ST. PETERSBURG STATE PEDIATRIC MEDICAL UNIVERSITY

Zastupova Anna Alekseevna

STATUS AND SCIENTIFIC SUBSTANTIATION FOR IMPROVING ANTENATAL FETAL CARE IN A WOMEN'S CLINIC

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Associate professor K.E. Moiseeva

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INTRODUCTION

Relevance of the study

One of the most important tasks of Russian healthcare is to create a system for the formation, active preservation, restoration and strengthening of children's health. The special status of a child is enshrined in Article 38 of the Constitution of the Russian Federation [72]. The Decrees of the President of the Russian Federation "On Proclaiming a Decade of Childhood in the Russian Federation" (No. 240 dated 29.05.2017) and "On holding the Year of the Family in the Russian Federation" (No. 875 dated 22.11.2023) [174-175] confirm such a close attention to the issues of maternal and child protection. In order to increase the availability and quality of medical care for mothers and children, the Government of the Russian Federation approved the State Program "Development of Healthcare" on December 26, 2017, the priority project of which is aimed at "improving the organization of medical care for newborns and women during pregnancy and after childbirth, including the development of a network of perinatal centers in the Russian Federation" [130]. In addition, the priority of protecting children's health, according to Federal Law No. 323-FZ dated 21.11.2011 "On the basics of protecting the health of citizens in the Russian Federation", is highlighted as one of the basic principles of domestic healthcare [180].

Despite the measures taken by state authorities, in conditions of low fertility, the issues of women's and children's health in the Russian Federation have become extremely relevant in recent years. The unfavorable situation related to population reproduction has revealed a decline in the quality of the country's reproductive potential. Under these conditions, the tasks of preserving and improving the health of women of fertile age have become most important. The health and quality of life of the mother plays a primary role in the development of the unborn child [24, 42, 55, 58, 66, 111, 118, 168, 186, 190, 198]. This is due to the influence of medical and social risk factors, which include the age of parents and their financial well-being, the course of the perinatal period, heredity, environmental and ecological conditions, medical care organization, etc. [21, 76, 203, 225]. The importance of analyzing risk factors for child health is due to their significant

influence on the occurrence of intrauterine pathological conditions and adverse perinatal outcome [51, 52, 66, 78, 162, 188, 194, 224, 223].

Perinatal mortality is the most important indicator of the health status of the country. Antenatal mortality has a significant share in the structure of perinatal mortality [95, 96, 172, 210, 232]. Fetal death during pregnancy is a priority concern in medicine, as it directly depends on the availability and quality of medical care in healthcare organizations [20, 38, 60, 83, 105, 183, 218, 220, 231]. However, with significant success in reducing antenatal mortality, the frequency of birth of children with congenital malformations and certain conditions occurring in the perinatal period remains quite high [41, 43, 64, 75, 95, 176, 194, 234]. Among the causes of both antenatal mortality and developmental disorders of the child during pregnancy, there are diseases such as preeclampsia, placenta and umbilical cord pathologies, maternal and infant blood immunological incompatibility, etc. [6, 28, 109, 115, 126, 127, 182, 224, 240]. In addition, adverse risk factors include the conditions and lifestyle of the prospective mother, as well as improper prescription and use of medications [30, 225, 248].

Thus, a huge role in the formation of child health belongs to the state of health of the prospective mother before and during pregnancy, timely elimination of risk factors and orientation of the family to a healthy pregnancy [167, 214, 217, 219, 246]. All of the above should be provided by the antenatal fetal protection system conducted in women's clinics [1, 29, 37, 56, 114, 125, 129]. This confirms the expediency of an integrated approach to providing medical care to pregnant women and the need for its further improvement [10, 86, 113, 187]. Thus, the assessment of outpatient obstetric and gynecological care during pregnancy and the identification of its main problems, due to the potential consequences for the future generation, is of particular scientific and practical importance. This determines the relevance of the chosen research topic.

The degree of elaboration of the research topic

Vartapetova N.V. was engaged in the scientific substantiation, development and implementation of the organizational and functional model of obstetric, gynecological and perinatal care at the present stage [26]. The work of Bantyeva M.N. was devoted to the development of measures to optimize outpatient obstetric and gynecological care and

its regulatory support [18]. Beybutova A.M. was engaged in the organization and quality of medical and social care for pregnant women in urban women's clinics [21]. The issue of optimizing the organization of outpatient obstetric and gynecological care was raised by Solovyeva E.A. in her work [166]. The organization of preventive counseling for pregnant women in the system of antenatal child health protection is reflected in the study of Balakireva A.V. [16]. The formation, current state and main issues of the organization of outpatient obstetric and gynecological care in Russia were considered by Moiseeva K.E. [104].

