

time, the incidence of threat of preterm labor (by 6.0%), AH (by 7.4%), premature detachment of normally located placenta (by 12.5%), labor disorders (by 19.9%) and dystocia (by 13.5%) was lower in St. Petersburg. The decrease in the incidence of pregnant, women in labor and new mothers in 2018-2022 was provided by a decrease in the incidence of threat of preterm labor (-3.7%), CSD (-4.6%), AH (-13.6%), severe preeclampsia (-5.7%), placenta previa without bleeding (-19.9%), premature placental abruption (-2.4%) and dystocia (-9.0%).

Summing up the above, it should be noted that in the megalopolis with low enough incidence rates of class XV diseases Pregnancy, childbirth and postpartum period there was a high level of obstructed labors and maternal mortality, and the CS frequency was significantly lower than in the country as a whole. On the one hand, this may be due to shortcomings in the work of obstetric and gynecological medical organizations in the timely detection and treatment of diseases during pregnancy. On the other hand, there is a concentration of pregnant women, women in labor and new mothers from the regions of the North-Western Federal District and the entire Russian Federation for delivery in the city obstetric hospitals. Given the current situation, it is advisable to conduct a comprehensive integrated analysis of the prenatal stage of treatment of pregnant women in pathologic pregnancy departments at all levels of obstetric hospitals in St. Petersburg.

Chapter 4. ASSESSMENT OF THE MAIN PERFORMANCE INDICATORS OF PATHOLOGIC PREGNANCY DEPARTMENTS

4.1. Availability of pathologic pregnancy beds for the female population

The indicator of provision of the population with hospital beds allows us to judge the availability of specialized medical care. The indicator of availability of pathologic pregnancy beds for women of fertile age can give an idea of the availability of obstetric and gynecological care for pregnant women with extragenital diseases or pregnancy complications in inpatient settings. It was found that the availability of pathologic pregnancy beds in the megalopolis was lower than the Russian Federation throughout the five-year period under study, and only in 2020 it exceeded the NWFD level by 1.2% (Figure 4.1).

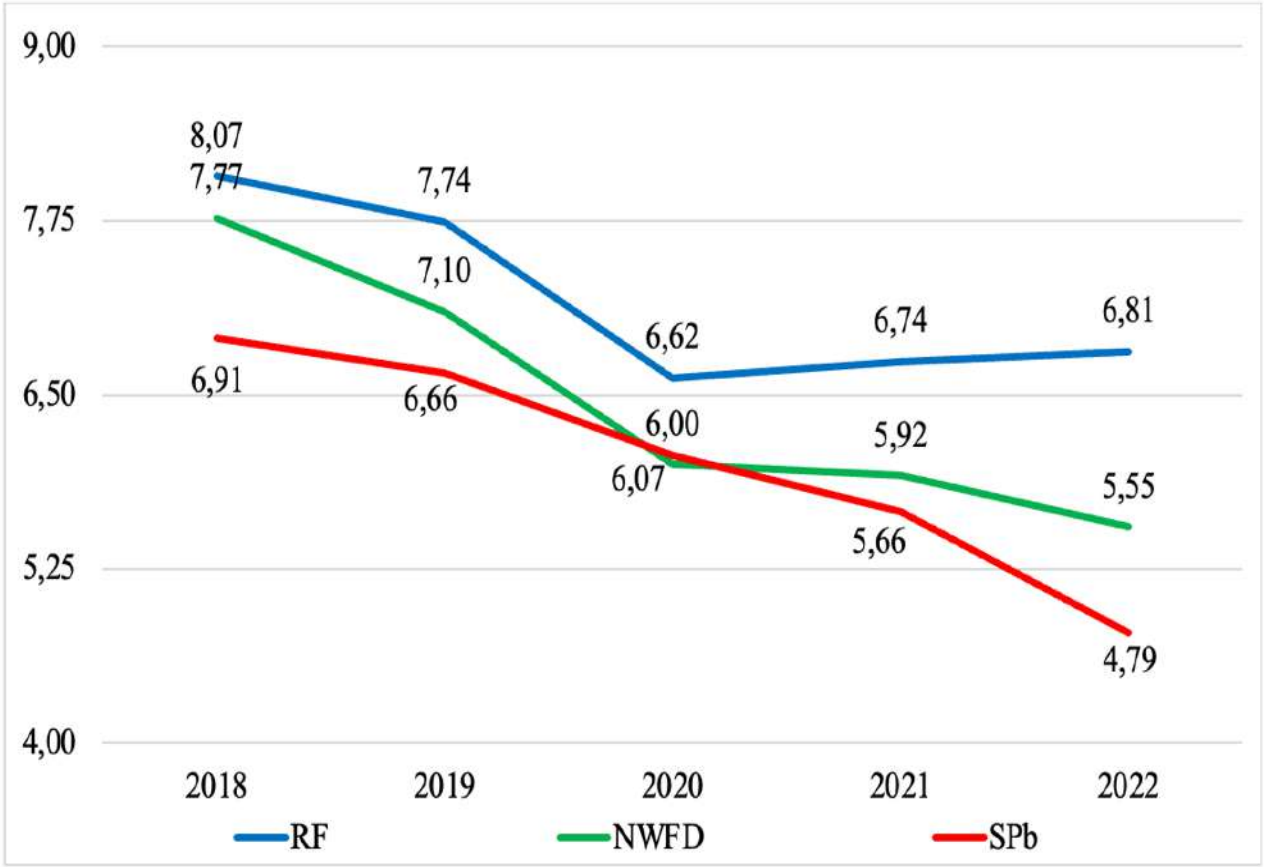

Figure 4.1 – Dynamics of availability of pathologic pregnancy beds in the Russian Federation, NWFD and St. Petersburg in 2018-2022 (per 10000 women of fertile age).

At the same time, in 2018-2022, the average bed availability in this profile amounted to 6.02‰, which was lower than the average in the Russian Federation by

16.4% or 1.18‰ in absolute values (7.20‰; t=4.44; p<0.01) and lower by 7.0% or 0.45‰ than the average in the NWFD (6.47‰; t=0.67; p>0.05). The study showed that, both in the country as a whole, and in the federal district and the city, there was an annual decline in both bed availability and the absolute number of beds. The overall decrease in the provision of pathologic pregnancy beds for women of fertile age in the megalopolis in 2018-2022 amounted to 30.7% (t=13.28; p<0.01), which exceeded the decline of these indicators in the Russian Federation and the NWFD (15.5% and 28.6%; t=19.79 and 10.91; p<0.01) [91].

An assessment of the contribution of pathologic pregnancy beds to the obstetric bespace in St. Petersburg revealed that, on average, in 2018-2022, the proportion of these beds in the megalopolis was lower than the national and federal district average (42.7% vs. 46.3% and 45.2%). The difference with the national average was 7.6% or 5.1% in absolute values (t=0.22; p>0.1), and with the average – 5.4% and 3.4%, respectively (t=0.36; p>0.1). A comparative analysis of the dynamics of the share of pathologic pregnancy beds in the total number of obstetric beds in the city showed that, while in the Russian Federation the indicators in 2018-2022 remained virtually unchanged (a slight decrease of 0.2%), in the NWFD and St. Petersburg the share of beds of this profile decreased by 6.4% and 10.4%, respectively. However, despite the higher rates of decline, both in the North-Western Federal District and in the megalopolis, changes in these indicators did not have a statistically significant difference (t=1.97; p>0.05). The five-year dynamics of the proportion of pathologic pregnancy beds in the total number of obstetric beds is shown in Figure 4.2.

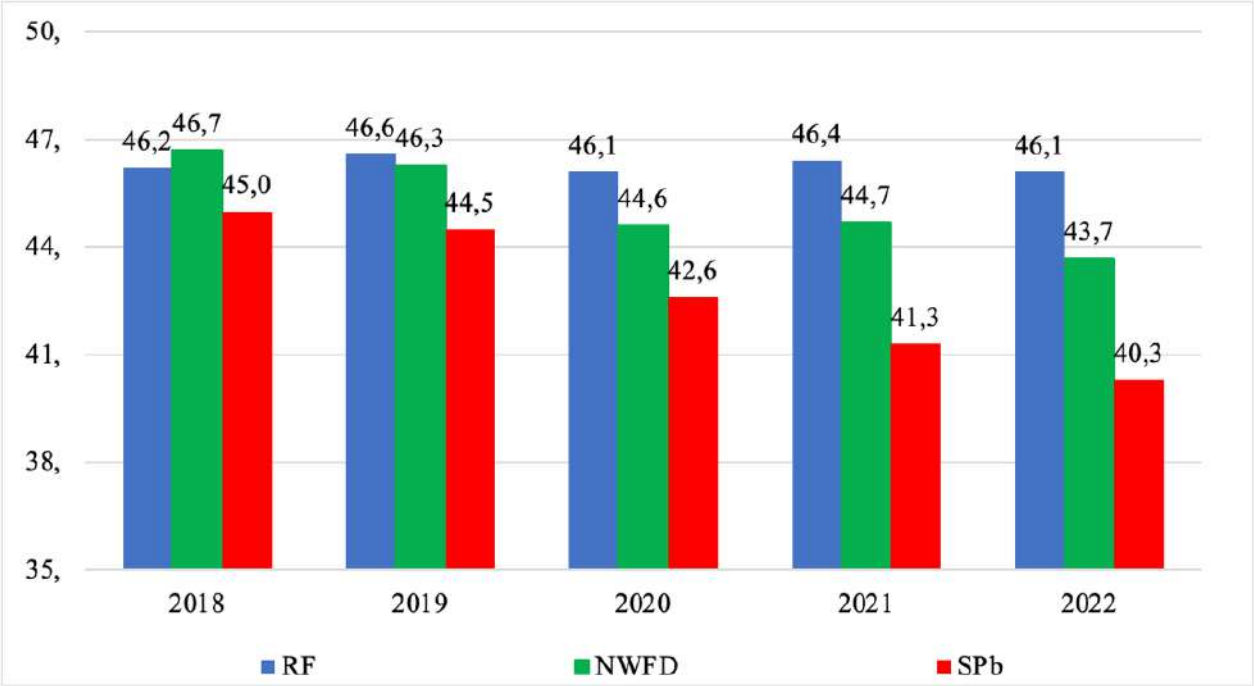

Figure 4.2 – Dynamics of the share of pathologic pregnancy beds in the total number of obstetric beds in the Russian Federation, NWFD and St. Petersburg in 2018-2022 (%)

Evaluation and analysis of the data presented above made it possible to study the indicators of the share of pathologic pregnancy beds in St. Petersburg in the number of pathologic pregnancy beds in the NWFD, which are presented in Figure 4.3.

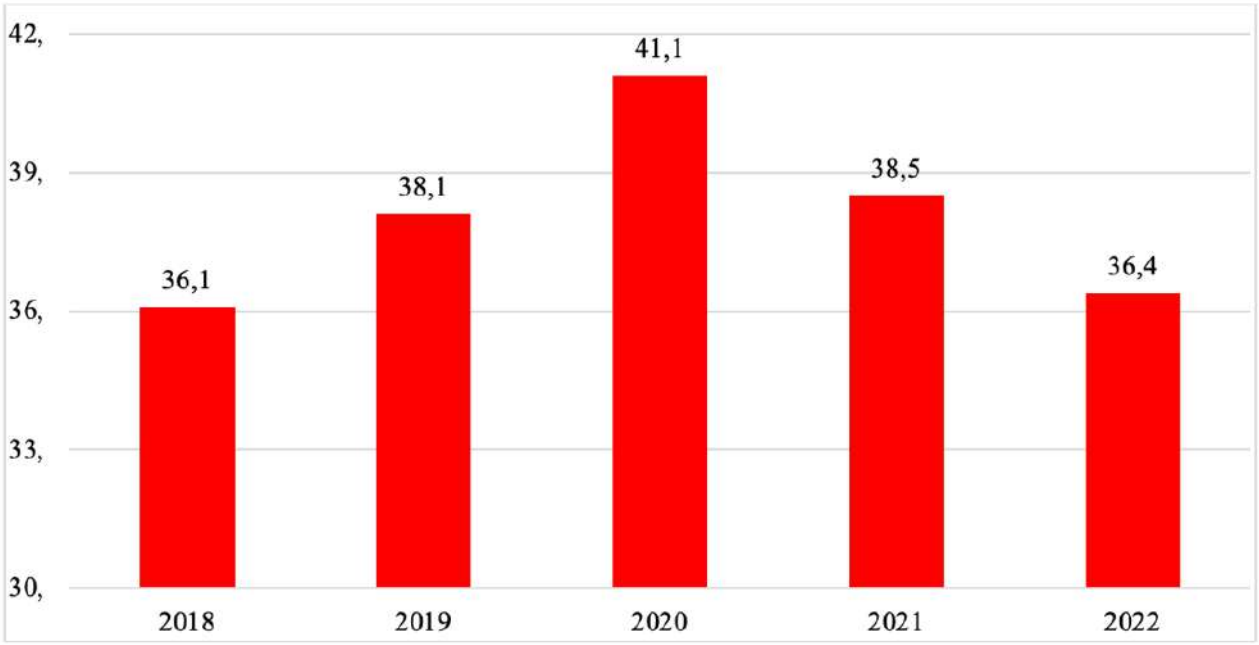

Figure 4.3 – Dynamics of the share of pathologic pregnancy beds in St. Petersburg in the total number of pathologic pregnancy beds in the NWFD in 2018-2022 (%)

It was noted that the proportion of beds in this profile was 36.1% in 2018 and the indicator reached its maximum value in Covid 2020 (41.1%), and then again there was an annual decrease to the level of 36.4% in 2022. On average, over five years, the share of pathologic pregnancy beds in St. Petersburg in the total number of beds in this profile in the North-Western Federal District amounted to 38.0%, with a five-year increase of 0.8% or 0.3% in absolute values ($t=0.14$; $p>0.1$).

Thus, in comparison with the Russian Federation and the North-Western Federal District, the megalopolis had a lower supply of pathologic pregnancy beds and a lower proportion of beds in this profile in the structure of the obstetric bedspace. The share of pathologic pregnancy beds in St. Petersburg in the total number of pathologic pregnancy beds in the federal district averaged 38.0%.

4.2 Monitoring of indicators of hospital bed usage in pathologic pregnancy departments

To analyze the efficiency of pathologic pregnancy department beds in obstetrics organizations of the city, a study of the indicators of bed usage of the megalopolis PPDs was carried out. To assess the efficiency of the use of human, material, technical, financial and other resources of obstetric hospitals, a comparative assessment of the average number of days of pathologic pregnancy bed occupancy per year (work or function of a pathologic pregnancy bed) was initially carried out. It was found that in St. Petersburg in 2018-2022 it averaged 264.6 days and was lower than the national average by 6.4% or 18.2 days and the district average by 5.4% or 15.2 days (Table 4.1). At the same time, in 2020, both in Russia as a whole and in the NWFD and the megalopolis, there was a sharp decline in the average number of days of pathologic pregnancy bed occupancy per year. However, while in the country as a whole the operation of these beds grew annually, the federal district and St. Petersburg followed the rise in 2021 with a decline in the indicators. By 2022, the average bed occupancy in the city had dropped to a five-year low of 242 days. Overall, by the level of 2018, the operation of pathologic pregnancy beds in 2022 decreased by 15.1% or 43 days,

which was significantly higher than the decrease in Russia (-2.0% or 6.0 days), but not significantly in the NWFD (14.1% or 43 days).

Table 4.1 – Dynamics of the PPD bed usage indicators in Russia, NWFD and St. Petersburg in 2018-2022

Ter. Units	2018	2019	2020	2021	2022	Average for five years	Difference between 2018 and 2022 (%)
Average bed occupancy per year (days)							
RF	299.0	292.0	262.0	268.0	293.0	282.8	-2.0
NWFD	304.0	304.0	262.0	268.0	261.0	279.8	-14.1
St. Petersburg	285.0	288.0	239.0	269.0	242.0	264.6	-15.1
Average length of stay in bed (days)							
RF	7.6	7.4	7.0	6.7	6.7	7.1	-11.8
NWFD	8.1	7.9	7.3	6.8	6.7	7.4	-17.3
St. Petersburg	7.0	6.8	6.3	5.9	5.6	6.3	-20.0
Bed turnover							
RF	39.34	39.46	37.43	40.00	38.96	39.04	-1.0
NWFD	37.53	38.48	35.89	39.41	39.40	38.14	+4.7
St. Petersburg	40.71	42.35	37.94	45.59	45.36	42.39	+10.3
Average bed downtime (days)							
RF	1.68	1.85	2.75	2.43	1.85	2.11	+9.2
NWFD	1.63	1.59	2.87	2.46	2.64	2.24	+38.3
St. Petersburg	1.97	1.82	2.79	2.11	2.71	2.28	+27.3

The criterion characterizing the organization and quality of inpatient treatment of pregnant women in obstetric care organizations is the average length of stay of patients in pathologic pregnancy beds. The assessment of the average length of stay in pathologic pregnancy beds in St. Petersburg allows us to determine that, as well as the average bed occupancy per year, this indicator was below the national and regional averages for all the period under study. The five-year average in the megalopolis was lower than the national average by 10.7% or 0.8 days, and in the federal district by 14.1% or 1.0 days. In the megalopolis, as in the Russian Federation and the North-Western Federal District, the dynamics of decrease in the average length of stay of pregnant women in pathologic pregnancy beds can be traced, only with a more significant difference over a five-year period (-20.0% or 1.4 days) [3]. At the same time, it was found that only in St. Petersburg the average length of stay of patients in

pathologic pregnancy beds did not exceed the recommended by the Letters of the Ministry of Health of Russia "Clarifications on the formation and economic justification of territorial programs of state guarantees of free medical care to citizens" indicators for the profile "Obstetrics-gynecology" set at 6.6 days [104].

As shown in Table 4.1, the decrease in the length of stay of women in pathologic pregnancy beds in Russia, NWFD and St. Petersburg was achieved by increasing the turnover of these beds. The turnover rate of pathologic pregnancy beds gives an idea of the average number of pregnant women treated in one such bed in an obstetric hospital. It was revealed that in the megalopolis, the turnover rates of these beds exceeded the figures for the country and the federal district over the studied period. At the same time, the difference with the national average was 7.9% or 3.35 in absolute values, and with the average level – 10.0% or 4.25, respectively. The increase in the pathologic pregnancy bed turnover in St. Petersburg in 2022 to the 2018 level was 10.3% or 4.65, which is more significant than the county average, where the increase was only 4.7% and 1.87, respectively. At the same time, in the whole country, the turnover of pathologic pregnancy beds decreased (by 1.0% and 0.38).

When analyzing the efficiency of bed usage, including obstetric hospitals, the key indicator is the average bed downtime (downtime per one turn). This indicator makes it possible to estimate how long, on average, a bed remained unoccupied between the discharge of one patient and the admission of the next. Bed downtime is directly related to the operation of the pathologic pregnancy bed and the average number of treated pregnant women. As the study showed, the five-year average of pathologic pregnancy bed downtime in the megalopolis was 2.28 days, which was lower than the national average by 7.4% or 0.17 days and the federal district average by 1.8% or 0.04 days, respectively. Evaluation of the dynamics of bed downtime revealed that, both in the country as a whole and in the NWFD and St. Petersburg, the indicators by 2022 increased compared to the 2018 level. However, if the growth in the megalopolis was 27.3% or 0.74 days, then in the federal district it was more noticeable – 38.3% or 1.01 days. At the same time, the average downtime for the studied period in the whole country decreased less significantly – 9.2% or 0.17 days.

It was revealed that the average pathologic pregnancy bed downtime in St. Petersburg throughout the study period did not exceed the recommended values for obstetric beds of 2.5-3.0 days [104]. In 2018, 2019 and 2021, this indicator was even lower than the specified range.