A number of other scientific studies carried out in various regions of the Russian Federation are also devoted to the provision of specialized medical care to pregnant women [9, 12, 14, 19, 27, 35, 59, 62, 63, 77, 80, 94, 97, 99, 101]. However, there have been no previous studies devoted to assessing the quality of life of pregnant women and improving the provision of outpatient obstetric and gynecological care by identifying the main issues in the organization of antenatal fetal protection in women's clinics.

The aim of the research is to develop and scientifically substantiate a set of measures aimed at improving antenatal fetal protection in a women's clinic based on an assessment of the state of organization of medical care for pregnant women in outpatient settings.

Research objectives:

1. To assess the indicators of medical and demographic processes and to study the health status of pregnant women.

2. To conduct a comparative assessment of the medical and social characteristics and obstetric anamnesis of pregnant women with fetal pathology and identify the features of their quality of life.

3. To evaluate the activities of the outpatient obstetric and gynecological service for antenatal fetal protection and identify its main problems.

4. To develop scientifically based recommendations for improving the organization of antenatal fetal protection in a women's clinic.

Scientific novelty of the study:

A comparative assessment and study of trends in fertility rates, perinatal mortality, incidence of pregnant women and provision of obstetric and gynecological services of the megalopolis with medical personnel in 2018-2022 was carried out. In addition, the following new data were obtained on the state of reproductive resources, fertility of women and incidence of women of fertile age; on the structure of perinatal mortality and stillbirth rate, the magnitude and dynamics of antenatal mortality; incidence of pregnant women in the megalopolis with certain forms of diseases that complicate the period of pregnancy.

The organization of medical care for pregnant women at the outpatient stage was assessed, a comparative analysis of the medical and social characteristics and obstetric history of pregnant women with fetal pathology was carried out, and their quality of life was studied. The main issues in the organization of antenatal fetal protection in the women's clinics of the megalopolis were identified. Medical and organizational measures aimed at improving the organization of medical care for pregnant women at the outpatient stage to improve the antenatal protection of the fetus in a women's consultation have been developed and scientifically substantiated.

Theoretical and practical significance of the research

The theoretical significance of the conducted study lies in the application of a set of basic methods for assessing the incidence of pregnant women and the organization of outpatient obstetric and gynecological care in a megalopolis. The assessment of the organization of primary specialized medical care for pregnant women made it possible to identify the main issues of its provision at the outpatient stage in women's clinics in the city.

The provisions, based on the conducted assessment of the organization of specialized medical care for pregnant women, that allow to develop and scientifically substantiate recommendations of medical and organizational nature, contributing to the improvement of the quality of medical care for pregnant women at the outpatient stage have been proved.

The practical significance of the research is confirmed by the fact that the obtained results made it possible to develop a set of practical recommendations to improve the organization of antenatal fetal protection in a women's clinic.

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 outpatient settings" (database registration certificate 2023624962 dated 25.12.2023) [67]. The database contains anonymized information on medical and social characteristics, supplemented with information on the health status of women, which allows the development of methodological recommendations for a comprehensive assessment of the health status of pregnant women and the organization of antenatal fetal protection. It can be supplemented and applied in medical and social research by clinicians, health care organizers, hygienists, statisticians, and other researchers. The database does not contain any personal data.

The practical recommendations developed based on the results of this research have been implemented in the activities and are used in the work of the following healthcare organizations: St. Petersburg SHCI "City Polyclinic No.23", department "Women's Consultation No.36" (Appendix 1); Consulting and Diagnostic Department 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 (Appendix 2); Women's Consultation of St. Petersburg SCHI "Maternity Hospital No.9" (Appendix 3).

Some results and the main provisions of the thesis are used in the process of teaching students of pediatric and medical faculties, clinical residents at the following departments: public health and public health care (Appendix 4), 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 5). A memo "Breastfeeding: meaning, preparation, lactation, hypogalactia" and "The key to healthy pregnancy" poster were designed (Appendix 6-7).

Research methodology and methods

Content analysis, epidemiological, sociological, statistical, graphical and analytical methods, retrospective analysis, qualimetry, data extraction (excerpting) from medical records and reporting documentation, continuous and sampling methods of research were used in the work. Descriptive statistics data are presented in the form of quantitative and qualitative indicators: weighted arithmetic mean, average standard deviation, standard error of weighted arithmetic mean, extensive and intensive indicators. Parametric and non-parametric methods of statistical data processing were used. The normality of the distribution of the studied samples was checked using the Kolmogorov-Smirnov criterion. The comparison of the two groups was carried out using the Student's t-test (in the case of a normal distribution) or the Mann-Whitney test (in the case of a distribution other than normal). The formation and statistical processing of the database, as well as the analysis and display of the results obtained, were carried out using the Microsoft Office Excel 2016 program (Word, Excel) and the StatSoft-Statistica 10.0 software package.

The basic provisions for the thesis defense:

1. In St. Petersburg, against the background of a high proportion of women of late reproductive age and the incidence of pregnant women with certain forms of diseases that complicated the course of pregnancy, the perinatal mortality and morbidity rates of newborns significantly exceed the average Russian values. One of the current areas of increasing the efficiency of providing medical care to women during pregnancy is to improve the work of antenatal clinics.

2. Pregnant women with fetal pathology have risk factors of medical and social characteristics, obstetric history and quality of life features that must be taken into account in the system of antenatal care of the fetus in antenatal clinics of the metropolis

3. The presence of deficiencies in the system of organizing antenatal care of the fetus in the metropolis related to staffing and health education work of the obstetric and gynecological service determines the need to improve it.

4. The developed medical and organizational measures aimed at improving the organization of medical care for pregnant women at the outpatient stage will improve the system of antenatal care of the fetus in antenatal clinics.

Main scientific results

The scientific research was carried out on the basis of an indicative sample using a set of methods and techniques. Continuous and selective research methods were used in the formation of the statistical population. Extracted data from the form No.111/u-20 "Individual medical card of pregnant woman and new mother" served as material for the formation of the database "Medical and social characteristics of pregnant women in St. Petersburg receiving outpatient medical care". The results of the survey of pregnant women made it possible to identify the main shortcomings in the organization of antenatal fetal protection in women's clinics for the subsequent development of management decisions in order to improve the quality of obstetric and gynecological care in medical organizations of the megalopolis.

The obtained research results are used in the process of teaching students of the pediatric and medical faculties, clinical residents at the Federal State-Funded Educational Institution of Higher Education "Saint Petersburg State Pediatric Medical University" of the Ministry of Health of the Russian Federation [60, 61, 62, 66, 78, 98,100, 101, 102].

The proposed recommendations based on the results of the research aimed at improving the organization of antenatal fetal protection in a women's clinic were implemented in the practical activities of healthcare organizations in St. Petersburg.

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

1. Ivanov D.O., Kharbediya Sh.D., Zastupova A.A., et al. "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 [62].

2. Zastupova A.A. Regulatory and legal bases of antenatal fetal protection in the Russian Federation. In the collection: Problems of urban health. Collection of scientific papers. Edited by N.I. Vishnyakov. St. Petersburg, 2023. Pp. 253-258 [54].

3. Moiseeva K.E., Ivanov D.O., Alekseeva A.V., Kharbediya 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 [101].

4. Moiseeva K.E., Ivanov D.O., Yuryev V.K., Alekseeva A.V., Shevtsova K.G., Kharbediya Sh.D., Zastupova A.A., Danilova V.V. Birth weight deviation as a risk factor for a child's health. Social aspects of public health. 2023. Vol. 69. No. 2 [102].

5. Moiseeva K.E., Yuryev V.K., Alekseeva A.V., Shevtsova K.G., Sokolova V.V., Kharbediya Sh.D., Danilova V.V., Zastupova A.A. The effect of complicated childbirth on the health of newborns. Modern issues of healthcare and medical statistics. 2023. No.2. Pp. 845-869 [100].

6. Zastupova A.A. Some results of the evaluation of indicators characterizing the performance of obstetric services. Forcipe. 2023. Vol. 6. No. S1. Pp. 243-244 [53].

7. Sergienko O.I., Zastupova A.A., Kharbediya Sh.D. Assessment of the organization of medical care for pregnant women with fetal malformations. / Forcipe. 2023. Vol. 6. No. S1. Pp. 560-561 [161].

8. 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[98].

9. Ionova T.I., Zastupova A.A., Moiseeva K.E., Berezkina E.N. Indicators of the quality of life of newborns. Medicine and healthcare organization. 2023. Vol. 8. No. 1. Pp. 21-31 [66].

10. Ivanov D.O., Moiseeva K.E., Yuriev V.K., Mezhidov K.S., Shevtsova K.G., Alekseeva A.V., Yakovlev A.V., Kharbediya Sh.D., Karaylanov M.G., Sergienko O.I., Zastupova A.A. The quality of dispensary observation during pregnancy in reducing infant mortality. Medicine and health care organization. 2023. Vol. 8. No. 4. Pp. 4-15 [60].

11. Shevtsova K.G., Berezkina E.N., Zastupova A.A. Assessment of health-related quality of life in children of the newborn period. In the book: Abstracts of the XVI All-Russian seminar "Reproductive potential of Russia: versions and contraversions" and the IX All-Russian Conference "FLORES VITAE. Contraversions of neonatal medicine and pediatrics". Moscow, 2022. Pp. 138-140 [180].

12. Moiseeva K.E., Yuryev V.K., Zastupova A.A., Sergeenko O.I., Shevtsova K.G., Simonova O.V., Kharbediya Sh.D., Alekseeva A.V., Gazheva A.A. A patient-oriented approach to providing medical care in maternity hospitals (departments) and

perinatal centers. / In the collection: Preventive medicine-2022. Collection of scientific papers of the All-Russian scientific and practical conference with international participation. Edited by A.V. Meltzer, I.S. Yakubova. St. Petersburg, 2022. Pp. 186-191 [97].