Evaluation of the correlation between the incidence of women of childbearing age according to the XV class of ICD-10 diseases and the bed usage in the pathologic pregnancy departments in the period from 2018 to 2022 revealed a strong correlation only between incidence and the average length of stay of pregnant women in a pathologic pregnancy hospital in the Russian Federation (r_{xy}=0.93) and St. Petersburg (r_{xy}=0.71). In the North-Western Federal District, the correlation between these indicators was direct and moderate (r_{xy}=0.59). Though, the reducing incidence of pregnant women, women in labor and new mothers in the Russian Federation and megalopolis has a significant impact on reducing the average length of stay of pregnant women in a pathologic pregnancy bed.

Thus, the operation of pathologic pregnancy beds and the average length of stay of patients in St. Petersburg was lower than for the country and the Federal District, while the turnover of beds was higher. However, in the megalopolis, as in Russia and the North-Western Federal District, there was a decrease in these indicators, but with a more significant difference over a five-year period (by 15.1% to 20.0%, respectively), which was achieved by increasing the turnover of beds of this profile. Despite fluctuations in the indicators, bed downtime in the megalopolis increased as in Russia and NWFD as a whole, but the growth was less significant than in the federal district, but more significant than in the country as a whole (+27.3%). The average length of stay of pregnant women in the pathologic pregnancy department and the average downtime in the megalopolis did not exceed the recommended norms. Thus, despite the lower availability of pathologic pregnancy beds for women in the megalopolis, their operation is more efficient compared to the overall figures for the country and the federal district. Incidence of women during pregnancy, childbirth and the postpartum period does not have a significant impact on the average annual occupancy of a

pathologic pregnancy bed, its average downtime and turnover, but affects only the average length of stay of women in beds of this profile [50].

In the course of the study, the efficiency of usage of the PPD bedspace in obstetric hospitals of the 2nd and 3rd levels of St. Petersburg was analyzed. An assessment of the average length of stay of patients in PPDs revealed that pregnant women stayed an average of 1.4 times longer in Level 2 than in Level 3 obstetric hospitals in 2020-2022 (6.1 days vs. 4.5 days). The average length of stay of patients in MH PPDs has decreased, which amounted to 0.5 days or 8.0% over three years. PC PPDs also showed a decrease in this rate in 2022 from the 2020 level, which was more significant at 0.9 days or 18.4%. The average length of stay of patients in PPD bed in MHs and PCs is shown in Figure 4.4.

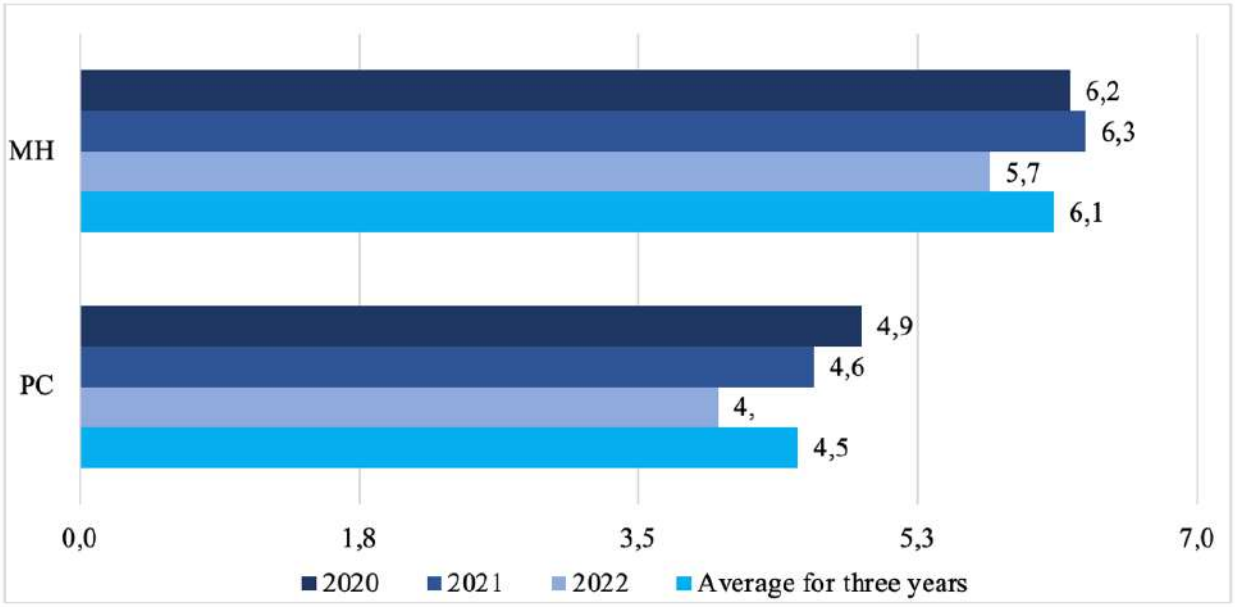

Figure 4.4 – Average length of stay of female patients in PPD beds in MH and PC (days)

Estimation of the average number of patients treated per year in a PPD bed revealed that the average bed turnover in MHs was 1.4 times less than in PCs (38.9 vs. 53.4). However, there was a trend of year-on-year increases in both MHs and PCs, which was particularly pronounced in PC PPDs, where the increase in 2022 was 1.8 times. PPD bed turnover in MHs and PCs is shown in Figure 4.5.

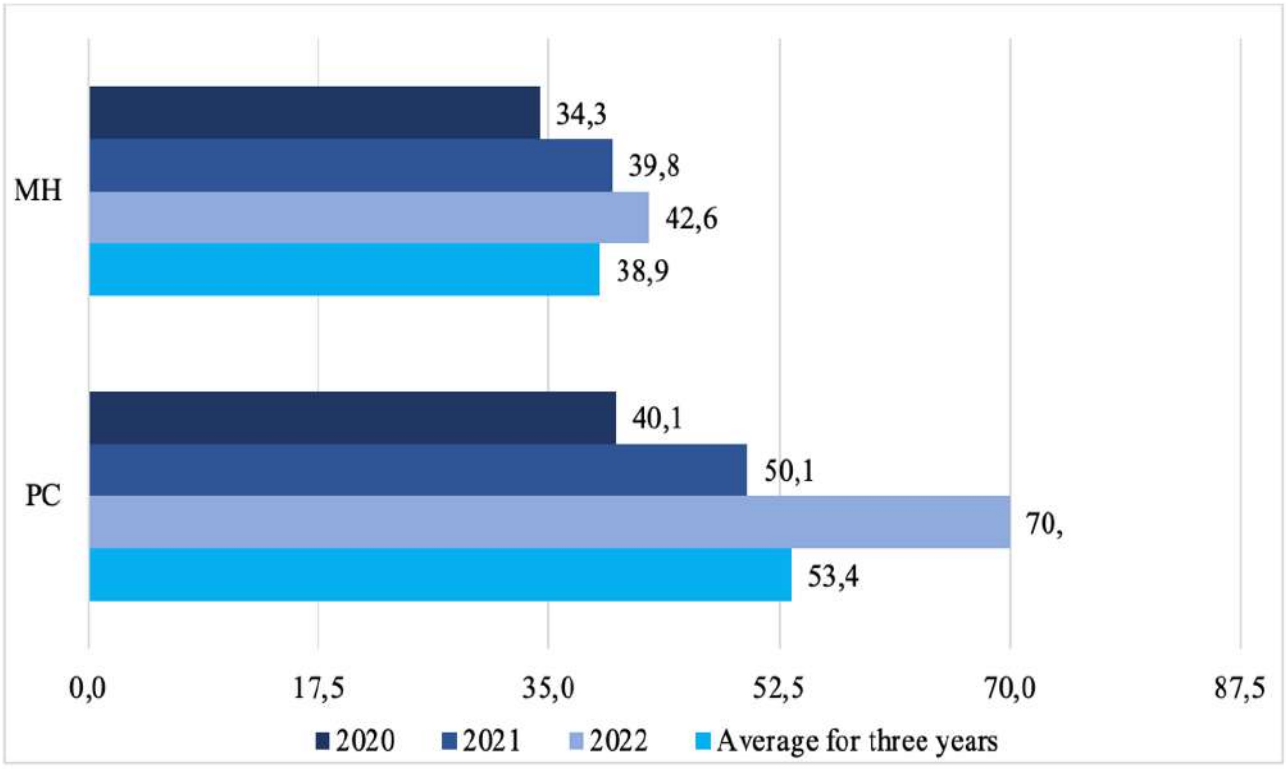

Figure 4.5 – PPD bed turnover in RDs and PCs

The conducted analysis showed that the average PPD bed operation in MHs and PCs during the study period was almost the same (235.5 and 236.3 days, respectively). PPD bed operation in MHs and PCs is shown in Figure 4.6.

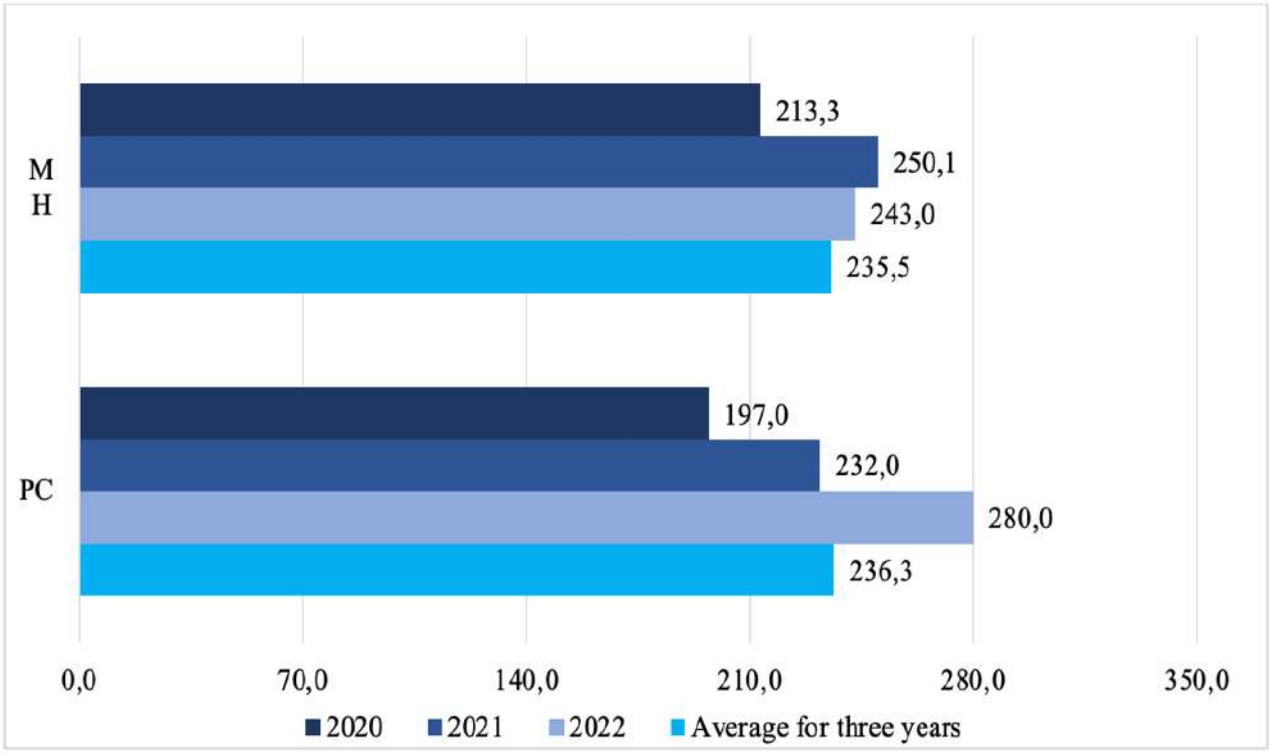

Figure 4.5 – PPD bed operation in RDs and PCs (days)

At the same time, the longest duration of PPDs bed operation was in 2021, when the increase by 2020 amounted to 36.8 days or 14.7%, followed by a decrease in 7.1 days or 2.8%. In general, over three years, MHs bed operation increased by 29.7 days or 12.2%. PC PPDs bed operation increased annually between 2020 and 2022, with an annualized increase of 35.0 days or 15.1% in 2021 and 48.0 days or 17.1% in 2022. In general, over the three years, the increase in bed operation was 1.4 times (83.0 days or 29.6%).

An assessment of the average PPDs bed downtime at different levels of obstetric hospitals revealed that there was an annual decrease in bed downtime. It was found that the three-year average downtime in MHs was 1.3 times higher than in PCs. In 2020, in both MHs and PCs, the average bed stay exceeded 4 days. Then, in MHs, bed downtime decreased by 1.51 days or 34.3% in 2021, decreased by 0.05 days or 1.7% in 2022, and the three-year total decrease was 1.6 days or 35.3%. In PC, the decrease in 2021 was 1.57 days or 37.4%, in 2022 was 1.42 days or 54.0%, and overall over the three years, downtime decreased by 2.99 days or 71.2%. Average PPDs bed downtime in MHs and PCs is presented in Figure 4.7.

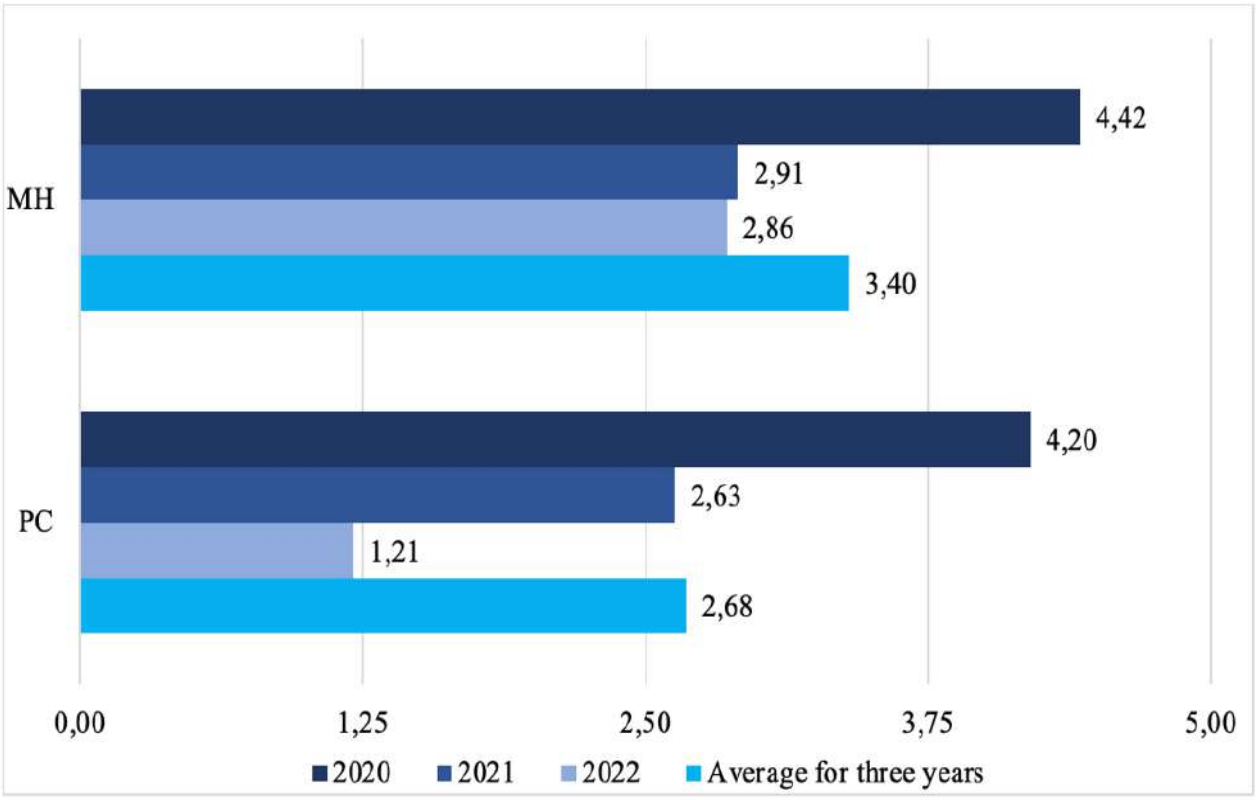

Figure 4.7 – Average PPD bed downtime in MHs and PCs (days)

The efficiency of bed operation in PPDs of Level 2 and Level 3 obstetric hospitals was achieved in different ways: in MHs, this was ensured through longer bed stays with fewer admitted pregnant women; in PDs due to shorter admission periods with a larger number of patients, which made it possible to achieve optimal downtime for obstetric beds.

4.3. Structure of obstetric pathology and performance indicators of pathologic pregnancy departments of the 2d and 3d level obstetric hospitals

According to Order No. 1130n [107], pregnant women who belong to the low and intermediate obstetric risk group are admitted to MHs that are classified as Level 2 obstetric hospitals. Pregnant women of a high risk group are transferred from the 2nd to the 3rd level PCs. The main obstetric pathologies for which pregnant women are admitted to PPDs of the 2d level obstetric hospitals are: mitral valve prolapse without hemodynamic disorders; compensated diseases of the respiratory, endocrine and digestive systems, as well as visual organs; overpregnancy; large fetus; I-II degree pelvis esophageal narrowing; breech presentation; history of stillbirth; uterine scar in the absence of signs of scar failure for scheduled CS; after infertility treatment, including with the use of assisted reproductive technologies (ART); preterm labor at the gestational age of 34-36 weeks; moderate preeclampsia, etc.

It was found (Table 4.2) that in the structure of obstetric pathology of St. Petersburg MH PPD patients, the threat of pregnancy termination significantly prevailed, which averaged 43.5% in 2020-2022, but tended to decrease (-8.5%; $t=2.4$ ($p<0.05$).

Table 4.2 – Structure of obstetric pathology of St. Petersburg MH PPD patients in 2020-2022 (% of total)

Type of pathology	ICD code	2020	2021	2022	Average for three years	Difference between 2020 and 2022 (%)	Difference between 2020 and 2022 t (p)
Renal pathology	O23.0	11.5	10.4	10.8	10.9	-6.1	0.7 (>0.1)
Swelling of pregnant women (pregnancy edema)	O10-O12	7.3	9.0	9.4	8.6	+22.3	2.4 (<0.05)
Threatened miscarriage	O20.0, O47.0	45.7	42.1	41.8	43.2	-8.5	2.5 (<0.05)
Pelvic presentation	O32.1	2.3	1.8	1.7	1.9	-26.1	1.3 (>0.05)
Moderate preeclampsia	O14	6.8	4.9	6.3	6.0	-7.4	0.6 (>0.1)
Uterine scar	O34.2	6.9	6.1	6.4	6.5	-7.2	0.6 (>0.1)
Placental insufficiency	O43.8	1.2	1.7	2.0	1.6	+40.0	2.0 (<0.05)
ARVI	O98.5	1.3	1.5	2.4	1.7	+45.8	2.6 (<0.05)
Precursors to labor	O47.1	10.3	14.1	11.8	12.1	+12.7	1.5 (>0.05)
Premature rupture of membranes	O42	5.2	6.8	5.0	5.7	+3.8	0.3 (>0.1)
Other	-	1.5	1.6	2.4	1.8	+37.5	2.1 (<0.05)
Total	-	100.0	100.0	100.0	100.0	-	-

Precursors to labor (11.8%) ranked second, while renal pathology (10.9%) ranked third. In addition, pregnancy edema, proteinuria and hypertensive disorders during pregnancy, delivery and postpartum period occupy a significant proportion and averaged 8.6%. It was found that during the three years studied, the proportion of acute respiratory infections (+45.8%; t=2.6 ($p<0.05$), placental insufficiency (+40.0%; t=2.0 ($p<0.05$) and pregnancy edema (+22.2%; t=2.4 ($p<0.05$) increased statistically significantly and the proportion of threatened abortion (-8.5%%; t=2.5 ($p<0.05$) decreased. In addition, there was an increase in labor precursors (+12.7%) and premature rupture of membranes (+3.8%) and a decrease in pelvic presentation (-26.1%), renal pathology (-6.1%), moderate preeclampsia (-7.4%), and uterine scar (-7.2%), but the change in these parameters was not statistically significant [70].

Obstetric hospitals of the 3rd level are focused on round-the-clock admission of pregnant women with various obstetric and somatic pathologies: gestosis of varying severity; threatened preterm labor, with ultrasound and clinical manifestations of cervical insufficiency of varying severity, including prolapse of the fetal bladder (isthmic-cervical insufficiency); placenta previa and ingrowth; uterine scar; uterine

myoma; pregnant women with fetal malformations; multiple pregnancies; GDM on diet and insulin therapy; cholestatic hepatosis; pregnant women with immune and non-immune fetal hydrocele; pregnant women with diseases of the cardiovascular system, kidneys, hereditary thrombophilia, obesity, varicose veins, thyroid disease, etc. [153].

As the study showed, the structure of obstetric pathology of PC patients differed significantly from the structure of obstetric pathology of MH patients. The first rank in PC PPDs belonged to GDM, with an average of 19.3% in 2020-2022 (Table 4.3). Pregnancy anemia ranked second (16.8%), uterine scar was third (14.5%), and congenital anomalies (malformations), deformities, and chromosomal abnormalities ranked fourth (10.3%). It was found that the proportion of threatened miscarriage was 4.7 times less frequent in PCs than in MHs ($t=27.7$; $p<0.01$), uterine scar 2.2 times ($t=7.9$; $p<0.01$) and 2.7 times more frequent placental insufficiency ($t=4.7$; $p<0.01$).

Table 4.3 – Structure of obstetric pathology of St. Petersburg PC PPD patients in 2020-2022 (% of total)

Type of pathology	ICD code	2020	2021	2022	Average for three years	Difference between 2020 and 2022 (%)	Difference between 2020 and 2022 t (p)
Swelling of pregnant women (pregnancy edema)	O10-O12	7.6	10.4	6.3	8.1	-17.1	1.4 (>0.05)
Threatened miscarriage	O20.0, O47.0	11.1	9.8	6.8	9.1	-38.7	4.1 (<0.01)
Multiple pregnancies	O30	3.3	3.2	2.8	3.1	-15.2	0.8 (>0.1)
Preeclampsia of moderate severity and severe	O14	3.2	3.1	2.9	3.1	-9.4	0.6 (>0.1)
Uterine scar	O34.2	14.4	15.0	14.2	14.5	-1.4	0.2 (>0.1)
Placental insufficiency	O43.8	2.3	5.5	4.7	4.3	+51.1	3.7 (<0.01)
Anemia of pregnancy	O99.0	16.3	14.2	19.9	16.8	+18.1	2.6 (<0.05)
Congenital malformation (CM)	Q00-Q99	12.2	10.0	9.1	10.3	-25.4	2.8 (<0.05)
Placental previa	O44.0	3.1	2.6	2.8	2.8	-9.7	0.5 (>0.1)
GDM	O24.4	17.9	17.3	22.3	19.3	+19.7	3.0 (<0.05)
ICI	O34.3	3.6	3.9	3.2	3.6	-11.1	0.6 (>0.1)
Other	-	4.8	5.1	5.0	5	+4.0	0.3 (>0.1)
Total	-	100.0	100.0	100.0	100.0	-	-

It was revealed that in PCs the proportion of placental insufficiency (+51.1%; $t=3.7$ ($p<0.01$), GDM (+19.7%; $t=3.0$ ($p<0.05$) and anemia of pregnancy (+18.1%; $t=2.6$ ($p<0.05$) significantly increased by 2022 to the 2020 level, and the specific

weight of threatened miscarriage (-38.7%; t=4.1 (p<0.01) and CMs (-25.4%; t=2.8 (p<0.05) decreased. At the same time, the proportion of pregnancy edema (-17.1%), multiple pregnancy (-15.2%), ICI (-11.1%), placental previa and moderate to severe preeclampsia (-9.7% and -9.4%, respectively) decreased during the study period, but changes in the values did not reveal statistical significance.

A comparative assessment of the movement of MH and PC PPDs patients revealed significant differences (Tables 4.4 and 4.5).

Table 4.4 – MH PPD patient movement in St. Petersburg in 2020-2022 (% of total)

	2020	2021	2022	Average for three years	Difference between 2020 and 2022 (%)	Difference between 2020 and 2022 t (p)
Treated and discharged	67.1	65.7	63.3	65.4	-5.7	3.1 (<0.05)
Transfers, including	4.4	3.5	3.6	3.8	-18.2	1.6 (>0.05)
- internal	1.7	1.8	1.3	1.6	-23.5	1.3 (>0.05)
- external	2.7	1.7	2.3	2.2	-14.8	1.0 (>0.05)
Delivery	28.5	30.9	33.1	30.8	+13.9	4.1 (<0.01)
Total	100.0	100.0	100.0	100.0	-	-

Table 4.4 shows that about two-thirds of the patients (three-year average 65.4%) were treated and discharged in MH PPDs, 3.8% were transferred and 30.8% of the patients had their delivery in the obstetric inpatient unit of this maternity hospital. In 2020-2022, there was a statistically significant decrease in the proportion of treated and discharged pregnant women (-5.7%; t=3.1 (p<0.05) and an increase in the proportion of patients whose admission to PPDs ended in delivery (+13.9%; t=4.1 (p<0.01).

The opposite trend was observed in PCs: the proportion of treated and discharged pregnant women amounted to a smaller proportion of admission outcomes (24.7% on average) and a larger proportion of deliveries (79.0%).

Table 4.5 – PC PPD patient movement in St. Petersburg in 2020-2022 (% of total)

Hospital admission outcome	2020	2021	2022	Average for three years	Difference between 2020 and 2022 (%)	Difference between 2020 and 2022 t (p)
Treated and discharged	23.6	26.1	24.3	24.7	+2.9	0.4 (>0.1)
Delivery	76.4	73.9	75.7	79.0	-0.9	0.4 (>0.1)
Total	100.0	100.0	100.0	100.0	-	-

In contract to MHs, where there was a significant difference between the indicators in 2020 and 2022, which were largely due to quarantine measures associated with the new Coronavirus pandemic, there was no significant difference between the two in the PC. The proportion of pregnant women treated and discharged increased from 23.6% to 24.3% (+2.9%), while the proportion of patients whose admission to PPDs ended in delivery decreased from 76.4% to 75.7% (-0.9%).

An important difference between MH and PC PPDs is the availability of transfer of patients with obstetric, somatic pathology and infectious diseases to Level 2 obstetric hospitals according to their profile, as well as to perinatal centers (Figure 4.8). The most frequent patients of MH PPDs were routed to Level 3A PCs, the proportion of such patients averaged 52.6% and increased 1.4 times by 2022, compared to 2020, with an annual increase ($t=1.7$; $p>0.05$). At the same time, the proportion of those transferred to Level 3B PCs and other obstetric hospitals in the city decreased by 1.3 and 1.9 times, respectively. The maximum proportion of pregnant women transferred to Level 3B PCs was during quarantine restrictions.

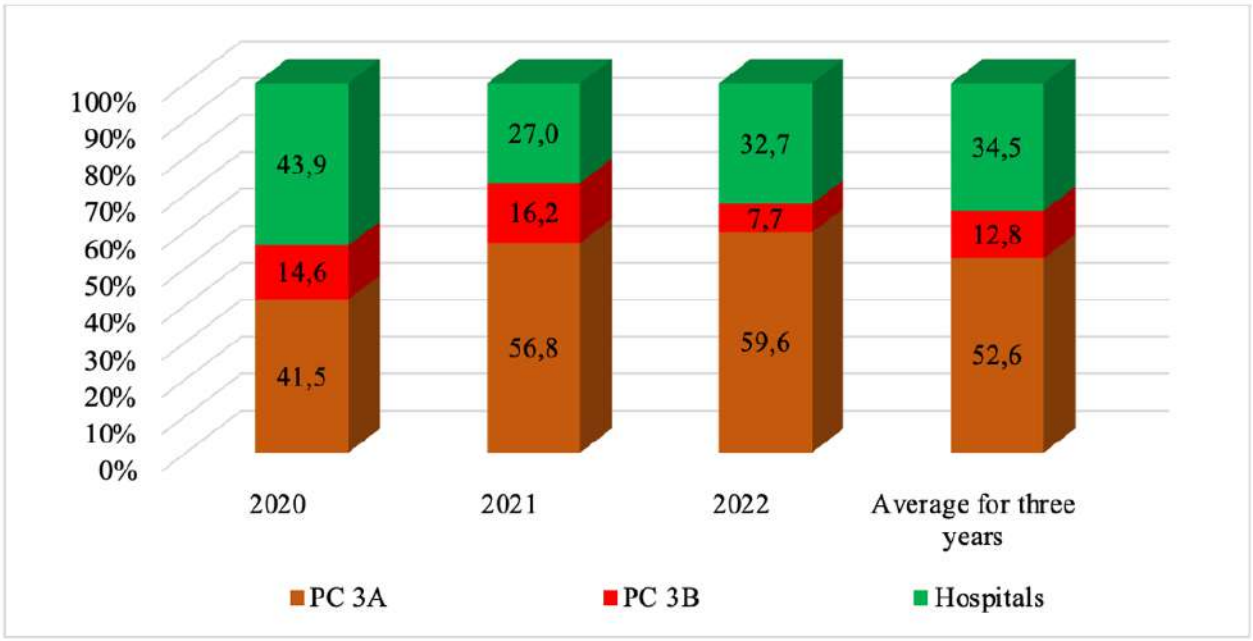

Figure 4.8 – Structure of external transfers to St. Petersburg MHs in 2020-2022 (% of total)

As discussed earlier, the proportion of patients whose hospital admission to PPDs ended in delivery was 2.6 times higher in PC PPDs and had statistically significant differences from MH PPDs ($t=25.0$; $p<0.01$). In order to determine the medical and organizational peculiarities of medical care at different levels of obstetric hospitals, the distribution of PPD patients by type of delivery was assessed (Figures 4.9 and 4.10).

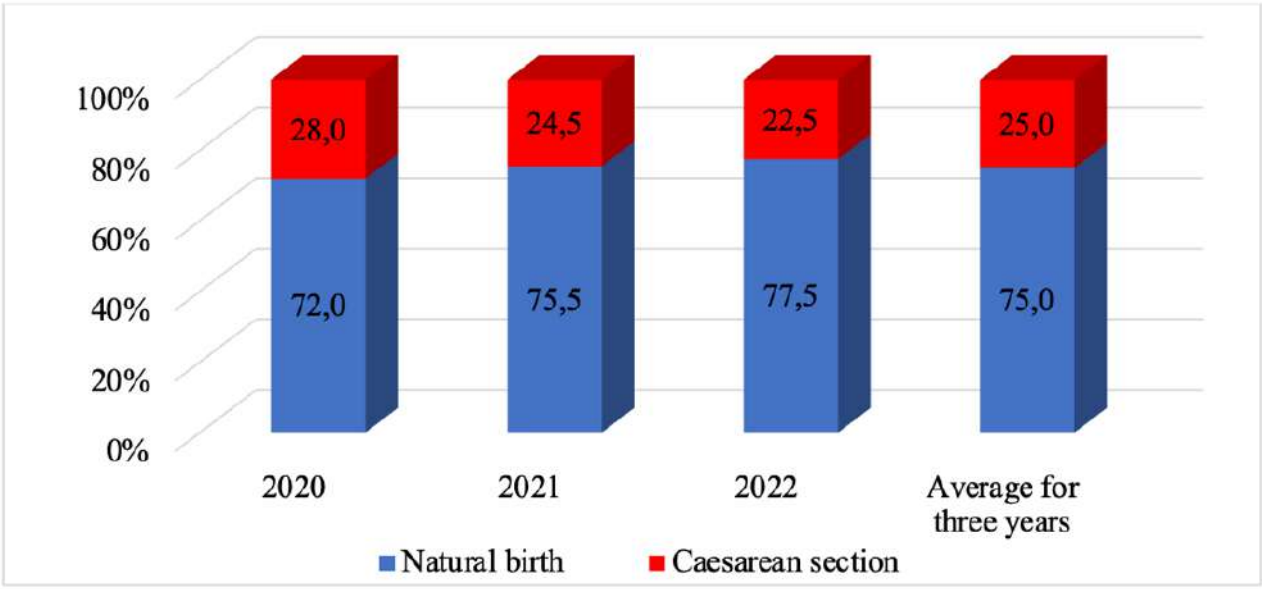

Figure 4.9 – Distribution of PPD patients by type of delivery in MH (% of total)

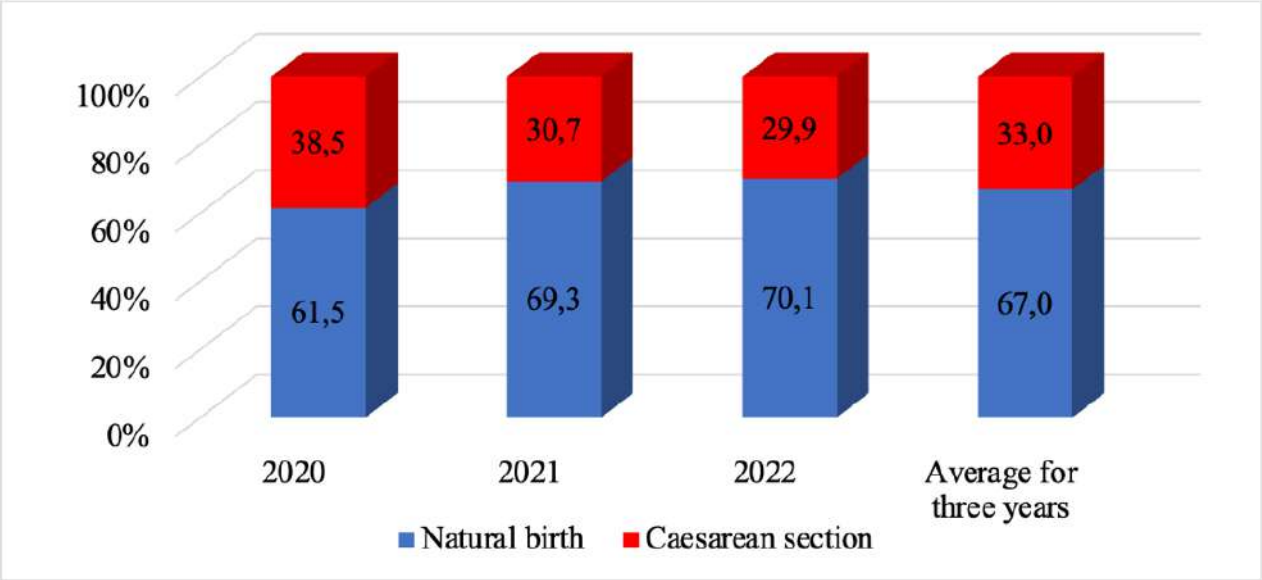

Figure 4.10 – Distribution of PPD patients by type of delivery in PC (% of total)

It was found that in both MHs and PCs, PPD patients had natural childbirth in the majority of cases. But the proportion of natural births in MH was 10.7% higher on average for 2020-2022 ($t=4.0$; $p<0.01$). Consequently, in PC after patients' admission, delivery was more frequently performed by CS. To compare the organization of labor in PPD patients with this type of delivery, a comparative assessment of the distribution of PPD patients according to the form of CS was carried out. It was revealed that emergency CS was most often used in MHs, and planned CS in PCs (Figures 4.11 and 4.12). On average, emergency CS was performed 7.4 times more frequently in MHs during the three study years (66.9% vs. 9.0%; $t=34.4$; $p<0.01$). Meanwhile, the increase in emergency CS in 2022 to 2020 levels in MHs was 8.7% ($t=3.0$; $p<0.05$). And in PCs, the use of emergency CS decreased 2.3-fold ($t=5.3$; $p<0.01$).

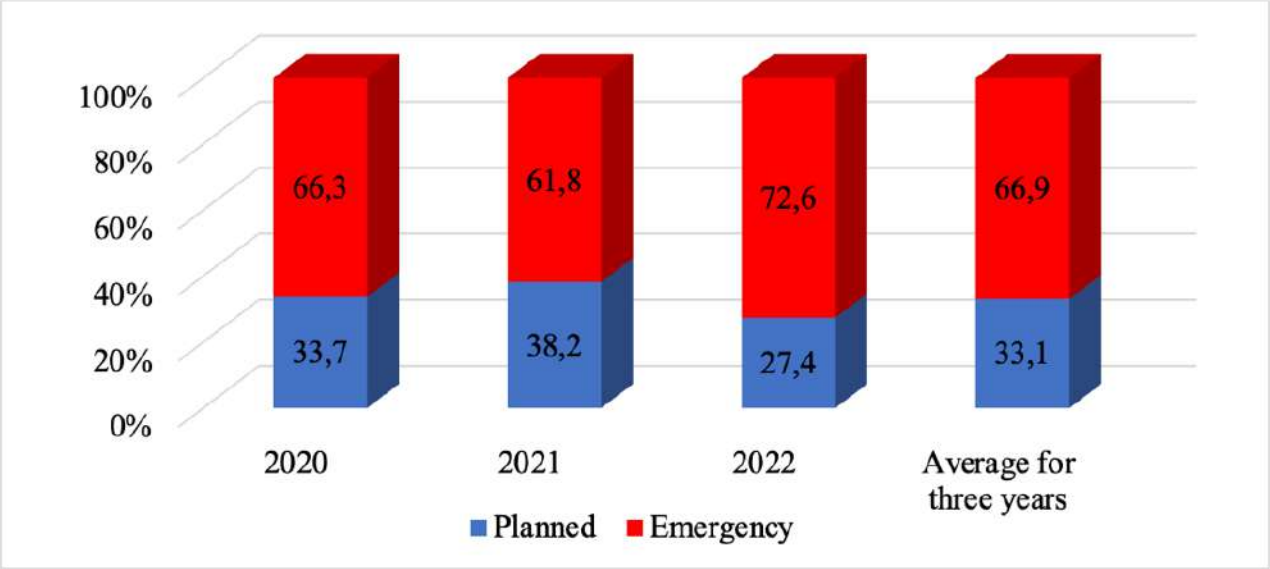

Figure 4.11 – Distribution of PPD patients by CS in MHs (% of total)

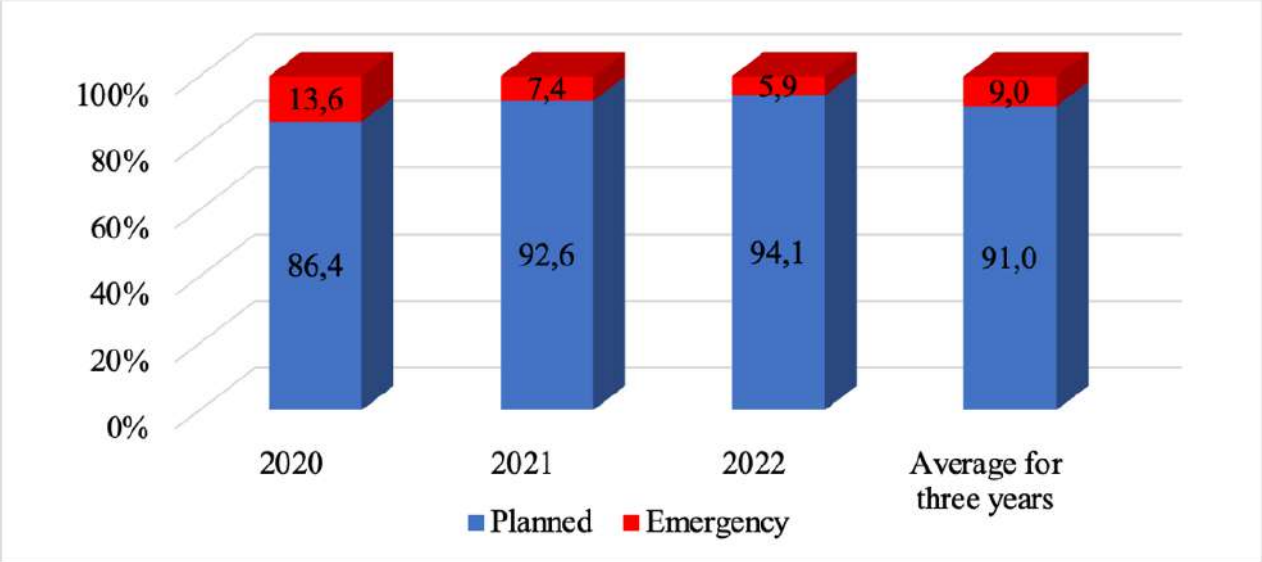

Figure 4.12 – Distribution of PPD patients by CS in PCs (% of total)

Thus, there are significant differences in the structure of obstetric pathology between patients of obstetric hospitals in MHs and PCs, both in nosologic forms and in the severity of the condition of pregnant women, which is largely explained by the level of obstetric hospitals. There are significant differences in the outcomes of hospital admission of female patients: in MH PPDs, discharge after treatment is significantly more often the outcome of admission, while in PC PPDs it is childbirth. Although natural delivery was the most common mode of delivery for PPD patients in both MHs and PCs, the proportion of CS in PCs was higher and more frequent than in MHs, the use of CS there was planned.