13. Moiseeva K.E., Yuryev V.K., Alekseeva A.V., Kharbediya Sh.D., Zastupova A.A., Sergeenko O.I., Shevtsova K.G., Simonova O.V. Comparative assessment of medical and social characteristics of patients of obstetric hospitals. / In the collection: Preventive Medicine-2022. Collection of scientific papers of the All-Russian scientific and practical conference with international participation. Edited by A.V. Meltzer, I.S. Yakubova. St. Petersburg, 2022. Pp. 192-197 [99].

14. 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 [94].

15. Ivanov D.O., Moiseeva K.E., Berezkina E.N., Sergienko O.I., Zastupova 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 [61].

16. 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 [51].

17. Kuznetsova Yu.V., Zastupova A.A., Lisovsky O.V., Lisitsa I.A., Selikhanov B.A., Getsko N.V. Assessment of risk factors for premature birth and the role of nursing personnel in the care of premature babies. Medicine and healthcare organization. 2021. Vol. 6. No. 4. Pp. 42-50 [78].

18. Zastupova A.A. Medical and social characteristics of the newborn's families. Forcipe. 2021. Vol. 4. No. S2. Pp. 54-55 [52].

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. In the course of the study the

following were analyzed: 20 forms of reporting medical documentation; 15 statistical materials of the Federal State Statistics Service; 10 statistical materials the Central Research Institute of Health Care Organization and Informatization of the Ministry of Health of the Russian Federation Rosstat; 1485 questionnaire forms specially developed for the present study and 512 excerpt cards from the forms of medical records. Statistical analysis methods were used to process the data. The number of units of information in the study was (total) 2042.

Approbation of the results of the thesis was carried out at international and all-Russian scientific and practical congresses and conferences. Materials of the thesis were presented and discussed at: the Congress with international participation "Healthy children – the future of the country" (St. Petersburg, 2022), IX All-Russian conference "FLORES VITAE. Contraversions of neonatal Medicine and Pediatrics" (Sochi, 2022), the All-Russian Scientific and Practical Conference with international participation "Preventive Medicine - 2022" (St. Petersburg, 2022), the Multidisciplinary Forum "VI Education Week" (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 "Topical issues of modern medicine" (Astrakhan, 2023), XIII Baltic Congress on Pediatric Neurology with international participation (St. Petersburg, 2023), the Congress with international participation "Healthy children – the future of the country" (St. Petersburg, 2023), the All-Russian Scientific and Practical Conference "Relevant issues of maternal and child health: priority for prevention" (Moscow, 2023), III Correspondence Scientific and Practical Conference with international participation "Topical aspects of medical activity in the youth environment" (Kirov, 2023), International Scientific and Practical Conference "Health and Environment" (Minsk, 2023), XVI All-Russian Scientific and Practical Conference "Human Health in the XXI century. Quality of Life" (Kazan, 2024), XI All-Russian Scientific and Practical Conference with international participation (St. Petersburg, 2024), VI International Scientific and Practical Conference "Modern achievements and prospects for the development of public health protection" (Tashkent, 2024), Scientific and Practical

Conference with international participation "Issues and prospects for improving the quality of patients' life" (Tashkent, 2024), VIII National Congress with international participation "Healthy children - the future of the country" (St. Petersburg, 2024).

Personal contribution of the author

The author independently analyzed literature sources on the topic of the thesis, developed the research design, statistical processing and analysis of the obtained results, formulated conclusions and developed practical recommendations. The author independently conducted a survey of pregnant women in the antenatal clinics and the consultative and diagnostic department of St. Petersburg, copied information from the form No.111/u-20 "Individual medical card of pregnant woman and new mother".

Publications

18 scientific papers have been published on the topic of the thesis, including 8 in peer-reviewed scientific journals recommended by the State Commission for Academic Degrees and Titles of the Ministry of Education and Science of Russia.

The structure and scope of the thesis

The thesis is presented on 170 pages of typewritten text and consists of an introduction, a review of the literature on the research topic, 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 251 sources, including 207 of domestic and 44 of foreign authors. The work is illustrated with 38 figures and 35 tables.

Chapter 1. CURRENT ISSUES IN THE ORGANIZATION OF OBSTETRIC AND GYNECOLOGICAL CARE (LITERATURE REVIEW)

1.1. The history of maternal and child health in Russia and abroad

The concern of high infant mortality in Russia was one of the major concerns in the late 19th and early 20th centuries. Since the very end of the 18th century, some attempts have been made to draw attention to this issue. At the same time, it was only in the second half of the 19th century that this problem acquired a serious scientific foundation, thanks to the development of pediatrics as an independent scientific discipline [5, 8, 46, 25].