4.4. Organization of medical councils and their role in providing specialized medical care to pregnant women

The provision of medical care to women during pregnancy, childbirth and the postpartum period is based on the organization of routing of pregnant women, which must be carried out strictly in accordance with the current regulatory framework at the regional level within the framework of the order of the Ministry of Health of the Russian Federation. The main role in this issue is assigned to PCs, whose activities made it possible to concentrate pregnant women of high obstetric and perinatal risk in one medical organization. Timely routing of pregnant women with severe complications of the gestational process and extragenital pathology to the PC PPDs and the use of modern innovative technologies made it possible to significantly reduce maternal, perinatal and infant mortality. A significant role in overcoming this problem belongs to medical councils, during which a decision on the admission of a pregnant woman to a perinatal center is made. This aspect is one of the functions of obstetrician-gynecologists in the pregnancy pathology departments of Level 3 obstetric hospitals. The composition of the council is directly related to the pregnancy or fetal condition that prompted it. In the course of the medical council, doctors determine the diagnosis, prognosis and tactics of further medical examination and treatment of the pregnant woman on the basis of the assessment of her health condition, and determine the expediency of her referral for admission to an obstetric hospital of the 3rd level. The decision of the medical council is recorded in the protocol, which is signed by all participants of the council.

The research demonstrated that most of the pregnant women for whom the medical council was organized belonged to the group of 30-39 years (63.6%) and the average age of the pregnant woman was 31.8±0.24 years. The proportion of pregnant women under 25 years was 10.2%, 25-34 years – 55.3% and 35 years and older – 34.5%. The average age of a pregnant woman in the age group under 25 years was 21.7±0.32 years, 25-34 years – 30.2±0.15 years, 35 years and older – 37.4±0.16 years.

It was found that more than half of the pregnant women, regardless of age group, lived permanently in St. Petersburg (Table 4.6). Among all pregnant women for whom

a council was held, 37.5% were residents of the Leningrad region, the proportion of whom was highest in the 25-34 age group (40.4%). Only 8.9% of pregnant women lived in other regions, while the highest percentage of such women was observed among pregnant women aged 35 and older (11.2%), and the lowest among young patients under 25 years (3.8%).

Table 4.6 – Distribution of pregnant women by place of residence by age (% of total)

Region	Up to 25 years old	15-34 years old	35 years and older	All women
St. Petersburg	57.7	51.2	56.2	53.6
Leningrad region	38.5	40.4	32.6	37.5
Other regions	3.8	8.4	11.2	8.9
Total	100.0	100.0	100.0	100.0

* - statistically significant differences between the indicators in groups ($p<0.05$)
# - statistically significant differences between the indicators in the group ($p<0.05$)

Analysis of the data obtained during the research allows us to conclude that among all pregnant women for whom medical councils were held, 93.4% were 28 weeks or more pregnant and only 6.6% were 14-27 weeks pregnant (Table 4.7). The average gestational age was 33.1±0.15 weeks. It was found that the highest proportion of pregnant women for whom council was conducted in the second trimester was among women 25-34 years old (7.7%), and the lowest proportion was among pregnant women under 25 years old (3.8%).

Table 4.7 – Distribution of pregnant women by gestational age (% of total)

Gestation period (weeks)	Up to 25 years old	15-34 years old	35 years and older	All women
I trimester (up to 14 weeks)	-	-	-	-
II trimester (14 - 27 weeks)	3.8 #	7.7 #	5.6 #	6.6 #
III trimester (28 weeks and more)	96.2 #	82.8 #	94.4 #	93.4 #
Total	100.0	100.0	100.0	100.0

* - statistically significant differences between the indicators in groups ($p<0.05$)
# - statistically significant differences between the indicators in the group ($p<0.05$)

An assessment of the distribution of pregnant women according to the presence of fetal malformations showed that only 8.1% of women for whom a council was held had no malformations (Figure 4.13). Although there was no statistically significant

difference, the highest proportion of women with fetal malformations was in the age groups under 25 years (92.3%) and 35 years and older (92.1%).

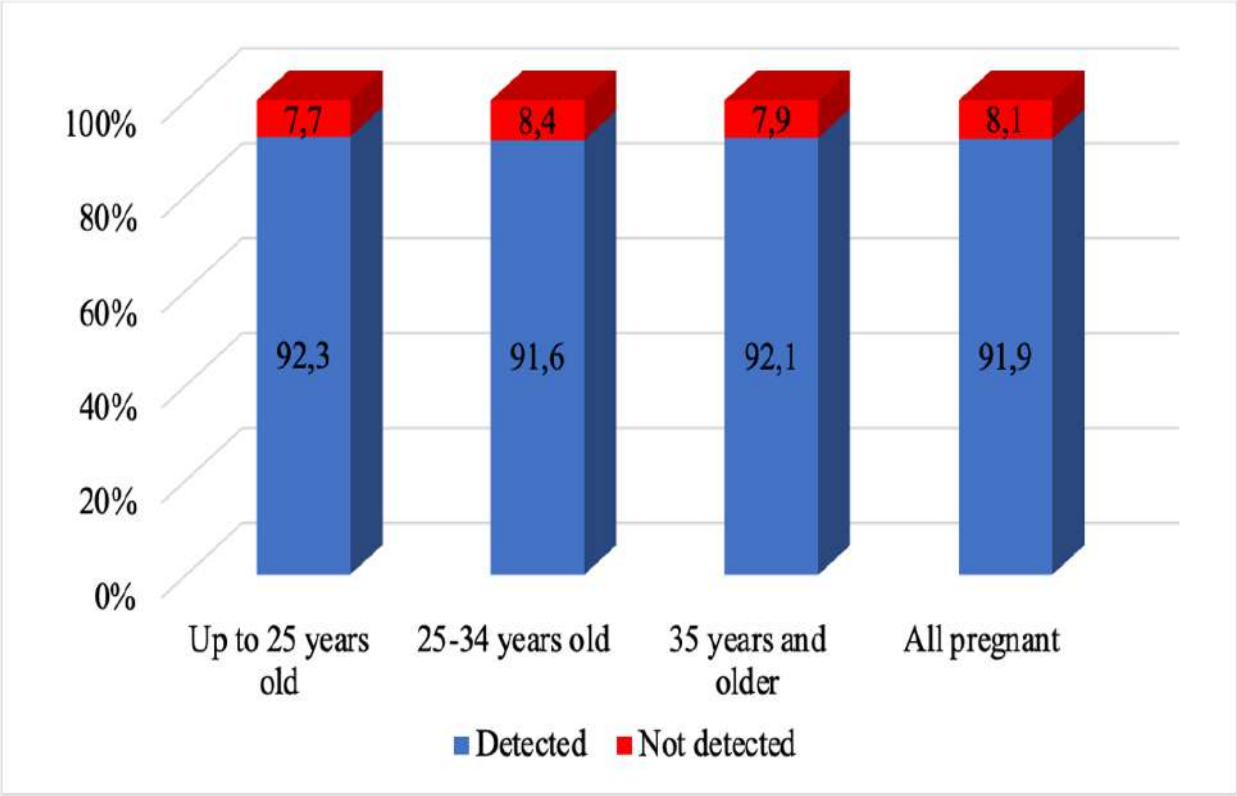

Figure 4.13 – Distribution of pregnant women by presence of fetal malformations by age (% of total)

An assessment of the structure of fetal abnormalities showed (Table 4.8) that the most frequent were malformations of the urinary and cardiovascular systems (hereafter – CVS) (32.7% and 25.3%, respectively). Less frequent were abdominal mass formation (10.8%), gastrointestinal tract malformations (10.8%), central nervous system (8.0%), and others. Women under 25 years had a higher proportion of GIT and pulmonary malformations (16.7% and 6.7%) than other age groups; women aged 25-34 years had urinary system (34.8%) and abdominal masse formation (12.7%); women aged 35 and older had CVS and CNS (30.2% 9.3%, respectively) and maxillofacial malformations (2.3%) [77].

Table 4.8 – Structure of fetal abnormalities in pregnant women depending on age (%)

Type of pathology	Up to 25 years old	15-34 years old	35 years and older	All women
Urinary system	26.9	34.8	31.4	32.7
CVS	26.5	21.7	30.2	25.3
CNS	6.7	7.5	9.3	8.0
GIT	16.7	9.0	7.0	9.2
Abdominal mass formation	10.0	12.7	8.1	10.8
Pulmonary malformation	6.7	5.2	3.5	4.8
Maxillofacial malformations	0.0	0.0	2.3	0.8
Other	6.7	9.0	8.1	8.4
Total	100.0	100.0	100.0	100.0

* - statistically significant differences between the indicators in groups ($p<0.05$)

- statistically significant differences between the indicators in the group ($p<0.05$)

The study showed that in the predominant majority of cases the prognosis for fetal life was favorable (91.5%), in 8.1% of cases it was doubtful and in 0.4% it was unfavorable, which was established in pregnant women 25-34 years old. The highest proportion of doubtful prognosis was in pregnant women under 25 years (15.4%) and favorable prognosis was in those aged 25-34 years (93.0%). The distribution of pregnant women by fetal prognosis for life is given in Table 4.9.

Table 4.9 – Distribution of pregnant women by fetal prognosis for life according to age (% of total)

Prognosis	Up to 25 years old	15-34 years old	35 years and older	All women
Favorable	84.6 #	93.0 #	91.0 #	91.5 #
Doubtful	15.4 #	6.3 #	9.0 #	8.1 #
Unfavorable	-	0.7 #	-	0.4 #
Total	100.0	100.0	100.0	100.0

* - statistically significant differences between the indicators in groups ($p<0.05$)

- statistically significant differences between the indicators in the group ($p<0.05$)

It was found that the proportion of favorable prognoses for fetal health was lower than the proportion of favorable prognoses for fetal life (86.1% vs. 91.5%; $t=2.5$ ($p<0.05$) and higher was the proportion of doubtful (12.4% vs. 8.1%; $t=2.3$ ($p<0.05$) and unfavorable prognoses (0.8% vs. 0.4%; $t=0.83$ ($p>0.1$). The highest proportion of

doubtful prognosis was also in pregnant women under 25 years (15.4%) and favorable prognosis was in those aged 25-34 years (87.4%). The distribution of pregnant women by prognosis for fetal health is presented in Table 4.10.

Table 4.10 – Distribution of pregnant women by fetal prognosis for health according to age (% of total)

Prognosis	Up to 25 years old	15-34 years old	35 years and older	All women
Favorable	84.6 #	87.4 #	86.5 #	86.8 #
Doubtful	15.4 #	11.2 #	13.5 #	12.4 #
Unfavorable	-	1.4 #	-	0.8 #
Total	100.0	100.0	100.0	100.0

* - statistically significant differences between the indicators in groups ($p<0.05$)
# - statistically significant differences between the indicators in the group ($p<0.05$)

Analysis of the routing of pregnant women revealed that only 11.3% of pregnant women were referred to the maternity hospital for delivery at their place of residence because they did not need a higher level of obstetric admission. PC delivery was indicated only for 88.7% of women. It was found that the most frequent need for admission for delivery to the Level 3 obstetrics organization was among pregnant women under 25 years (92.3%), and less frequently among women aged 35 and older (87.6%). The distribution of pregnant women by routing according to age is presented in Table 4.11.

Table 4.11 – Distribution of pregnant women by routing according to age (% of total)

Routing	Up to 25 years old	15-34 years old	35 years and older	All women
Delivery in PC	92.3 #	88.8 #	87.6 #	88.7 #
Delivery at the place of residence	7.7 #	11.2 #	12.4 #	11.3 #
Total	100.0	100.0	100.0	100.0

* - statistically significant differences between the indicators in groups ($p<0.05$)
# - statistically significant differences between the indicators in the group ($p<0.05$)

Analysis of the results of the medical councils showed that 98.4% of women received recommendations for natural delivery and only 1.6% of pregnant women were indicated for CS delivery (Table 4.12). The proportion of indications for CS delivery decreased with increasing age. While women under 25 years were recommended for

CS in 3.8% of cases, all pregnant women aged 35 and older were indicated for natural delivery (100.0%).

Table 4.12 – Distribution of pregnant women by age-specific recommendations for delivery (% of total)

Delivery	Up to 25 years old	15-34 years old	35 years and older	All women
Natural childbirth	96.2 #	97.9 #	100.0	98.4 #
CS	3.8 #	2.1 #	-	1.6 #
Total	100.0	100.0	100.0	100.0

* - statistically significant differences between the indicators in groups ($p<0.05$)
# - statistically significant differences between the indicators in the group ($p<0.05$)

Evaluation of treatment recommendations after childbirth revealed that surgical treatment was indicated for 10.9% of pregnant women, and 90.1% of women were recommended for examination (Table 4.13).

Table 4.13 – Distribution of pregnant women by treatment recommendations after childbirth, depending on age (% of total)

Treatment	Up to 25 years old	15-34 years old	35 years and older	All women
Examination	84.6 #	88.0 #	93.3 #	90.1 #
Surgical	15.4 #	12.0 #	6.7 #	10.9 #
Total	100.0	100.0	100.0	100.0

* - statistically significant differences between the indicators in groups ($p<0.05$)
# - statistically significant differences between the indicators in the group ($p<0.05$)

Surgical treatment was most commonly recommended for pregnant women under 25 years (15.4%) and decreased with increasing age of the woman: 12.0% in pregnant women 25-34 years and 6.7% in pregnant women aged 35 and older.

Thus, the medical council was most frequently held for routing pregnant women aged 30-39 years (63.6%) at an average gestational period of 33.1±0.15 weeks with identified fetal pathology (91.9%). Delivery at PCs was indicated in 88.7% of women. Only 1.6% of pregnant women were indicated for CS delivery and 10.9% of pregnant women were recommended operational treatment after delivery. Pregnant women under 25 years had a higher incidence of fetal pathology than other age groups, a higher proportion of GIT and pulmonary malformations, a higher proportion of doubtful prognoses for the child's life and health, more frequent need for CS delivery at PCs, and more frequent recommendations for surgical treatment after birth. Pregnant women

aged 25-34 years were more likely to have fetal urinary malformations (34.8%) and abdominal masses (12.7%) and had the highest proportion of favorable prognoses for fetal life and health. Pregnant women aged 35 and older were more likely to have fetal CVS (30.2%) and CNS (30.2%) malformations, and they were all recommended natural delivery and operational treatment after delivery.

Chapter 5. CHARACTERISTICS OF THE PATIENTS ADMITTED TO PATHOLOGIC PREGNANCY DEPARTMENTS AND THEIR SATISFACTION WITH THE PROVISION OF SPECIALIZED MEDICAL CARE

5.1. Medical and social characteristics of patients in pathologic pregnancy departments

When assessing the organization of specialized medical care for women during pregnancy, it is necessary to consider not only objective PPD indicators, but also factors that are determined by the medical and social characteristics of pregnant women and peculiarities of obstetric history of PPD patients. In addition, a comprehensive assessment cannot be carried out without analyzing patient satisfaction with the provision of medical care at the inpatient stage. It is advisable to start the assessment of social risk factors with age, which, together with gender and heredity, is among the uncontrollable ones. The study showed (Table 5.1) that the proportion of patients of early reproductive age in Level 2 obstetric hospitals was statistically significantly higher than in PCs (75.5% vs. 61.8%; t=6.2 (p<0.01).

Table 5.1 – Distribution of PPD patients in obstetric hospitals by age, marital status and education (% of total)

Characteristic	Level 2	Level 3	Visibility indicator (%)	T (p)
Age				
Up to 25 years old	16.3	13.0	20.2	2.1 (<0.05)
25-34 years old	59.2	48.8	17.6	4.8 (<0.01)
35 years and older	24.5	38.2	35.9	6.2 (<0.01)
Average age (M±m)	30.05±0.48	32.8±0.32	-	8.4 (<0.01)
Total	100.0	100.0	-	-
Marital status				
Registered marriage	84.4	76.7	9.1	4.1 (<0.01)
Civil marriage	10.1	12.4	18.5	1.6 (>0.1)
Not married	5.5	8.2	32.9	2.2 (<0.05)
Total	100.0	100.0	-	-
Education				
Higher/incomplete higher	58.3	69.3	15.9	5.1 (<0.01)
Secondary (general/special)	39.3	20.5	47.8	9.4 (<0.01)
Incomplete secondary	2.4	0.3	87.5	4.8 (<0.01)
Total	100.0	100.0	-	-

The proportion of patients aged 35 and older was significantly higher in PPDs of Level 3 obstetric hospitals (24.5% vs. 38.2; t=8.4 (p<0.01). The average age of PPD

patients in Level 2 obstetric hospitals also had statistically significant differences with that in PCs (30.05±0.48 vs. 32.8±0.32 years; t=8.4 (p<0.01). Evaluation of the distribution of PPD patients by marital status revealed that there were significantly more married pregnant women (84.4% vs. 76.7%; t=4.1 (p<0.01) and fewer unmarried women (5.5% vs. 8.2%; t=2.2 (p<0.05).

It was found that the proportion of female patients with secondary general/specialized education (39.3% vs. 20.5%; t=9.4 (p<0.01) and 8.0 times higher proportion with incomplete secondary education (3.4% vs. 0.3%; t=4.8 (p<0.01)) was 47.8% higher in MH PPDs. At the same time, there was a 15.9% higher proportion of female patients with higher/incomplete higher education in PCs (58.3% vs. 69.3%; t=5.1 (p<0.01).

It was found that there was no significant difference between the proportion of working female patients in MH and PC PPDs, nor was there any significant difference between the proportion of non-working female patients. In both groups, the proportion of working patients (worker, employee, entrepreneur) was statistically significantly higher than the proportion of patients who had no formal employment (housewife, unemployed, studying).

Table 5.2 – Distribution of PPD patients in obstetric hospitals by employment and source of payment for treatment (% of total)

Characteristic	Level 2	Level 3	Visibility indicator (%)	T (p)
Employment				
Employed	76.1	74.1	2.6	0,98 (>0,05)
Not employed	23.9	25.9	7.7	0,98 (>0,05)
Total	100.0	100.0	-	-
Source of payment for treatment				
MHI	87.6	91.7	4.5	2.8 (<0.05)
VHI	3.1	1.0	67.7	3.6 (<0.01)
Personal funds	9.3	7.2	22.6	1.7 (>0.05)
Total	100.0	100.0	-	-

The majority of PPD patients, both in MHs and in PCs, received medical care within the framework of mandatory health insurance. The proportion of such patients was statistically significantly higher in PC PPDs (91.7% vs. 87.6%; t=2.8 (p<0.05).

And the proportion of pregnant women whose treatment was paid for by voluntary health insurance (VHI) was 3.1 times higher in MH PPDs.

Thus, in comparison with PC PPDs, patients younger than 25 years old, married, with full and incomplete secondary education, and whose treatment was paid for by with MHI were treated in MH PPDs significantly more often. Pregnant women aged 35 and older, unmarried, with higher/incomplete higher education and with payment for the stay within the framework of VHI were more often treated in PC than in MH PPDs.

5.2. Anamnestic characterization of patients in pathologic pregnancy departments

Obstetric and gynecological history plays a huge role in the choice of treatment tactics for patients admitted to PPDs. As shown by copying data from record forms N111/u-20 "Individual medical record of pregnant women and new mothers", (Table 5.3), for MH PPD patients emergency admission was statistically significantly higher (65.6% vs. 34.4%), and for PC PPD patients it was planned (72.6% vs. 34.4%) (t=18.0 ($p<0.05$).

Table 5.3 – Distribution of PPD patients in obstetric hospitals by form of and method of hospital admission (% of total)

Characteristic	Level 2	Level 3	Visibility indicator (%)	T (p)
Form of admission				
Emergency	65.6	27.4	58.2	18.0 (<0.01)
Planned	34.4	72.6	52.6	18.0 (<0.01)
Total	100.0	100.0	-	-
Method of hospital admission				
By referral from an obstetrician-gynecologist (WCC)	49.5	60.2	17.8	4.7 (<0.01)
CCDS	38.2	3.1	65.7	25.3 (<0.01)
Self-referred	10.2	32.6	54.9	11.2 (<0.01)
Transfer from another medical organization	2.1	4.1	48.8	2.3 (<0.05)
Total	100.0	100.0	-	-

It was found that the average age of menstrual period in MH and PC PPD patients had no statistically significant differences (13.32±0.07 vs. 13.25±0.0 years; t=0.3

(p>0.1). There was also no significant difference when assessing the average age of sexual debut (18.05±0.12 vs. 18.39±0.11 years; 1.22 (p>0.05).

In both MH and PC PPD patients, the most common was first pregnancy and first delivery. However, the proportion of first-pregnant women was statistically significantly higher in MH PPD patients (42.0% vs. 35.7%; t=2.7 (<0.01). On average, MH PPD patients had 2.17±0.07 pregnancies and PC PPD patients had 2.41±0.06 (t=5.9 (p<0.01). At the same time, there was no statistically significant difference between the average number of deliveries in PPD patients of obstetric hospitals of Level 2 and 3 (1.81±0.02 and 1.75±0.04 deliveries; t=1.5 (p>0.1) [46, 52]. Thus, fewer pregnancies ended in delivery in PC patients compared to MH patients. The distribution of PPD patients in obstetric hospitals by number of pregnancies and deliveries is presented in Table 5.4.

Table 5.4 – Distribution of PPD patients in obstetric hospitals by number of pregnancies and births (% of total)

No.	Level 2	Level 3	Visibility indicator (%)	T (p)
Pregnancy				
First	42.0	35.7	15.0	2.7 (<0.01)
Second	26.8	28.6	6.3	0.9 (>0.1)
Third	15.3	17.4	12.1	1.2 (>0.1)
Fourth and more	16.0	18.3	12.6	1.3 (>0.1)
Average (M±m)	2.17±0.07	2.41±0.06	-	5.9 (<0.01)
Total	100.0	100.0	-	-
Delivery				
First	46.0	50.3	8.5	1.8 (>0.05)
Second	37.8	33.9	10.3	1.8 (>0.05)
Third	11.8	12.4	4.8	0.4 (>0.1)
Fourth and more	4.4	3.4	22.7	1.1 (>0.1)
Average (M±m)	1.81±0.02	1.75±0.04		1.5 (>0.1)
Total	100.0	100.0	-	-

Significant differences were found between MH and PC PPD patients in terms of medical history. The study showed that most of the patients of Level 3 obstetric hospital PPDs were significantly more likely to have somatic diseases (56.1% vs. 59.4%), hereditary diseases (44.4% vs. 37.6%), gynecological diseases (76.1% vs. 68.2%) and sexually transmitted diseases (STDs) (18.6% vs. 14.0%) compared to

patients of Level 2 obstetric hospital PPDs. Table 5.5 presents the distribution of PPD patients in obstetric hospitals in terms of medical history.

Table 5.5 – Distribution of PPD patients in obstetric hospitals in terms of medical history (% of total)

Characteristic	Level 2	Level 3	Visibility indicator (%)	T (p)
Somatic diseases				
Present	40.6	56.1	27.6	6.7 (<0.01)
Absent	59.4	43.9	26.1	6.7 (<0.01)
Total	100.0	100.0	-	-
Hereditary diseases				
Present	37.6	44.4	15.3	3.0 (<0.01)
Absent	62.4	55.6	10.9	3.0 (<0.01)
Total	100.0	100.0	-	-
Gynecological diseases				
Present	68.2	76.1	10.4	3.9 (<0.01)
Absent	31.8	23.9	24.8	3.9 (<0.01)
Total	100.0	100.0	-	-
STDs				
Present	14.0	18.6	24.7	2.6 (<0.01)
Absent	86.0	79.8	7.3	2.6 (<0.05)
Total	100.0	100.0	-	-

It was found that most of the female patients of MH and PC PPDs had ever been under regular medical check-up (Table 5.6). Statistically significant difference (t=2.1 ($p<0.05$)) between the proportion of those in PCs and MHs was revealed. It was lower (75.3% vs. 80.3%) among patients admitted to PC PPDs [51]. While the proportion of patients with pathology was higher, the share of those observed in medical organizations providing medical care in outpatient settings, such as polyclinics and antenatal clinics, was lower.

Table 5.6 – Distribution of PPD patients in obstetric hospitals by regular medical check-ups and gynecologic surgeries in anamnesis (% of total)

Characteristic	Level 2	Level 3	Visibility indicator (%)	T (p)
Subject to regular medical check-up				
Yes	80.3	75.3	6.2	2.1 (<0.05)
No	19.7	24.7	20.2	2.1 (<0.05)
Total	100.0	100.0	-	-
Gynecologic surgeries				
Present	24.2	31.7	-23.7	3.5 (<0.01)
Absent	75.8	68.3	-9.9	3.5 (<0.01)
Total	100.0	100.0	-	-

At the same time, the proportion of pregnant women who had gynecologic surgeries was significantly higher among PC patients (24.2% vs. 31.7%; t=3.5 (p<0.01). Thus, significant differences were found in the patients' medical history, both in terms of obstetric and gynecologic status and somatic health.

In order to assess the somatic incidence, an assessment of the structure of somatic pathology in the anamnesis of patients in obstetric hospitals was carried out, which is reflected in Table 5.7.

Table 5.7 – Structure of somatic pathology in the anamnesis of PPD patients in obstetric hospitals (%)

Disease	Level 2	Level 3	Visibility indicator (%)	T (p)
CVS	9.1	15.4	40.9	3.9 (<0.01)
Eye and its appendages	2.4	3.9	38.5	1.8 (>0.05)
Digestive system	23.2	20.4	12.1	1.5(>0.1)
Genitourinary system	25.0	8.3	66.8	10.9 (<0.01)
Obesity	7.9	14.1	44.0	4.1 (<0.01)
Thyroid gland	4.9	4.9	3.9	-
DM	1.8	5.8	69.0	4.0 (<0.01)
Musculoskeletal system	7.3	10.7	30.5	2.4 (<0.05)
Skin and connective tissue	1.8	1.5	16.7	0.5 (>0.1)
Respiratory system	3.7	5.8	56.8	2.0 (<0.05)
Other	12.8	9.2	28.1	2.6 (<0.01)
Total	100.0	100.0	-	-

PC patients were found to have a 69.0% higher proportion of DM (5.8% vs. 1.8%), 56.8% higher proportion of respiratory diseases (5.8% vs. 3.7%), 44.5% higher proportion of obesity (14.1% vs. 7.9%), 40.9% higher proportion of CVS (15.4% vs. 9.1%), and 30.5% higher proportion of musculoskeletal diseases (10.7% vs. 7.3%). At the same time, the proportion of diseases of the genitourinary system was 66.8% lower (25.0% vs. 8.3%).

It was revealed that in the structure of hereditary diseases in female patients of PC PPDs there was significantly higher specific weight of acute myocardial infarction by 43.8% (4.8% vs. 2.7%), hemostasis diseases by 40.0% (6.5% vs. 3.9%), and DM by 13.3% (33.1% vs. 28.7%). At the same time, among hereditary diseases, the proportion of oncology (20.4% vs. 25.3%) and coronary heart disease (CHD) was significantly

lower (11.4% vs. 6.9%). The structure of hereditary diseases in the anamnesis of PPD patients is presented in Table 5.8.

Table 5.8 – Structure of hereditary diseases in the anamnesis of PPD patients in obstetric hospitals (%)

Disease	Level 2	Level 3	Visibility indicator (%)	T (p)
DM	28.7	33.1	13.3	2.0 (<0.05)
Oncology	25.3	20.4	19.4	2.6 (<0.01)
HD	16.4	17.7	7.3	0.7 (>0.1)
CHD	11.4	6.9	39.5	3.5 (<0.01)
Hemostasis diseases	3.9	6.5	40.0	2.4 (<0.05)
ACVA	3.6	4.8	25.0	0.9 (>0.1)
AMI	2.7	4.8	43.8	2.2 (<0.05)
Varicose veins	1.8	2.8	35.7	1.4 (>0.1)
Other	6.2	4.9	21.0	1.2 (>0.1)
Total	100.0	100.0	-	-

Analysis of the structure of gynecologic diseases in the anamnesis showed that the patients of the Level 3 obstetric hospitals had a statistically significantly higher proportion of non-inflammatory diseases of the female genital organs by 31.7% (59.3% vs. 40.5%), as well as benign neoplasms of the female genital organs by 53.1% (9.8% vs. 4.6%). At the same time, these patients had a lower proportion of inflammatory diseases of the female genital organs at 69.2% (8.9% vs. 28.9%) and menstrual disorders at 39.2% (7.6% vs. 12.5%). The structure of gynecological diseases in the anamnesis of PPD patients is presented in Table 5.9.

Table 5.9 – Structure of gynecological diseases in the anamnesis of PPD patients in obstetric hospitals (%)

Disease	Level 2	Level 3	Visibility indicator (%)	T (p)
Inflammatory diseases of the female genitalia	28.9	8.9	69.2	12.6 (<0.01)
Non-inflammatory diseases of the female genitalia	40.5	59.3	31.7	8.2 (<0.01)
Menstrual disorders	12.5	7.6	39.2	3.7 (<0.01)
Malformations of the female genitalia	0.5	0.4	20.0	0.3 (>0.1)
Infertility	9.4	11.6	19.0	1.5 (>0.1)
Benign neoplasms of the female genitalia	4.6	9.8	53.1	4.1 (<0.01)
Malignant neoplasms	0.0	0.4	100.0	-
Other	2.6	1.8	30.8	1.2 (>0.1)
Total	100.0	100.0	-	-

It was found that naturally occurring pregnancies were significantly more common in PPD patients in Level 2 obstetric hospitals (91.8% vs. 88.5%), and in Level 3, ART was more common (11.5% vs. 9.5%). The distribution of PPD patients in obstetric hospitals by method of pregnancy is presented in Table 5.10.

Table 5.10 – Distribution of PPD patients in obstetric hospitals by method of pregnancy and outcome of previous pregnancies and deliveries (% of total)

Characteristic	Level 2	Level 3	Visibility indicator (%)	T (p)
Onset of pregnancy				
Spontaneously	91.8	88.5	3.6	2.3(<0.05)
ART	9.9	11.5	53.8	2.2 (<0.05)
Total	100.0	100.0	-	-
Outcome of previous pregnancy				
Natural childbirth	74.5	64.1	-14.0	4.8 (<0.01)
CS	12.1	17.9	-32.4	3.4 (<0.01)
Spontaneous miscarriage / non-developing pregnancy	13.4	18.0	-25.6	2.7 (<0.01)
Total	100.0	100.0	-	-

The study showed that in MH PPD patients, the outcome of the previous pregnancy was statistically significantly more often natural childbirth (74.5% vs. 64.1%) than in PC PPD patients. At the same time, in PC PPD patients, CS was significantly more frequent (17.9% vs. 12.1%) and the outcome of previous pregnancy was spontaneous miscarriage/non-developing pregnancy (18.0% vs. 13.4%). Thus, in the previous pregnancy, the ratio of natural delivery/CS in MH PPD patients was 86.1%/13.9% with the proportion of 1 CS for every 6.2 natural deliveries. In PC PPD patients, the ratio was 78.2%/21.8% with the proportion of 1 CS for every 3.6 natural births. Moreover, the proportion of natural births in MHs was higher than in PCs by 9.2% and CS frequency was lower by 36.2% ($t=4.3$ ($p<0.05$).

It was found (Table 5.11) that pregravid preparation was significantly more frequent in PPD patients of Level 3 obstetric hospitals (35.4% vs. 22.3%). In addition, women with multiple pregnancies were significantly more likely to be admitted to PC PPDs (3.8% vs. 1.8%).

Table 5.11 – Distribution of PPD patients in obstetric hospitals depending on the availability of pregravid preparation and type of pregnancy (% of total)

Characteristic	Level 2	Level 3	Visibility indicator (%)	T (p)
Pregravid preparation				
Yes	22.3	35.4	-37.0	6.1 (<0.01)
No	77.7	64.7	-16.7	6.1 (<0.01)
Total	100.0	100.0	-	-
Type of pregnancy				
Singleton	98.2	96.3	-1.9	2.3 (<0.05)
Multiple pregnancy	1.8	3.8	-52.6	2.3 (<0.05)
Total	100.0	100.0	-	-

Significant differences were found between MH and PC PPD patients in terms of obstetric risk for preeclampsia, risk of fetal growth retardation and trisomy 21. The proportion of high obstetric risk for preeclampsia was found to be 33.0% (10.9% vs. 7.3%), 14.1% (7.8% vs. 7.7%) for fetal growth retardation, and 68.8% (1.6% vs. 0.5%) for trisomy 21 (Down syndrome) in PPD patients in Level 3 obstetric hospitals. Although the study revealed no significant differences in the proportion of high obstetric risk for preterm labor, trisomy 18 (Edwards syndrome) and trisomy 13 (Patau syndrome) in the study groups, the proportion of high risk for these conditions was higher in PPD patients of Level 3 obstetric hospitals [78]. The proportion of high-risk patients is shown in Table 5.12.

Table 5.12 – Distribution of PPD patients in obstetric hospitals with obstetric risk (% of total)

Level	Level 2	Level 3	Visibility indicator (%)	T (p)
Preeclampsia				
Low	92.7	89.1	-3.9	2.6 (<0.01)
High	7.3	10.9	-33.0	2.6 (<0.01)
Total	100.0	100.0	-	-
Premature birth				
Low	96.2	95.3	-0.9	0.9 (>0.1)
High	3.8	4.7	-19.2	0.9 (>0.1)
Total	100.0	100.0	-	-
Fetal growth retardation				
Low	95.3	92.2	-3.2	2.6 (<0.01)
High	6.7	7.8	14.1	2.6 (<0.01)
Total	100.0	100.0	-	-
Trisomy 21				
Low	99.5	98.4	-1.1	2.1 (<0.05)
High	0.5	1.6	-68.8	2.1 (<0.05)
Total	100.0	100.0	-	-

Continuation of Table 5.12

Level	Level 2	Level 3	Visibility indicator (%)	T (p)
Trisomy 18				
Low	99.8	99.5	0.3	1.0 (>0.1)
High	0.2	0.5	60.0	1.0 (>0.1)
Total	100.0	100.0	-	-
Trisomy 13				
Low	99.9	99.4	0.5	1.6 (>0.1)
High	0.1	0.6	83.0	1.6 (>0.1)
Total	100.0	100.0	-	-

Thus, significant differences in the anamnestic characterization of Level 2 and 3 PPD patients were established. MH PPD patients were statistically significantly more likely to have emergency admission (65.6%), via EMS (38.2%), for first pregnancy (42.0%) that ended in delivery (74.5%), which were more likely to be natural (74.5%) and there was 1 CS for every 6.2 natural deliveries. Level 2 PPD patients were less likely to have an aggravated obstetric and gynecologic, hereditary history, somatic diseases (56.1%) and gynecologic surgeries (24.2%), but were more likely to be under regular medical check-up (80.3%). In the structure of their somatic pathology, genitourinary diseases were more frequent (25.0%), in hereditary pathology - oncology (25.3%) and AHC (11.4%), in gynecological pathology – inflammatory diseases of female genital organs and menstrual disorders (28.9% and 12.5%, respectively). PC PPD patients were significantly more likely to be admitted as planned (72.6%), referred by WCC (60.2%) and self-referred (32.6%), the outcome of the previous pregnancy was delivery with CS (17.9%) and spontaneous miscarriage/non-developing pregnancy (18.0%), with 1 CS for every 3.6 natural births. In the structure of somatic pathology, they were significantly more likely to have CVS (15.4%), obesity (14.1%), diseases of musculoskeletal (10.7%), respiratory system and DM (5.8% each), in hereditary pathology – DM (33.1%), hemostasis diseases (6.5%) and AMI (4.8%), in gynecological – non-inflammatory diseases and benign neoplasms of female genital organs (59.3% and 9.8%) and they had a higher obstetric risk of preeclampsia, risk of fetal growth retardation and trisomy 21.

5.3. Subjective assessment of the organization of medical care in pathologic pregnancy departments

Patient satisfaction is a key indicator of the quality and accessibility of medical care. In accordance with the law of St. Petersburg "On the territorial program of state guarantees for free provision of medical care to citizens in St. Petersburg for 2023 and for the planning period of 2024 and 2025" (TPSG), the level of satisfaction of the population with the availability of medical care (as a percentage of the number of respondents) should be at least 80%. However, in 2024, the figure was only 63%, according to the TPSG for 2024 and the planning period of 2025 and 2026. Since the satisfaction assessment was conducted in 2023-2024, the level of 80% was taken for comparison [102-103].

Among the most significant indicators affecting the population's satisfaction with inpatient care are the waiting time for admission and the number of people in a ward (Table 5.13). The study showed that both MH and PC PPD patients were admitted to the ward immediately. However, the proportion of immediately admitted was significantly higher in MH PPDs and the difference between the rates was 10.8% (91.7% vs. 81.8%: t=5.9 (<0.01)). The waiting time for admission of 2-4 days was statistically significantly higher for PC PPDs (18.2% vs. 8.3%), which was associated with a high proportion of planned admissions from the regions.

Table 5.13 – Distribution of PPD patients in obstetric hospitals depending on the waiting period for admission and the number of people in the ward (% of total)

Characteristic	Level 2	Level 3	Visibility indicator (%)	T (p)
Waiting period for admission				
Immediately	91.7	81.8	10.8	5.9 (<0.01)
After 2-4 days	8.3	18.2	54.4	5.9 (<0.01)
Total	100.0	100.0	-	
Number of people in the ward				
1	21.5	27.9	22.9	3.1 (<0.01)
2	44.2	27.2	38.5	7.6 (<0.01)
3	30.9	27.4	11.3	1.7 (>0.05)
4	3.5	17.4	79.9	8.9 (<0.01)
Total	100.0	100.0	-	-
On average	2.02±0.02	2.34±0.05		3.2 (<0.01)

PC PPD patients were accommodated almost in single, double and triple wards depending on the number of people in the ward. And in MH PPDs, the majority were in double and triple wards (44.2% and 30.9% respectively). At the same time, compared with PC PPDs, more patients were treated in single wards – 22.9% (27.9% vs. 21.5%; t=5.9 (<0.01)) and 79.9% of patients were in quadruple wards (17.9% vs. 3.5%; t=8.9 (<0.01)). In MH PPDs, statistically significantly (by 38.8%) more patients were treated in double wards (44.2% vs. 27.2%; t=7.6 (<0.01)). On average, there were statistically significantly fewer people per ward in MH than in PC PPDs (2.02±0.02 vs. 2.34±0.05; t=3.2 (<0.01)).