During the discussion of methods to reduce infant mortality, special attention was paid to the social causes of this phenomenon. It was recognized that poverty and low level of education are the main factors that have a great impact on the increase in the death rate in Russia. The economic and social conditions in the country created an isolated situation compared to other states. It was noted that the reduction of child mortality should begin with the elimination of these negative factors. However, it is important to understand that the problem of child mortality is not limited only to the social aspects of life, but there are other factors affecting the health of the mother and fetus [65].

In the 19th century, new types of assistance to mothers and children were organized, such as nurseries, consultations, the so-called "milk drops" and the maternity insurance system [39, 44, 92]. They served as a contribution to the existing maternity care system, which provided care for the mother and newborn baby.

However, at the beginning of the 20th century, the Russian government realized the need to create a broader system of maternal and child healthcare at the national level. In this regard, an interdepartmental commission was formed and established in 1912, which was engaged in reviewing medical and sanitary legislation and drafting bills on the protection of motherhood, infancy and childhood. This initiative has become one of the most significant in the field of maternal and child health in Russia [70, 73].

One of the main concerns that drew close attention was infant mortality. A separate department, which began its work on May 6, 1913, was formed to solve this problem.

This department worked on the development of relevant legislation and took measures to prevent child mortality and protect maternity. One of the important measures taken by the department was the introduction of a system of compulsory registration of pregnant women and newborns. Thanks to this system, it has become possible to monitor health status of mothers and infants and provide them with the necessary medical care on time. The department also actively collaborated with medical institutions and specialists. It sought to improve the skills of physicians and medical personnel to provide more effective obstetrics care and improve health of mothers and children [46].

The tasks set for the department made it possible to carry out research in three directions: the first is the fight against child mortality; the second is maternity protection and the third is the organization of proper obstetrics. The department also developed the main provisions for the draft law on the protection of motherhood, infancy and childhood.

The initial part of the document outlined key principles aimed at protecting maternal health and reducing perinatal mortality. These principles prescribed state, zemstvo and city structures to take care of mothers and newborns, providing them with appropriate support. In cases of financial constraints on local institutions, it was possible to obtain funding from the central government. Every year, under the editorship of the Ministry of Internal Affairs, a list of charitable organizations was created that received funding from public funds to help mothers and children. Though, during the discussion on these issues at the meeting of the fifth sub-commission, differences of opinion appeared as to who should take full responsibility for combating the mortality of children under the age of 17 and protecting motherhood - state structures or public organizations [89, 90].

During the commission meeting, it was emphasized that solving the problems of mortality among the population and maintaining the general level of health are tasks that should be performed by local public institutions. At the same time, it was suggested that the State and the Government should take full responsibility for maternal and child health care.

In the second part of the document, the norms concerning the work of maternity hospitals and working conditions of women were prescribed. Women working in the

industrial sector during pregnancy were forbidden to work two weeks before and four weeks after childbirth in order to ensure their health and safety. In addition, nursing mothers had the opportunity to leave work for one hour to feed their child during the first nine months [2].

Such a rule was in place for female workers in factories and mills as well as for women in agriculture and plantations, which helped to support and encourage young mothers in ensuring the well-being and proper nutrition of their children.

The third part of the provisions covered issues related to the protection of infancy and childhood. This section mentioned various structural units that were engaged in this task: orphanages, shelters, nurseries (both temporary and permanent), milk distribution clinics (known as "milk drop"), foster care systems, children's colonies, clinics and hospitals, summer camps and playgrounds for children. These institutions were of great importance in ensuring the health and well-being of infants and children [33, 89].

The purpose of the nursery was to provide food, care and supervision for newborn children who were abandoned by the female workers. These institutions provided the necessary care and allowed parents to work quietly, since that their children were safe. These facilities provided counseling to monitor the development and health of newborn babies. Such consultations helped to convey to mothers the necessity and importance of breastfeeding, and during these consultations, mothers were trained in proper care and feeding of their children. The institutions also provided low-income mothers with free and high-quality breast milk [185].

There were certain rules in ancient times that governed the activities of nurses and controlled the nursing "craft". Based on these rules, only women whose babies were three months old or died during the postpartum period could become nurses. New mothers, who came to work with a newborn, made exceptions and continued breastfeeding at the workplace [56]. Only special institutions could appoint nurses; these institutions included orphanages and nursing homes, as well as attending physicians. It was the physician's responsibility to report to the local medical supervisory authorities every case where a nurse was appointed. Such a requirement was introduced to control the working

conditions of nurses, to ensure their health, and to prevent problems related to child nutrition [90, 158].

The Russian government, in addition to the work of the commission, made another important step towards the creation of a system of maternal and infant health care - the creation of a central institute in St. Petersburg, which became the main body and introduced research and sanitary-educational work, as well as engaged in the training and re-training of medical workers, both middle and medical personnel, as well as the creation of model institutions of maternal and infant health care in Russia [70, 124]. The ideologist of the creation of such an institution was the privy councilor, the pediatrician K.A. Rauchfuss, managed to captivate Nicholas II with his innovative idea [148].