It was revealed that regardless of the level of the obstetric hospital, the level of satisfaction with the conditions of stay in the department was very high and significantly exceeded the indicator established by the TPSG (Table 5.14). There was no statistically significant difference between fully (94.1% and 94.8%, respectively) and partially (4.6% and 4.1%) satisfied, and between completely dissatisfied (1.3% and 1.1%) patients in MH and PC PPDs.

Table 5.14 – Distribution of patients in obstetric hospitals depending on satisfaction with the conditions of stay in the department (% of total)

Degree of satisfaction	Level 2	Level 3	Visibility indicator (%)	T (p)
Yes, pretty much	94.1	94.8	0.7	0.7 (>0.1)
Not always	4.6	4.1	10.9	0.5 (>0.1)
Not satisfied	1.3	1.1	15.4	0.4 (>0.1)
Total	100.0	100.0	-	-

Thus, 5.9% of women in MH PPDs expressed partial or complete dissatisfaction with the conditions of stay in the ward, while in PC PPDs this figure amounted to 5.2%. The main reasons for dissatisfaction with the conditions of stay in the MH and PC PPDs were unsatisfactory nutrition (Table 5.15), the proportion of which was 15.8% higher in PCs (42.5% vs. 35.8%; t=2.9 (<0.05)). Dissatisfaction with lighting, the share of which was higher in MH (24.4% vs. 13.3%; t=6.5 (<0.01)) ranked second. The third ranking differed: in MH PPDs it was dissatisfaction with the visit ban (11.8%) and in PC PPDs it was dissatisfaction with the lack of toiletries (10.6%) [89].

Table 5.15 – Distribution of PPD patients of obstetric hospitals depending depending on dissatisfaction with the conditions of stay in the department (% of total)

Reason	Level 2	Level 3	Visibility indicator (%)	T (p)
Ban on visiting	11.8	9.7	17.8	1.5 (>0.1)
Drafts	0.7	5.3	86.8	5.0 (<0.01)
Lack of toiletries	4.2	10.6	60.4	4.9 (<0.01)
Insufficient lighting	24.4	13.3	45.5	6.5 (<0.01)
Poor nutrition	35.8	42.5	15.8	2.9 (<0.05)
Excessive cost of accommodation	2.8	8.0	65.0	4.5 (<0.01)
Lack of repair	11.1	1.8	83.8	9.9 (<0.01)
Other	9.2	8.8	4.3	0.3 (>0.1)
Total	100.0	100.0	-	-

There was also a fairly high proportion of dissatisfied with the lack of repair (11.1%) in MH PPDs, and overpriced accommodation (8.0%) in PC PPDs.

The attitude of the medical personnel makes a significant contribution to the assessment of patient satisfaction. Despite the fact that patients who were partially or completely dissatisfied with the conditions of stay in the department did not name it among the reasons for dissatisfaction, the aspect of the quality of medical care was studied separately (Table 5.16). The study revealed that the predominant majority of PPD patients felt that their attending physician (obstetrician-gynecologist) was always friendly, tactful (91.8% and 93.3%; t=1.3 (>0.1)) and gave them enough time and attention (93.8% and 91.3%; t=1.3 (>0.1)). However, there was a statistically significant difference between the proportion of MH and PC PPDs patients who believed that the obstetrician-gynecologist was sometimes inattentive and rude and such patients were 62.8% more in MHs (4.3% vs. 1.6%; t=3.8 (<0.01)).

Table 5.16 – Distribution of PPD patients in obstetric hospitals depending on their opinion of the attending physician (% of total)

Characteristic	Level 2	Level 3	Visibility indicator (%)	T (p)
Human qualities				
Always friendly, tactful	91.8	93.3	1.6	1.3 (>0.1)
Sometimes tactless and rude	4.3	1.6	62.8	3.8 (<0.01)
Always tactless and downright rude	0.8	0.5	37.5	0.8 (>0.1)
I find it difficult to answer	3.1	4.7	34.0	1.7 (>0.05)
Total	100.0	100.0	-	-
Sufficiency of time and attention given				
Enough time and attention	93.6	91.3	2.7	1.8 (>0.05)
Sometimes it's not enough, I would like more	4.0	6.2	35.5	2.3 (<0.05)
Pays not enough attention and always in a hurry	2.4	2.5	4.0	0.1 (>0.1)
Total	100.0	100.0	-	-

There were also significant differences between the proportion of patients who felt that the obstetrician-gynecologist sometimes did not give them enough time and attention. There were 35.5% more such respondents in PC than in MH PPDs (6.2% vs. 4.0%; t=2.3 (<0.05).

An assessment of patients' opinion of the nursing personnel at the MH and PC PPDs revealed that the predominant majority of women also felt that they were always friendly and tactful with them (91.3% and 92.4%; t=0.9 (>0.1)). Although most of the patients in MH PPDs indicated that they were given adequate time and attention, such respondents were more in MH PPDs (96.0% and 92.7%; t=2.9 (<0.01)). In contrast, more patients were observed in PC PPDs, who could not assess the human qualities of the nursing personnel (2.8% vs. 0.8%; t=2.9 (<0.01)), as well as those who believed that the nurses did not always give the patients enough time and attention (7.3% vs. 4.0%; t=2.9 (<0.01)). The distribution of PPD patients according to their opinion of the nursing personnel is presented in Table 5.17.

Table 5.17 – Distribution of PPD patients in obstetric hospitals depending on the opinion about the secondary personnel (% of total)

Characteristic	Level 2	Level 3	Visibility indicator (%)	T (p)
Human qualities				
Always friendly, considerate	91.3	92.4	1.2	0.9 (>0.1)
Sometimes tactless and rude	6.3	4.8	23.8	1.4 (>0.1)
Always tactless and downright rude	1.6	0.0	100.0	-
I find it difficult to answer	0.8	2.8	71.4	2.9 (<0.01)
Total	100.0	100.0		
Sufficiency of time and attention given				
Enough time and attention	96.0	92.7	3.4	2.9 (<0.01)
Sometimes it's not enough, I would like more	4.0	7.3	45.2	2.9 (<0.01)
Pay not enough attention and always in a hurry	2.1	2.8	25.0	0.9 (>0.1)
Total	100.0	100.0	-	-

The assessment of the work of medical personnel by the patients of MH and PC PPDs with a five-point scale made it possible to establish (Table 5.18) that the activities of obstetrician-gynecologists were assessed almost equally and the average score was almost the same (4.90±0.03 and 4.92±0.02; t=0.6 (>0.1)). However, patients in Level 2 obstetric hospitals gave more “good” ratings to the attending physician's performance than patients in Level 3 obstetric hospitals (7.5% vs. 1.0%; t=8.5 (<0.01)).

Table 5.18 – Distribution of PPD patients in obstetric hospitals by assessment of the work of the attending physician and nursing personnel (%)

Points	Level 2	Level 3	Visibility indicator (%)	T (p)
Attending physician				
2 points	0.9	0.5	44.4	1.1 (>0.1)
3 points	1.1	2.1	47.6	1.6 (>0.1)
4 points	7.5	1.0	86.7	8.5 (<0.01)
5 points	90.7	92.2	1.6	1.2 (>0.1)
Average rating	4.90±0.03	4.92±0.02	-	0.6 (>0.1)
Total	100.0	100.0	-	-
Nursing personnel				
2 points	0.0	0.0	0.0	-
3 points	1.5	0.3	80.0	3.2 (<0.01)
4 points	13.5	4.9	63.7	7.2 (<0.01)
5 points	85.0	93.8	9.4	6.8 (<0.01)
Average rating	4.86±0.01	4.92±0.01	-	2.7 (<0.05)
Total	100.0	100.0	-	-

Analysis of the distribution of PPD patients in obstetric hospitals according to the assessment of the work of nursing personnel revealed significant differences in the

proportion of 5-, 4-, and 3-point assessments, as well as in the average score. The proportion of "excellent" grades in PC PPDs was higher by 9.4% (93.8% vs. 85.0%; t=6.8 (<0.01)); "good" was lower by 2.8 times (4.9% vs. 13.5%; t=7.2 (<0.01)) and "fair" was lower by 5.0 times (0.3% vs. 1.5%; t=3.2 (<0.01)).

It was found that the distribution of PPD patients in obstetric hospitals of the 2d and 3d levels in terms of their assessment of the organization of medical care in the pathologic pregnancy department did not have statistically significant differences in terms of the specific weight of assessments or the average score (Table 5.19). Nevertheless, the patients rated the work of doctors and nurses higher than that of the department, giving it lower scores than the medical personnel (p<0.05).

Table 5.19 – Distribution of patients in obstetric hospitals by assessment of the organization of medical care in the pathologic pregnancy department (% of total)

Characteristic	Level 2	Level 3	Visibility indicator (%)	T (p)
2 points	0.0	0.0	0.0	-
3 points	0.0	0.0	0.0	-
4 points	12.5	10.8	13.6	1.2 (>0.1)
5 points	87.5	89.2	1.9	1.2 (>0.1)
Average rating	4.73±0.01	4.77±0.01	-	1.3 (>0.1)
Total	100.0	100.0	-	-

Patients who participated in the questionnaire were asked to give their recommendations for improving the quality of medical care in PPDs (Table 5.20).

Table 5.20 – Distribution of PPD patients in obstetric hospitals according to recommendations to improve care in PPD (% of total)

Characteristic	Level 2	Level 3	Visibility indicator (%)	T (p)
Will ensure that the ward can be booked in advance	0.0	7.8	100.0	-
Individual approach to patients	10.9	5.3	-51.4	4.8 (<0.01)
Operationalize the reception department	15.8	10.5	-33.5	3.5 (<0.01)
Allow for walks on the grounds	5.9	6.4	-7.8	0.4 (>0.1)
Increase the number of 2-bed wards	15.8	6.3	-60.1	7.2 (<0.01)
Communicate with patients more tactfully	12.3	6.7	-45.5	4.3 (<0.01)
Equip a buffet for patients	0.0	4.7	100.0	-
Improve nutrition	19.8	17.6	-11.1	1.2 (>0.1)
Allow visits	6.9	11.3	-38.9	3.1 (<0.01)
Make a single electronic card	8.8	16.1	-45.3	4.5 (<0.01)
Other	3.8	7.3	-47.9	3.1 (<0.01)
Total	100.0	100.0	-	-

The results revealed that there were significant differences according to the level of obstetric hospital, and the overall recommendation to improve nutrition, which ranked first. The second most popular suggestion was to improve the work of the emergency room and increase the number of 2-bed wards (15.8% each), and the third was the recommendation to communicate more tactfully with patients (12.3%). In PC PPDs, the proposal to make a single electronic card ranked second (16.1%) and the proposal to allow visits (11.3%) ranked third.

The study demonstrated that patients generally appreciated the medical organization, regardless of the level of obstetric hospital. At the same time, the average scores given for the performance of medical organization as a whole were significantly higher than the organization of medical care in PPDs ($p<0.05$). The only exception was that the patients rated the performance of PPD medical personnel higher than the performance of the entire medical organization. The distribution of PPD patients in obstetric hospitals according to their assessment of the work of the medical organization as a whole is presented in Table 5.21.

Table 5.21 – Distribution of PPD patients in obstetric hospitals by assessment of the work of the medical organization as a whole (% of total)

Characteristic	Level 2	Level 3	Visibility indicator (%)	T (p)
3 points	2.1	2.6	19.2	0.7 (>0.1)
4 points	4.1	3.1	24.4	1.2 (>0.1)
5 points	93.8	94.3	0.5	0.9 (>0.1)
Average rating	4.85±0.01	4.89±0.01	-	0.7 (>0.1)
Total	100.0	100.0	-	-

The study revealed that the overwhelming majority of patients would recommend both the department and the obstetrics organization as a whole for providing medical care to pregnant women. There were no unwilling to recommend PPD (Table 5.22). Only 4.2% of patients in MHs and 3.3% in PCs had difficulty answering the question about their willingness to recommend PPD. The proportion of women who did not want to recommend a delivery organization for providing medical care to pregnant women was 2.3% in MH PPDs, while there were no such respondents in PC PPDs. However, the proportion of those who found it difficult to answer this question was higher in PC than in MH PPDs, at 5.3% and 4.8% respectively.

Table 5.22 – Distribution of PPD patients of obstetric hospitals by willingness to recommend a department and obstetrics organization for medical care for pregnant women (% of total)

Characteristic	Level 2	Level 3	Visibility indicator (%)	T (p)
Department				
Yes	95.8	96.4	0.6	0.7 (>0.1)
No	0.0	0.0	-	-
I find it difficult to answer	4.2	3.6	14.3	0.7 (>0.1)
Total	100.0	100.0		
Organization of maternity care in general				
Yes	92.9	94.7	1.9	1.7 (>0.05)
No	2.3	0.0	100.0	-
I find it difficult to answer	4.8	5.3	-9.4	0.5 (>0.1)
Total	100.0	100.0	-	-

Thus, MH PPDs had shorter waiting time for admission and housed fewer patients in the wards (2.02±0.02 vs. 2.34±0.05) compared to PC PPDs. Regardless of the level of obstetric hospital, the level of satisfaction with the conditions of stay in the department was very high and exceeded the indicator set by the TPSG. Only 5.9% of patients in MH and 5.2% in PC PPDs were partially or completely dissatisfied with the ward environment, with food and lighting being the main reasons for dissatisfaction. There was a fairly high proportion of dissatisfaction with the ban on visits (11.8%) and lack of repair (11.1%) in MH PPDs, and in PC PPDs – with the lack of toiletries (10.6%) and overcharging for accommodation (8.0%). PPD patients rated the work of the department as a whole somewhat lower than the organization of the activities of the medical organization as a whole and the work of the medical personnel. More than 90% of patients would recommend both, PPD and the organization as a whole for the care of women with pregnancy pathology. Significant differences were found in the general recommendations for improvement of departmental performance depending on the level of obstetric hospital. Only 2.3% of patients will not recommend PPD in Level 2 maternity care organizations for treatment.

CONCLUSION

Improving the accessibility and quality of medical care for pregnant women, women in labor and new mothers, and newborns is a key task of modern healthcare. The North-Western Federal District (NWFD) has the highest maternal mortality rate, as well as the largest increase in it over the last five years. In St. Petersburg this indicator was one of the highest in the NWFD throughout the 2018-2022 period and the city accounted for an average of 48.2% of maternal deaths in the county, while the average share of megalopolis maternal deaths in the total number of deaths in the country was 6.2%. Based on the fact that maternal mortality is one of the main indicators used to assess the state of maternal and child health care system, and considering the contribution of St. Petersburg to maternal mortality, not only in the NWFD but also in the Russian Federation, the megalopolis was chosen as the region for research and its obstetric care organizations served as the base for the present study.

With one of the lowest contributions of the NWFD to the total number of births in the country, the county had one of the highest rates of complicated births (672.81‰). The share of megalopolis deliveries in the total number of deliveries in the NWFD averaged 43.4%, and the proportion of complicated deliveries in the total number of complicated deliveries in the NWFD averaged 45.7%. The frequency of complicated births in the city (708.23‰) was 5.0% higher than in Russia as a whole and had an upward trend (+5.5%). The increase in the incidence of obstructed labor had a moderately pronounced effect on the increase in maternal mortality in the megalopolis and could be due to the influence of other factors as well.

An evaluation of CS deliveries revealed that the NWFD had the lowest rates in the country (average 278.40‰). In St. Petersburg, its frequency was below not only the national average (by 37.58‰), but also the average in the NWFD (by 10.56‰), but tended to increase. The share of CS deliveries in St. Petersburg in the total number of such deliveries in the NWFD amounted to 41.8% and, like the share of obstructed labor, increased insignificantly over five years. It's been established that the increased

CS use in the country and the megalopolis may be moderately associated with an increase in obstructed labor incidence.

The incidence of women of fertile age in the megalopolis with the class of diseases Pregnancy, labor and postpartum period was not only below the national average, but also the district average (60.69‰ vs. 61.86‰ and 63.14‰, respectively) and, as in the country as a whole, it was declining (-25.2%). The assessment of the influence of incidence level on the frequency of obstructed labor and CS use has revealed that in St. Petersburg the factor of decreasing incidence of women with XV class diseases may not be related to the improvement of women's health, but is most likely the result of worsening diagnosis of diseases in pregnant women, which in turn leads to an increase in the frequency of complications in childbirth and the use of CS.

The analysis of the incidence of women who complicated the course of pregnancy showed that for every 100 women who completed pregnancy, the incidence of threatened preterm labor in St. Petersburg was, on average, 6.0% lower than in the country and the federal district as a whole, with a slight downward trend (-3.7%). While the incidence of CSD (-4.6%) and GSD (-7.7%) in pregnant women decreased, the incidence of venous complications (+11.0%), ESD (+6.8%), including GDM (+34.1%) increased significantly. The frequency of venous complications was 2.2 times higher than the Russian average and 1.4 times than the county average, CSD was 1.5 times and 1.2 times higher, respectively, anemia was 4.4% and 2.8% higher, respectively, ESD was 42.7% and 17.8% higher than the national average, GDM was 43.8% and 20.1% higher than the county average, and GSD was 18.8% higher than the Russian average, but 12.2% lower than the NWFD average. The level of AH was 7.3% and 8.0% higher than the average in the Russian Federation and the NWFD and tended to decrease (-13.6%). The incidence of moderate preeclampsia exceeded the national average by 1.8 times and the federal district by 1.3 times and increased slightly (+1.2%). The incidence of severe preeclampsia exceeded the Russian average by 2.0 times, and in the North-Western Federal District – by 1.4 times and decreased by 5.7%.

Placenta previa with and without hemorrhage was diagnosed in pregnant women and new mothers in the megalopolis significantly more often than the national (1.6 and

1.4 times, respectively) and district (1.5 and 1.2 times) averages, and over five years the frequency of this pathology decreased by 19.9% and 15.7%. The incidence of premature detachment of normally located placenta was lower than the district average by 8.7% and the national average by 12.5%, and it increased by 2022.

In St. Petersburg, the incidence of labor disorders and obstructed labor was significantly lower than the average in the Russian Federation (1.2 times) and in the NWFD (1.5 and 1.3 times, respectively) and tended to increase (+9.2% and +9.0%). The incidence of uterine rupture during the study period in the megalopolis was slightly higher than the national and federal district average and increased by 1.6 times. The proportion of out-of-hospital uterine ruptures in St. Petersburg was significantly lower than in the Russian Federation and the NWFD (19.6% vs. 33.2% and 22.3%, respectively) and decreased 2.8 times.

In order to identify differences in medical and social characteristics, obstetric and gynecological, hereditary and somatic status, a comparative assessment of patients of MH and PC PPDs was carried out. It was revealed that in the structure of patients with obstetric pathology of St. Petersburg PPDs, the threat of pregnancy termination (43.5%) significantly prevailed, precursors of labor ranked second (11.8%), renal pathology ranked third (10.9%), pregnancy edema ranked fourth (8.6%). During the three years studied, the proportion of acute respiratory infections (+45.8%), placental insufficiency (+40.0%) and pregnancy edema (+22.2%) increased significantly and the proportion of threatened abortion (-8.5%) decreased. In PC PPDs, GDM was ranked first (19.3%), anemia second (16.8%), uterine scar third (14.5%), and CMs fourth (10.3%). The proportion of placental insufficiency (+51.1%), GDM (+19.7%) and anemia of pregnancy (+18.1%) increased statistically significantly and the proportion of threatened termination of pregnancy (-38.7%) and CMs (-25.4%) decreased.