Professor S.K. Gogel made a report to the Board of Trustees in 1915. The main idea of his report was a proposal to change the status and activities of the Board. Gogel suggested that maternal and infant health care should be seen as an important public endeavor that requires the creation of new bills, a systematic approach, and public funding. He also drew attention to the fact that child mortality should be recognized as a challenge for the state.

Based on Gogel's suggestions, a special bill was necessary to achieve efficiency in maternal and infant care, which was a state objective. This project was to include the transfer of responsibility for maternal and infant health care to the level of zemstvo and city self-governments, similar to that for medical care. In addition, Gogel focused on the need to create a network of institutions for the care of mothers and children, including obstetric centers and district patronages [70]. He stressed that the implementation of these measures should take place in stages to ensure high-quality care for the target group.

At the meeting dedicated to discussion of the foundations for the future work of the Board of Trustees, the report of S.K. Gogel was considered. His report emphasized that the protection of motherhood and infancy should be recognized as an important State task and funded from the State budget. This proposal was approved by the participants of the meeting without any objections [32, 88].

In order to ensure the widest possible development of the institution's activities, the Maternity and Infant Care Trusteeship during these years had to maintain the status of a

non-state community, that is, to retain the status of a private community. This decision was supported by the participants of the meeting.

It was noted at the above-mentioned meeting, that, in order to implement the task of protecting motherhood and infancy, it is extremely important to involve zemstvo and city institutions. It was decided that financing for these purposes will be carried out at the expense of funds from the state treasury. In addition, the importance of giving the Board full freedom in choosing those institutions that will receive state subsidies was emphasized [32, 82].

The Provisional Government did not have either financial or organizational resources that would allow solving the issue of maternity and infancy protection. The complexity and magnitude of the problem required a more in-depth and comprehensive review, which would enable new steps to be taken to improve the maternal and infant health care system to make it more effective and accessible to all women and children [93, 228].

During the period of activity of the Provisional Government, steps were taken towards the expansion of the Ministry of State Welfare. It was proposed to create a specialized Department whose activities would extend to children. There were three departments in the structure of the Department for Children's Care, each of which was supposed to be responsible for a specific area and have its own function. The following departments were to be established: Maternity and Infancy Protection Department, Child Welfare Department and Secondary Education Department. An initiative was proposed whereby the All-Russian Trusteeship was to take over the coordination and resolution of issues related to the protection of motherhood and infancy. However, due to certain historical circumstances, these intentions were never realized [91].

On January 12, 1918, a decree was issued on the liquidation of the All-Russian Trusteeship as part of the reorganization and creation of the People's Commissariat for State Welfare. This decision was part of the broader changes taking place in the country during that period, including the restructuring of public administration and social services.

Studies conducted in Germany, other Western European countries and the United States confirm that at the end of the 19th and early 20th centuries there was an active movement to reduce child mortality and improve child health - maternal and infant health care. This movement was caused by serious issues related to the high mortality rate of children in the early stages of life. Maternity and infancy protection included a wide range of measures aimed at improving the health of mothers and newborns [192, 212].

This movement originated in France, which waged a real struggle for the health and well-being of mothers and infants. It all started with doctors and private benefactors, who were the first to join this struggle [40].

They realized the need to help people suffering from various diseases and lack of medical care. Over time, public organizations joined this movement, primarily the city government. They realized that joint efforts can bring real changes and improve the quality of people's lives. Thanks to their active support, many programs and initiatives have been created aimed at reducing various diseases and improving access to medical care. However, the state only became involved in this struggle as a last resort, as it did not consider it a state affair for a long time.

The French have played an important role in the reduction of child mortality. They introduced their innovative ideas about the diversity of organizational forms of maternal and infant care. In France, in 1844, nurseries were opened to help working mothers, and in 1890 Prof. A. Pinard opened the first women's counseling center to provide medical assistance to women during pregnancy.

At the obstetric clinic in Berlin in the 19th century, the famous obstetrician-gynecologist P. Büden worked and also practiced in Paris. He established pediatric counseling during the newborn period. Also, the first "Milk drop" was created in this children's polyclinic, which allowed to receive monetary incentives for natural breastfeeding and donor breast milk and mixtures were also given to mothers with an unenviable financial situation [192].

The state supported these doctors in the field of protection of young mothers and children during the newborn period. However, the state did not consider the issue of reducing the mortality of children up to the age of seventeen to be a sphere of its interests

and preferred to leave the solution of this problem to private communities and individuals. In 1913, the Maternity Financial Security Act was enacted, entitling a certain category of pregnant women and women in labor to a cash allowance for four weeks before and one month after childbirth. But the French republic, which unfortunately became the source of many ideas in the field of maternal and infant health care, unfortunately, was not very successful in their implementation [46].