A comparative assessment of the movement of MH and PC PPDs patients revealed significant differences. On average, 65.4% of patients were treated and discharged in MH PPDs over three years, 3.8% were transferred and 30.8% of patients had a delivery in the obstetric inpatient unit. The proportion of pregnant women treated and discharged averaged 24.7% and 79.0% of deliveries in PC PPDs. Patient flow rates

in MH PPD patients were significantly influenced by quarantine measures, while in PC PPDs the impact of the new coronavirus pandemic was not pronounced. During the study period, the proportion of treated and discharged pregnant women in MH PPDs decreased by 5.7% and the proportion of patients whose admission to PPDs ended in delivery increased by 13.9%. The proportion of treated and discharged pregnant women in PCs increased by 2.9%, while the proportion of patients whose admission to PPDs ended in delivery decreased by 0.9%. MH PPD patients were most frequently routed to Level 3A PCs, the proportion of such patients averaged 52.6% over the three years studied and increased 1.4-fold by 2022 with annual growth. The maximum proportion of pregnant women transferred to Level 3B PCs was during the quarantine restriction period.

In both MHs and PCs, PPD patients had natural births in the majority of cases, but the proportion of natural births was 10.7% higher in MHs. Emergency CS was the most commonly used procedure for PPD patients in MHs, while planned CS was the most commonly used in PCs. The use of emergency CS was 7.4 times more common in MHs than in PCs (66.9% vs. 9.0%). The increase in the use of emergency CS in MHs was 8.7%, in PCs the use of emergency CS decreased by 2.3 times.

Over the three years, the average length of stay of patients in PPDs decreased, but in MHs pregnant women stayed 1.4 times longer in PCs (6.1 days vs. 4.5 days, respectively). At the same time, PPD bed turnover rates increased. On average, bed turnover was 1.4 times less in MHs than in PCs (38.9 vs. 53.4). Bed operation in PPDs of Level 2 and 3 obstetric hospitals was almost the same (235.5 and 236.3 days, respectively) due to longer stays and fewer patients treated in the MH PPDs with shorter admissions and more patients per bed in PC PPDs. PPD bed turnover over three years increased by 29.7 days in MHs and 83.0 days in PCs, contributing to a significant decrease in bed downtime, which was 1.3 times higher in MHs than in PCs (3.40 days vs. 2.68 days).

The majority of pregnant women for whom a medical council was held belonged to the age group 30-39 years (63.6%) and the average age of the pregnant woman was 31.8±0.24 years, with an average gestational age of 33.1±0.15 weeks. More than half

of the pregnant women, regardless of age, lived in St. Petersburg and the reason for the counsil was the presence of fetal pathology (91.9%), the proportion of which was highest in the age groups under 25 years and 35 years and older. The most common malformations were of the urinary system (32.7%) and CVS (25.3%). Women under 25 years had a higher proportion of GIT (16.7%) and pulmonary malformations (6.7%) than other age groups; women aged 25-34 years had urinary system (34.8%) and abdominal masse formation (12.7%); women aged 35 and older had CVS (30.2%) and CNS (9.3) and maxillofacial malformations (2.3%). The proportion of favorable prognoses for fetal health was lower than for fetal life (86.1% vs. 91.5%) and the proportion of doubtful (12.4% vs. 8.1%) and unfavorable prognoses (0.8% vs. 0.4%) was higher. The highest proportion of doubtful prognosis was in pregnant women under 25 years and unfavorable prognosis was in those aged 25-34 years.

Delivery in the perinatal center alone was indicated for 88.7% of women. The most frequent need for admission for delivery to a Level 3 obstetrics organization was among pregnant women under 25 years (92.3%), and less frequently among women of aged 35 and older (87.6%). Only 1.6% of pregnant women were indicated for CS delivery and the proportion of indications for CS decreased with increasing age. Surgical treatment was indicated in 10.9% of pregnant women, and screening was recommended in 90.1% of women. Postpartum surgical treatment was most commonly recommended for pregnant women under 25 years and decreased with increasing age of the woman.

Data extraction showed that the proportion of patients of early reproductive age in Level 2 obstetric hospitals was statistically significantly higher than in PCs (75.5% vs. 61.8%). The proportion of patients aged 35 and older was significantly higher in PPDs of Level 3 obstetric hospitals (24.5% vs. 38.2). The average age of PPD patients in Level 2 obstetric hospitals also had statistically significant differences with that in PCs (30.05±0.48 vs. 32.8±0.32 years).

Evaluation of the distribution of PPD patients by marital status revealed that there were significantly more married pregnant women (84.4% vs. 76.7%) and fewer unmarried women (5.5% vs. 8.2%).

In MH PPDs the proportion of female patients with secondary complete education was 47.8% higher (39.3% vs. 20.5%) and 8.0 times higher with incomplete secondary education (3.4% vs. 0.3%). And in PCs, the proportion of patients who had higher/incomplete higher education was 15.9% higher (58.3% vs. 69.3%). In both MH and PC PPDs, the proportion of employed patients was significantly higher than the proportion of patients who were not formally employed. The majority of PPD patients, both in MHs and in PCs, received medical care within the framework of mandatory health insurance. The proportion of such patients was higher in PC PPDs (91.7% vs. 87.6%). The proportion of pregnant women whose treatment was paid for with VHI funds was 3.1 times higher in MH PPDs.

Significant differences were found in the patients' medical history, both in terms of obstetric and gynecologic status and somatic health. MH PPD patients had statistically significantly higher emergency admission (65.6% vs. 34.4%), and planned admission (72.6% vs. 34.4%) of PC PPD patients. In all PPD patients, first pregnancy and first delivery were most common, but the proportion of first-pregnant women was statistically significantly higher in MH PPD patients (42.0% vs. 35.7%). On average, MH PPD patients had 2.17±0.07 pregnancies and PC PPD patients had 2.41±0.06. At the same time, there was no statistically significant difference between the average number of deliveries in PPD patients of obstetric hospitals of Level 2 and 3 (1.81±0.02 and 1.75±0.04 deliveries). Thus, fewer pregnancies ended in delivery in PC patients compared to MH patients.

In MH PPD patients, the outcome of the previous pregnancy was statistically significantly more often natural childbirth (74.5% vs. 64.1%) than in PC PPD patients. At the same time, in PC PPD patients, CS was significantly more frequent (17.9% vs. 12.1%) and the outcome of previous pregnancy was spontaneous miscarriage/non-developing pregnancy (18.0% vs. 13.4%). Thus, in the previous pregnancy, the ratio of natural delivery/CS in MH PPD patients was 86.1%/13.9% with the proportion of 1 CS for every 6.2 natural deliveries. In PC PPD patients, the ratio was 78.2%/21.8% with the proportion of 1 CS for every 3.6 natural births. Moreover, the proportion of natural births in MHs was higher than in PCs by 9.2% and CS frequency was lower by 36.2%.

It was found that naturally occurring pregnancies were significantly more common in PPD patients in Level 2 obstetric hospitals (91.8% vs. 88.5%), and in Level 3, ART was more common (11.5% vs. 9.5%). Pregravid preparation was significantly more frequent in PPD patients of Level 3 obstetric hospitals (35.4% vs. 22.3%). In addition, women with multiple pregnancies were significantly more likely to be admitted to PC PPDs (3.8% vs. 1.8%).

Significant differences were found between MH and PC PPD patients in terms of medical history. The majority of PC PPD patients, compared to MH PPD patients, were significantly more likely to have somatic diseases (56.1% vs. 40.6%), hereditary diseases (44.4% vs. 37.6%), gynecologic diseases (76.1% vs. 68.2%), and STDs (18.6% vs. 14.0%). The majority of MH and PC PPD patients had ever been subjects to regular medical check-up, but the proportion of those was lower among patients admitted to PCs (75.3% vs. 80.3%). At the same time, the proportion of pregnant women who had gynecologic surgeries was significantly higher among PC patients (24.2% vs. 31.7%).

In the structure of somatic pathology PC patients were found to have a 69.0% higher proportion of DM (5.8% vs. 1.8%), 56.8% higher proportion of respiratory diseases (5.8% vs. 3.7%), 44.5% of obesity (14.1% vs. 7.9%), 40.9% of CVS (15.4% vs. 9.1%), and 30.5% of musculoskeletal diseases (10.7% vs. 7.3%). At the same time, the proportion of diseases of the genitourinary system was 66.8% lower (25.0% vs. 8.3%).

It was revealed that in the structure of hereditary diseases in female patients of PC PPDs there was significantly higher specific weight of acute myocardial infarction by 43.8% (4.8% vs. 2.7%), hemostasis diseases by 40.0% (6.5% vs. 3.9%), and DM by 13.3% (33.1% vs. 28.7%). At the same time, among hereditary diseases, the proportion of oncology (20.4% vs. 25.3%) and CHD was significantly lower (11.4% vs. 6.9%).

Evaluation of the structure of gynecologic diseases in the anamnesis showed that the patients of the Level 3 obstetric hospitals had a statistically significantly higher proportion of non-inflammatory diseases of the female genital organs by 31.7% (59.3% vs. 40.5%), and benign neoplasms of the female genital organs by 53.1% (9.8% vs.

4.6%). Yet, these patients had a lower proportion of inflammatory diseases of the female genital organs at 69.2% (8.9% vs. 28.9%) and menstrual disorders at 39.2% (7.6% vs. 12.5%).

Significant differences were found between MH and PC PPD patients in terms of obstetric risk for preeclampsia, risk of fetal growth retardation and trisomy 21. The proportion of high obstetric risk for preeclampsia was found to be 33.0% (10.9% vs. 7.3%), 14.1% (7.8% vs. 7.7%) for fetal growth retardation, and 68.8% (1.6% vs. 0.5%) for trisomy 21 (Down syndrome) in PPD patients in Level 3 obstetric hospitals.

The conducted survey showed that both MH and PC PPD patients were admitted to the ward immediately. However, the proportion immediately admitted was significantly higher in MH PPDs and the difference between the rates was 10.8% (91.7% vs. 81.8%). The waiting time for admission of 2-4 days was statistically significantly higher for PC PPDs (18.2% vs. 8.3%), which was associated with a high proportion of planned admissions from the regions.

In PC PPDs, patients were placed almost uniformly in single, double and triple wards. And in MH PPDs, the majority were in double and triple wards (44.2% and 30.9% respectively). At the same time, compared with the PC PPDs, more patients were treated in single wards – 22.9% (27.9% vs. 21.5%) and 79.9% of patients were in quadruple wards (17.9% vs. 3.5%). And in MH PPDs, 38.8% were more likely to be in double wards (44.2% vs. 27.2%). On average, there were statistically fewer people per ward in MH than in PC PPDs (2.02±0.02 vs. 2.34±0.05).

The level of satisfaction with PPDs environment was very high and significantly higher than that found by the TPSG regardless of the level of obstetric hospital. There was no statistically significant difference between fully (94.1% and 94.8%, respectively) and partially (4.6% and 4.1%) satisfied, and between completely dissatisfied (1.3% and 1.1%) patients in MH and PC PPDs.

Only 5.9% of women in MH PPDs were partially or completely dissatisfied with the conditions of stay in the ward, while in PC PPDs there were 5.2% of such women. The main reasons for dissatisfaction with the conditions of stay in the MH and PC PPDs were unsatisfactory nutrition, the proportion of which was 15.8% higher in PC

(42.5% vs. 35.8%). Dissatisfaction with lighting was in the second place, the share of which was higher in MHs (24.4% vs. 13.3%). The third place differed: in MH PPDs it was dissatisfaction with the visit ban (11.8%) and in PC PPDs it was dissatisfaction with the lack of toiletries (10.6%). There was also a fairly high proportion of dissatisfied with the lack of repair (11.1%) in the MH PPDs, and overpriced accommodation (8.0%) in PC PPDs.

The predominant majority of female patients of MH and PC PPDs felt that their attending physician was always friendly, tactful (91.8% and 93.3%) and gave them enough time and attention (93.8% and 91.3%). But the proportion of patients who thought that obstetrician-gynecologist was sometimes inattentive and rude was 62.8% higher in MH PPDs (4.3% vs. 1.6%), and the proportion of patients who thought that obstetrician-gynecologist sometimes gave them insufficient time and attention was 35.5% higher in PC PPDs (6.2% vs. 4.0%).

The predominant majority of respondents in the MHs and PCs believed that the nursing personnel was always friendly and tactful with them (91.3% and 92.4%). Although most of the patients indicated that they were given enough time and attention, such respondents were more in MH PPDs (96.0% vs. 92.7%). There were more female patients in PC PPDs who found it difficult to assess the human qualities of nursing personnel (2.8% vs. 0.8%) and who believed that they were not always given enough time and attention (7.3% vs. 4.0%).

Evaluation of the work of medical personnel on a five-point scale allowed us to establish that the patients evaluated the activities of obstetrician-gynecologists in MHs and PCs almost equally and the average score was almost the same (4.90±0.03 and 4.92±0.02 points). However, patients in Level 2 obstetric hospitals gave more “good” ratings to the attending physician's performance than patients in Level 3 obstetric hospitals (7.5% vs. 1.0%).

It was found that the distribution of PPD patients in obstetric hospitals of the 2d and 3d levels in terms of their assessment of the organization of medical care in the pathologic pregnancy department did not have statistically significant differences in terms of the specific weight of assessments or the average score. However, patients

rated the work of doctors and nurses more highly, while they gave lower marks to the work of the department.

The results revealed that there were significant differences according to the level of obstetric hospital, and the overall recommendation to improve nutrition, which ranked first. The second most popular suggestion was to improve the work of the emergency room and increase the number of 2-bed wards (15.8% each), and the third was the recommendation to communicate more tactfully with patients (12.3%). In PC PPDs, the proposal to make a single electronic card ranked second (16.1%) and the proposal to allow visits (11.3%) ranked third.

The work of the medical organization as a whole also received high marks from patients regardless of the level of obstetric hospital. At the same time, the average scores given for the performance of the medical organization as a whole were statistically higher than the organization of medical care in PPDs. Only the work of PPD medical personnel was rated higher than the work of the medical organization as a whole.

The study revealed that the overwhelming majority of patients would recommend both the department and the obstetrics organization as a whole for providing medical care to pregnant women. Only 4.2% of patients in MHs and 3.3% in PCs had difficulty answering the question about their willingness to recommend PPD. The share of women who did not want to recommend an obstetrics organization for providing medical care to pregnant women was 2.3% in MH PPDs, while there were no such respondents in PC PPDs. However, the proportion of those who found it difficult to answer this question was higher in PC than in MH PPDs, at 5.3% and 4.8% respectively.

FINDINGS

1. In St. Petersburg, while the incidence of women of reproductive age with class XV diseases Pregnancy, childbirth and postpartum period and the CS frequency in labor were quite low, there was a high level of obstructed labor, maternal mortality, as well as the incidence of GSD and ESD (by 18.8% and 42.7%, respectively), GDM (by 43.8%), CSD (by 33.7%), venous complications (by 54.0%), anemia (by 4.4%), moderate (by 42.5%) and severe (by 48.9%) preeclampsia, placenta previa with hemorrhage (by 26.1%), and uterine rupture (by 50.0%). The decrease in the incidence of pregnant, women in labor and new mothers in 2018-2022 was provided by a decrease in the incidence of threat of preterm labor (-3.7%), CSD (-4.6%), AH (-13.6%), severe preeclampsia (-5.7%), placenta previa without bleeding (-19.9%), premature placental abruption (-2.4%) and dystocia (-9.0%).

2. In comparison with the average Russian indicators, the megalopolis had a lower supply of pathologic pregnancy beds and a lower proportion of beds in this profile in the structure of the obstetric bedspace. The reducing incidence of pregnant women, women in labor and new mothers in the megalopolis had a significant impact on reducing the average length of stay of pregnant women in a hospital bed. At the same time, the efficiency of bed usage and achievement of optimal downtime of PPD beds in Level 2 and 3 obstetric hospitals were achieved in different ways: in MH PPDs due to longer bed stays with fewer admitted patients, and in PC PPDs due to shorter admission periods with more patients treated.

3. The structure of obstetric pathology in PC PPD patients had significant differences from the structure of obstetric pathology in MH PPD patients, both in nosologic forms and in the severity of condition of pregnant women, which is associated with the provision of HTMC at the Level 3 obstetric hospitals. There are significant differences in the outcomes of hospital admission of female patients: in MH PPDs, discharge after treatment is significantly more often the outcome of admission, while in PC PPDs it is childbirth. Although natural delivery was the most common

mode of delivery for PPD patients in both MHs and PCs, the proportion of CS in PCs was higher and more frequent than in MHs, the use of CS there was planned.

4. The most frequent medical council was conducted for pregnant women aged 30-39 years (63.6%) at an average gestational age of 33.1±0.15 weeks with detected fetal pathology (91.9%), in the structure of which the greatest proportion was urinary system malformations (32.7%) and CVS (25.3%). The type of fetal pathology in pregnant women had significant differences depending on the pregnant woman's age. The proportion of favorable prognoses for fetal health was lower than the proportion of favorable prognoses for fetal life (86.1% vs. 91.5%). With increasing age of the pregnant woman, the indicators of the need for delivery in PCs, the use of CS and surgical treatment after the childbirth decreased.

5. Significant differences in the medical, social and anamnestic characteristics of PPD patients depending on the level of obstetric hospital were found. Patients younger than 25 years (75.5%), married (84.4%), with complete and incomplete secondary education (41.7%), and whose treatment was paid for with MHI funds (91.7%) were significantly more likely to be treated at MH PPDs, while pregnant women aged 35 and older (38.2%), unmarried (8.2%), with higher/incomplete higher education (69.3%), and with MHI paid for their stay (3.1%) were more likely to be treated at PC PPDs. MH PPD patients were more likely to have emergency admission (65.6%), via EMS (38.2%), for first pregnancy (42.0%) that ended in delivery (74.5%), which were more likely to be natural (74.5%) and there was 1 CS for every 6.2 natural deliveries. Patients of Level 2 PPDs were less likely to have an aggravated obstetric, gynecologic, hereditary, and somatic anamnesis, but more likely to be under regular medical check-up. PC PPD patients were significantly more likely to have planned, referral, and self-referral admissions, to have had a previous pregnancy resulting in delivery with CS and spontaneous miscarriage/non-developing pregnancy, to have 1 CS per 3.6 natural births, and to have a higher obstetric risk for preeclampsia, risk of fetal growth retardation, and trisomy 21. In addition, there were significant differences in the structure of somatic, hereditary and gynecologic morbidity among PPD patients

depending on the level of obstetric hospital. So, we can talk about proper routing of pregnant women in the megalopolis.

6. MH PPDs had shorter waiting time for admission and housed fewer patients in the wards (2.02±0.02 vs. 2.34±0.05) compared to PC PPDs. Regardless of the level of obstetric hospital, the level of satisfaction with the conditions of stay in the department was very high and exceeded the indicator set by the TPSG. Only 5.9% of patients in MH and 5.2% in PC PPDs were partially or completely dissatisfied with the ward environment, with food and lighting being the main reasons for dissatisfaction. There was a fairly high proportion of dissatisfaction with the ban on visits (11.8%) and lack of repair (11.1%) in MH PPDs, and in PC PPDs – with the lack of toiletries (10.6%) and overcharging for accommodation (8.0%).

7. Both doctors' and nurses' were highly evaluated by the patients, but in PC PPDs they more often reported insufficient time and attention, and in MH PPDs – non-tactful attitude. At the same time, patients rated the work of the department lower than the activity of the medical organization as a whole and the work of medical personnel. More than 90% of patients would recommend both, PPDs and the organization as a whole for the care of women with pregnancy pathology. Only 2.3% of patients will not recommend PPDs in Level 2 maternity care organizations for treatment during pregnancy.

8. The study revealed significant differences in the organization of specialized medical care in PPDs depending on the level of organization of obstetric care, which should be taken into account when improving these departments' work and in making management decisions related to improving their performance and quality of work.

PRACTICAL RECOMMENDATIONS

To the executive authorities in the field of healthcare of the city of St. Petersburg:

1. In order to reduce maternal mortality and incidence of pregnant women, to provide for increased control over the quality of specialized medical care for women during pregnancy, for the continuity of work of obstetric care organizations with other medical organizations in the city.

2. Pay special attention to the introduction of electronic document management in the activities of medical organizations of the city in order to form a single digital circuit in the healthcare system.

3. To ensure further improvement of the efficiency of routing pregnant women, to carry out regular monitoring of the quality of inpatient medical care for women during pregnancy in accordance with the current order of the Ministry of Health of the Russian Federation on the profile "Obstetrics and gynecology".

4. Provide for sociological surveys of patients of obstetric care organizations as a tool to improve the quality of medical care in the system of maternal and child health care.

It is advisable for chief physicians of obstetric care organizations, regardless of the level of the medical organization, to ensure:

- Provision of inpatient medical care to pregnant women in accordance with medical standards.
- Introduction of new medical technologies and evaluation of their efficiency.
- Organization and provision of sanitary and epidemiological regime to prevent and reduce nosocomial infection.
- Introduction of a unified form "Report on the work of the pregnancy pathology department" for statistical monitoring and analysis of the causes of morbidity and treatment results.
- Measures to assess and control the quality of medical care.

- Organization of work on interaction with other structural subdivisions of the obstetrics organization to ensure continuity in the provision of medical care of appropriate quality.
- Compliance with the therapeutic and protective regime.
- Providing emergency care for acute conditions with subsequent transfer to the intensive care unit.
- Attracting specialists for additional consultations.
- Development of methods to reduce the waiting time to receive a patient in the emergency room, depending on the characteristics of the medical institution: setting the time of planned admission; maintaining documentation on planned admission in order to ensure uniform arrival of patients by day of the week; registration of basic medical documentation at the treatment department; improvement of waiting conditions (comfortable furniture, cooler, air conditioner, table for filling out medical documentation).
- Planning of measures to improve conditions for patients (timely repair and equipment)
- Organization of periodic anonymous questionnaires of patients to analyze the quality of activities of the departments, analyze the performance of personnel and develop measures to address performance shortcomings.
- Conducting trainings for medical personnel, monitoring compliance with deontological norms in interaction with colleagues and patients.

It is advisable for chief physicians of Level 3 obstetric care organizations to ensure:

- Multidisciplinary approach to the management of patients with severe obstetric-gynecological, hereditary and somatic pathology.
- Joint management with specialized specialists (neonatologists, pediatric surgeons, neurosurgeons, cardiac surgeons) and delivery of pregnant women with various fetal pathologies;

- Optimization of indications for surgical delivery of pregnant women with various obstetric and extragenital pathologies against the background of the priority position of reducing the frequency of surgical delivery.
- Optimization of methods of timely delivery of patients with very early preterm labor, with chronic placental insufficiency and with fetal growth retardation syndrome.
- Use of telemedicine consultations, perinatal councils in the medical care organization for pregnant women with obstetric and perinatal pathology.
- Involvement in the work of the department of psychologist, rehabilitation doctor, preventive work with patients.

PROSPECTS FOR FURTHER DEVELOPMENT OF THE SUBJECT

Prospects of further development of the thesis topic are:

- studying the organization of specialized medical care in PPDs, both in the subjects of the NWFD and in regions of other federal districts of the Russian Federation.

- assessment of medical care for certain categories of pregnant women, in particular, young pregnant women, pregnant women of older reproductive age;

- assessment of the organization of medical care for pregnant women, women in labor and new mothers depending on the nosological form of the disease that caused admission to PPD.

- assessment of the implementation of existing obstetric and perinatal risks in subsequent pregnancies.

LIST OF ABBREVIATIONS

AH – arterial hypertension

CSD – circulatory system disease

GSD – genitourinary system diseases

ESD – endocrine system disease

HIV – human immunodeficiency virus

HTMC – high-tech medical care

WHO – World Health Organization

CM – congenital anomalies (malformations), deformities and chromosomal abnormalities

ART – ancillary reproductive technology

HD – hypertension disease

GDM – gestational diabetes mellitus

VHI – voluntary health insurance

DR – dispensary registration

FEFD – Far Eastern Federal District

OU – observation unit

WCC – women's care clinic

GIT – gastrointestinal tract

STDs – sexually transmitted diseases

CS – Cesarean section

CHD – coronary heart disease

ICI – isthmic-cervical insufficiency

W. – weeks

PE – pregnancy edema

AMI – acute myocardial infarction

MHI – mandatory health insurance

ACVA – acute cerebrovascular accident

PPD – pathologic pregnancy department

ARVI – acute respiratory viral infections

VFD – Volga Federal District

PC – perinatal center

MH – maternity hospital

Rosstat – Federal State Statistics Service

RF – Russian Federation

DM – diabetes mellitus

NWFD – North-Western Federal District

NCFD – North Caucasian Federal District

EMC – emergency medical care

SPb – St. Petersburg

CVS – cardiovascular system

SFD (Siberian) – Siberian Federal District

USA – United States of America

TPSG – territorial program of state guarantees

UFD – Ural Federal District

SPbSPMU – Federal State-Funded Educational Institution of Higher Education "Saint Petersburg State Pediatric Medical University" of the Ministry of Health of the Russian Federation

RIH (Russian research Institute of Health) – "Central Research Institute of Health Care Organization and Informatization" of the Ministry of Health of the Russian Federation

CNS – central nervous system

CFD – Central Federal District

SFD (Southern) – Southern Federal District

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APPENDICES

Appendix 1

РОССИЙСКАЯ ФЕДЕРАЦИЯ

ФЕДЕРАЛЬНАЯ СЛУЖБА
ПО ИНТЕЛЛЕКТУАЛЬНОЙ СОБСТВЕННОСТИ

RU2023624962

ГОСУДАРСТВЕННАЯ РЕГИСТРАЦИЯ БАЗЫ ДАННЫХ, ОХРАНЯЕМОЙ АВТОРСКИМИ ПРАВАМИ

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Название базы данных:
База данных «Медико-социальная характеристика беременных Санкт-Петербурга, получающих медицинскую помощь в амбулаторных условиях»

Реферат:
Для создания базы данных было проведено анкетирование ПО беременных, проживающих в Санкт-Петербурге. База данных содержит обезличенную информацию о медико-социальной характеристике, дополненную сведениями о состоянии здоровья женщин, что позволяет разработать методические рекомендации для комплексной оценки состояния здоровья беременных и антенатальной охраны плода. Она может быть дополнена и применяться в медико-социальных исследованиях клиницистами, организаторами здравоохранения, гигиенистами, статистиками и др. исследователями. Персональных данных база не содержит. Тип ЭВМ: IBM PC-совмест. ПК. ОС: Windows XP и выше.

Вид и версия системы управления базой данных: Excel

Объем базы данных: 40 КБ

Appendix 2

РОССИЙСКАЯ ФЕДЕРАЦИЯ

RU2023624873

ФЕДЕРАЛЬНАЯ СЛУЖБА
ПО ИНТЕЛЛЕКТУАЛЬНОЙ СОБСТВЕННОСТИ

ГОСУДАРСТВЕННАЯ РЕГИСТРАЦИЯ БАЗЫ ДАННЫХ, ОХРАНЯЕМОЙ АВТОРСКИМИ ПРАВАМИ

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Название базы данных:
База данных «Медико-социальная характеристика беременных Санкт-Петербурга, получающих медицинскую помощь в стационарных условиях»

Реферат:
Для создания базы данных было проведено анкетирование беременных, получавших лечение на отделениях патологии беременности, и осуществлена последующая выкопировка сведений из «Индивидуальной карты беременной и родильницы» (ф. 111/у-20) и «Медицинской карты пациента, получающего медицинскую помощь в стационарных условиях, в условиях дневного стационара» (ф. 003/у) на 200 женщин, проживающих в мегаполисе. База данных содержит обезличенную информацию исследования состояния здоровья беременных, что позволило выявить негативные факторы, влияющие на показатели здоровья матери и плода данного региона. База данных может использоваться в качестве научного материала для изучения здоровья женской популяции и применения здоровьесберегающих технологий.

Вид и версия системы управления базой данных: Excel

Объем базы данных: 100 КБ

Appendix 3

ПРАВИТЕЛЬСТВО САНКТ-ПЕТЕРБУРГА
КОМИТЕТ ПО ЗДРАВООХРАНЕНИЮ

Санкт-Петербургское государственное бюджетное учреждение здравоохранения
«Родильный дом № 9»
ул. Орджоникидзе, 47, Санкт-Петербург, 196142
тел./факс: (812) 726-44-55;
e-mail: roddom9@zdrav.spb.ru
ОКПО 35456156 ОКОГУ 2300229
ОГРН 1037821066337 ИНН 7810467660
КПП 781001001
03.06.2024 № 5454к

В диссертационный совет

А К Т
о внедрении

НАИМЕНОВАНИЕ РАЗРАБОТКИ.
Рекомендации, медико-организационного характера, направленные на совершенствование организации специализированной медицинской помощи беременным женщинам в отделениях патологии беременности.

КЕМ ВНЕДРЕНО.
Главный врач «Родильный дом №9» Болотских В.М.
СПб ГБУЗ «Родильный дом № 9».
196142, г. Санкт-Петербург, м. Звездная, ул. Орджоникидзе, д. 47
Тел/факс: +7 (812) 727-32-76E-mail: roddom9@zdrav.spb.ru

ИСТОЧНИК ИНФОРМАЦИИ.
Материалы диссертационного исследования Сергиенко Ольги Игоревны на тему: «Совершенствование организации специализированной медицинской помощи в отделениях патологии беременности».

РЕЗУЛЬТАТЫ ВНЕДРЕНИЯ.
Предложенные по результатам работы рекомендации, направленные на совершенствование организации медицинской помощи беременным в стационарных условиях, были внедрены в практику и позволили улучшить доступность и качество акушерско-гинекологической помощи женскому населению в условиях отделения патологии беременности родильного дома.

СПб ГБУЗ «Родильный дом № 9» /В. М. Болотских/

Appendix 4

ПРАВИТЕЛЬСТВО САНКТ-ПЕТЕРБУРГА
КОМИТЕТ ПО ЗДРАВООХРАНЕНИЮ
Санкт- Петербургское государственное
бюджетное учреждение здравоохранения
«Родильный дом № 16»
192283, Санкт-Петербург
ул. Малая Балканская 54, тел/ф: 778-91-71
ОГРН 1037835027438
ИНН / КПП 7816057854 / 781601001
Л.сч. № 0151141
Расчетный счет 03224643400000007200
БИК 014030106, ОКПО 34363493
Корресп. счет 40102810945370000005
ОКТМО 40907000000,
E-mail: roddom16@zdrav.spb.ru
03.06.2024г. №4654

В Диссертационный совет

А К Т
о внедрении

НАИМЕНОВАНИЕ РАЗРАБОТКИ.

Рекомендации, медико-организационного характера, направленные на совершенствование организации специализированной медицинской помощи беременным женщинам в отделениях патологии беременности.

КЕМ ВНЕДРЕНО.

ВРИО главного врача «Родильный дом №16» Кирман О.Н.
СПб ГБУЗ «Родильный дом № 16».
192283, г. Санкт-Петербург, м. Купчино, ул. Малая Балканская, д. 54
Тел/факс: +7 (812) 778-91-71 E-mail: roddom16@zdrav.spb.ru

ИСТОЧНИК ИНФОРМАЦИИ.

Материалы диссертационного исследования Сергиенко Ольги Игоревны на тему: «Совершенствование организации специализированной медицинской помощи в отделениях патологии беременности».

РЕЗУЛЬТАТЫ ВНЕДРЕНИЯ.

Предложенные по результатам работы рекомендации, направленные на совершенствование организации медицинской помощи беременным в стационарных условиях, были внедрены в практику и позволили улучшить доступность и качество акушерско-гинекологической помощи женскому населению в условиях отделения патологии беременности родильного дома.

Врио главного врача
СПб ГБУЗ «Родильный дом №16» **О.Н. Кирман**

Appendix 5

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ
ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ
«САНКТ-ПЕТЕРБУРГСКИЙ ГОСУДАРСТВЕННЫЙ ПЕДИАТРИЧЕСКИЙ МЕДИЦИНСКИЙ УНИВЕРСИТЕТ»
МИНИСТЕРСТВА ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ (ФГБОУ ВО СПбГПМУ Минздрава России)
ул. Литовская, д. 2, г. Санкт-Петербург, 194100,
тел.(812)2950646, факс (812)2954085,
e-mail:spb@gpma.ru, http://www.gpma.ru
№
на № 0254 и от 10.06.2024

В Диссертационный совет

А К Т
о внедрении

НАИМЕНОВАНИЕ РАЗРАБОТКИ.

Рекомендации, медико-организационного характера, направленные на совершенствование организации специализированной медицинской помощи беременным женщинам в отделениях патологии беременности.

КЕМ ВНЕДРЕНО.

Главный врач клиники СПбГПМУ Резник В.А.

ФГБОУ ВО «Санкт-Петербургский государственный педиатрический медицинский университет» Министерства здравоохранения Российской Федерации.

194100, Российская Федерация, г. Санкт-Петербург, ул. Литовская, 2, литер Х
Тел. +7 (812) 416-53-00, kdo.prenatal@mail.ru, http://www.gpma.ru

ИСТОЧНИК ИНФОРМАЦИИ.

Материалы диссертационного исследования Сергиенко Ольги Игоревны на тему: «Совершенствование организации специализированной медицинской помощи в отделениях патологии беременности».

РЕЗУЛЬТАТЫ ВНЕДРЕНИЯ.

Предложенные по результатам работы рекомендации, направленные на совершенствование организации медицинской помощи беременным в стационарных условиях, были внедрены в практику и позволили улучшить доступность и качество акушерско-гинекологической помощи женскому населению в условиях отделения патологии беременности перинатального центра.

Главный врач, д.м.н. /В.А. Резник/

Appendix 6

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ
ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ
«САНКТ-ПЕТЕРБУРГСКИЙ ГОСУДАРСТВЕННЫЙ ПЕДИАТРИЧЕСКИЙ МЕДИЦИНСКИЙ УНИВЕРСИТЕТ»
МИНИСТЕРСТВА ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ (ФГБОУ ВО СПбГПМУ Минздрава России)
ул. Литовская, д. 2, г. Санкт-Петербург, 194100,
тел.(812)2950646, факс (812)2954085,
e-mail:spb@gpma.ru, http://www.gpma.ru

_____№_____

на № 03-2211 от 30.05.24

УТВЕРЖДАЮ
Проректор по научной работе
ФГБОУ ВО «Санкт-Петербургский
государственный педиатрический
медицинский университет» МЗ РФ
д.м.н., профессор _____ Р.А. Насыров

АКТ

О внедрении научно-практической разработки

1. НАИМЕНОВАНИЕ РАЗРАБОТКИ.
   Рекомендации, медико-организационного характера, направленные на совершенствование организации специализированной медицинской помощи беременным женщинам в отделениях патологии беременности.
2. КЕМ ВНЕДРЕНО. АДРЕС ИСПОЛНИТЕЛЯ.
   Юрьев Вадим Кузьмич, заведующий кафедрой общественного здоровья и здравоохранения ФГБОУ ВО «Санкт-Петербургский государственный педиатрический медицинский университет» МЗ РФ (194100, г. Санкт-Петербург, ул. Литовская, д. 2).
3. ИСТОЧНИК ИНФОРМАЦИИ.
   Материалы диссертационного исследования О.И. Сергиенко на соискание ученой степени кандидата медицинских наук на тему: «Совершенствование организации специализированной медицинской помощи в отделениях патологии беременности».
4. ФОРМА ВНЕДРЕНИЯ.
   Использование фрагментов диссертационного исследования на лекциях и на занятиях в курсе общественное здоровье и здравоохранение (4-5 курсы).
5. РЕЗУЛЬТАТЫ ВНЕДРЕНИЯ.
   Студенты на конкретных примерах знакомятся с особенностями комплексной оценки организации медицинской помощи беременным женщинам в условиях отделения патологии беременности родильного дома.
6. ПРЕДЛОЖЕНИЯ И РЕКОМЕНДАЦИИ.
   Материалы диссертационного исследования Сергиенко О.И. могут быть рекомендованы внедрению в преподавание курсов общественного здоровья и организации здравоохранения в других медицинских ВУЗах. Целесообразно издание учебно-методического пособия по материалам диссертационного исследования.

Заведующий кафедрой общественного здоровья
и здравоохранения, д.м.н., профессор _____ /В.К. Юрьев/

Appendix 7

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ
ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ
«САНКТ-ПЕТЕРБУРГСКИЙ ГОСУДАРСТВЕННЫЙ ПЕДИАТРИЧЕСКИЙ МЕДИЦИНСКИЙ УНИВЕРСИТЕТ»
МИНИСТЕРСТВА ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ (ФГБОУ ВО СПбГПМУ Минздрава России)
ул. Литовская, д. 2, г. Санкт-Петербург, 194100,
тел.(812)2950646, факс (812)2954085,
e-mail:spb@gpma.ru, http://www.gpma.ru

_____№_____

на № 02534 от 17.06.2024

УТВЕРЖДАЮ
Проректор по научной работе
ФГБОУ ВО «Санкт-Петербургский
государственный педиатрический
медицинский университет» МЗ РФ
д.м.н., профессор _____ Р.А. Насыров

АКТ
О внедрении научно-практической разработки

1. НАИМЕНОВАНИЕ РАЗРАБОТКИ.
Рекомендации, медико-организационного характера, направленные на совершенствование организации специализированной медицинской помощи беременным женщинам в отделениях патологии беременности.
2. КЕМ ВНЕДРЕНО.
Иванов Дмитрий Олегович, заведующий кафедрой неонатологии с курсами неврологии и акушерства-гинекологии ФП и ДПО ФГБОУ ВО «Санкт-Петербургский государственный педиатрический медицинский университет» МЗ РФ (194100, г. Санкт-Петербург, ул. Литовская д.2).
3. ИСТОЧНИК ИНФОРМАЦИИ.
Материалы диссертационного исследования О.И. Сергиенко на соискание ученой степени кандидата медицинских наук на тему: «Совершенствование организации специализированной медицинской помощи в отделениях патологии беременности».
4. ФОРМА ВНЕДРЕНИЯ.
Использование фрагментов диссертационного исследования на лекциях и на занятиях.
5. РЕЗУЛЬТАТЫ ВНЕДРЕНИЯ.
Слушатели на конкретных примерах знакомятся с особенностями комплексной оценки состояния здоровья и организация специализированной медицинской помощи беременным женщинам для улучшения антенатальной охраны плода.
6. ПРЕДЛОЖЕНИЯ И РЕКОМЕНДАЦИИ.
Материалы диссертационного исследования Сергиенко О.И. могут быть рекомендованы к внедрению в преподавание акушерства в других медицинских ВУЗах. Целесообразно издание методических рекомендаций по комплексной оценке состояния здоровья и организация специализированной медицинской помощи беременным женщинам для улучшения доступности и качества акушерского-гинекологической помощи женскому населению в условиях отделения патологии беременности.

Заведующий кафедрой неонатологии
с курсами неврологии и акушерства-гинекологии
ФП и ДПО, д.м.н. /Д.О. Иванов/