In Germany, French forms of open charity were accepted with great enthusiasm. Local community organizations and activists began to actively pursue research, development, and widespread implementation of public infant care (PIC) facilities. The history of this endeavor dates back to 1896 from Thuringia and other German regions, and it was at this time that the care of childhood came under the responsibility of the state. The number of institutions involved in the protection of the health of infants has gradually increased [181].

Dr. N.F. Altgausen shared interesting information about German infant health organizations after his trip to Germany in 1908 [212]. In 1905, four special institutions were established in Berlin with the participation of the city council, and by 1908 their number had increased to seven.

In Germany, after the First World War, there was an urgent need to combat the high mortality rate among infants. In response to this problem, a wide network of medical institutions was created, the purpose of which was to protect the health of mothers and newborns. Such institutions known as Suglingsfrsorgestellen (infant care centers) played a key role in this system. They not only provided free specialist advice on care and nutrition for children from disadvantaged families, but also provided additional services including medical examinations and vaccinations for infants, helping to obtain medical supplies and hygiene products for families in need [208].

At the German Congress for the Protection of Infancy in 1920 Prof. Rott emphasized that in the first two decades after the war, Germany developed and successfully implemented a multi-layered child protection system that included both government, public and private philanthropic initiatives. This system combined medical

care for pregnant women and infants with social support for families, especially those in difficult living conditions [192, 208].

Germany's comprehensive approach to maternal and infant health has resulted in a significant reduction in infant mortality and a model in which other countries have shown interest over time. This model has been successfully applied in countries that have sought to improve the health and well-being of newborn children.

Not only Germany supported the idea of establishing maternal and child welfare, but also other countries in Western Europe and the United States were interested in solving this problem. In England, for example, maternal and child health care was entirely the responsibility of private communities. These communities struggled with the mortality of children of the first year of life, and in the early 20th century it was decided to unite them to solve this problem more productively, in order to help both mothers and children. In 1915, a Central Council was created, which included representatives of associations [25, 212]. Not all women in England were entitled to receive financial support for pregnancy and during the child's newborn period. Only women who were members of the insurance fund during 26 weeks of pregnancy were eligible for such benefits. These payments were provided to cover the costs of medical and obstetric care during pregnancy.

In 1918, the Department of Maternal and Infant Health was established under the State Health Department, in cooperation with the Central Council of the Association. Half of the expenses of the institution, which provided necessary services to mothers and children during infancy, were financed by this department.

The maintenance of the departments, the salaries of medical personnel, in turn, were paid by the government. However, this privilege could only be used by unmarried women who gave birth to children.

At the same time, maternity clubs, maternity schools and centers were opened – all this contributed to the preparation of women for maternal duties. These institutions provided information on proper nutrition, healthy lifestyle during pregnancy, organization and conduct of newborn care and other aspects of motherhood. These measures had a great positive impact on the dynamics of child mortality and allowed

reducing child mortality rates in the period from 1910 to 1925 by 41.4% (from 12.8% to 7.5%). This has been a significant advance in ensuring the safety and health of mothers and children.

For all the undeniable merits and significant progress, the organization of maternal and infant health care had its shortcomings. The lack of a unified strategy, involvement of individuals and various associations created many obstacles to a qualitative solution to the issue of ensuring the safety and health of mothers and children. In addition, working for charity contributed to inequalities in access to services.

In the United States, a vigorous fight against infant mortality was launched at the beginning of the 20th century. Not only local authorities, but also numerous private charitable institutions participated in this program [8, 192].

In the early 20th century, the Federal Bureau of Infant Welfare was established. It had the particularly important task of studying the incidence and mortality of children of the first year of life. At the same time, the Federal Bureau introduced the idea of public health education on hygiene for children under the age of 10 and children between 10 and 16 years old.

In many cities in 1915, social units were established in the department, which also carried out sanitary and educational work, both among adults and children, concerning issues of maternal and child health. In these same years, the American Red Cross adopted an initiative to organize and implement the patronage of special nurses to newborns [209]. Such measures proved to be very productive and allowed for significant progress: child mortality in the country decreased by 29.6% (from 12.5% to 8.8%) in the period from 1910 to 1917.

In the United States, in order to attract the general public to the issues of incidence and morbidity of children under one year old, 1918 was proclaimed the "Year of the Child". The following year, a conference on maternal and infant health was organized in Washington at the initiative of the Children's Bureau. Various solutions were proposed to improve the situation in the field of motherhood and childhood. These included the establishment of specialized centers for monitoring pregnant women and maternity

homes, the provision of social support to families by the State, and education on how to reduce maternal and child mortality in various segments of the population.

However, despite the decline in child mortality, which was directly linked to improvements in financial well-being and living conditions, there was still an unpleasant situation in the area of motherhood and childhood. These findings pointed to the need for further efforts in the fight to improve child health and reduce child mortality in the United States [67, 192].

1.2. Regulatory and legal support and organization of medical care for pregnant women in outpatient settings

In the current conditions in the health care activities in Russia and other countries, one of the most important tasks is to protect the health of mothers and children [31, 34, 196, 242]. Declining fertility, elements of depopulation, increasing number of operative deliveries and increasing use of assisted reproductive technologies, including in vitro fertilization, have stimulated the introduction of new approaches in obstetrics and perinatology [3, 60, 84, 157, 213, 226, 229]. In this regard, special attention is paid to improving the health of women during pregnancy, childbirth and the postpartum period, as well as the health of newborn children.

Due to the general deterioration of health in the Russian Federation, an annual decrease in the incidence rates of women aged fifteen to forty-nine of ICD-10 XV class (Pregnancy, childbirth and the puerperium) diseases was noted.

However, in some regions, such as the Northwestern Federal District, the incidence remains above the national average, with the health of women in St. Petersburg playing a significant role [101, 142, 143, 144, 204, 247].

The existicng problem of antenatal protection of the fetus due to high perinatal mortality, frequent births of children with congenital anomalies and insufficient level of sanitary and medical awareness of the population. A woman's life before pregnancy, its planning and the pregnancy itself are key factors shaping a child's health even before

birth. Thus, the effective formation of the health of the unborn child is inextricably linked with the health of the mother [74, 102, 118, 207, 222, 236, 237, 243, 250, 251].

There is a need to improve the concept of antenatal child health protection, which is determined by the negative demographic situation and imperfect sanitary and preventive work with the fetus in the womb of a pregnant woman. The priority of antenatal fetal protection is emphasized by the fact that nowadays the attention of medical specialists is often focused on the provision of medical care to women during pregnancy with pathological course. At this time, specialists miss the opportunity to improve fetal health in the antenatal period [15, 17, 23, 117]. This emphasizes the need for an integrated approach that simultaneously cares for the health of both mother and child before birth, paying attention to all aspects of their health and well-being during pregnancy and preparation for childbirth [102, 164, 169, 199, 202, 203].

The main normative documents on the protection, formation and strengthening of citizen's health are: Constitution of the Russian Federation (Art. 41 and Art. 38); Federal Law (FZ) No. 323 dated 21.11.2011 "On the fundamentals of health protection of citizen in the Russian Federation"; Federal Law No. 52 dated 30.03.1999 "On sanitary and epidemiological well-being of the population."; Federal Law No. 326 dated 29.11.2010 "On compulsory medical insurance in the Russian Federation" [72, 179, 180].

The realization of rights is carried out by a number of measures that relate to the protection from external factors, protection of environment, the creation of favorable conditions for work and leisure, the education of adults and children, and the provision of medical and social assistance. According to FZ-323 "On the fundamentals of health protection of citizen in the Russian Federation", the basic rules of health protection of citizens are defined, including the importance of organizing preventive measures among the population of our state (Art. 9, 25) [180]. These principles are mandatory for medical institutions that provide medical care in the country. The principle of priority prevention develops and implements measures aimed at identifying various risk factors and preventing the emergence and spread of diseases, reducing the risk of their development, as well as eliminating the impact of environmental factors on human health.

The state also provides women with the right to specialized medical care during pregnancy, childbirth and after it in various medical health organizations in the territory of the Russian Federation. Hygiene training and education for adults and children is compulsory in our country. Hygiene protection is implemented through measures aimed at preventing the emergence and spread of diseases, as well as promoting a healthy lifestyle, starting from the newborn period of children. Moreover, the state also provides women with the right to specialized medical care during pregnancy, childbirth and after it in various medical health organizations in the territory of the Russian Federation.

The format of work and working functions of obstetrician-gynecologists as leading specialists in monitoring pregnant women are enshrined by the orders of the Ministry of Health and Social Development of the Russian Federation No. 244 dated 30.03.2006 "On approval of the regulation on the organization of the medical examination of pregnant women and new mothers", No. 1130n dated 20.10.2020 "On approval of the procedure for providing medical care in the field of obstetrics and gynecology" [134, 138]. According to these orders prescribing the rules, in accordance with which follow-up care for pregnant women and new mothers is carried out; risk groups of women are determined, influences the motivation of the pregnant woman and her family members to give birth and raise a healthy child. For this purpose, physical and psychoprophylactic preparation of pregnant women for childbirth and postpartum period is carried out; therapeutic, preventive, rehabilitative and social activities aimed at preserving and restoring the health of pregnant women and new mothers are carried out; ensuring interaction in the examination and treatment of women between the antenatal clinic and other medical organizations, etc. [27, 45, 139, 147, 189].

The form of work and functional responsibilities of pediatricians as specialists in antenatal fetal protection are fixed by orders No. 306n dated 27.03.2017 "On the approval of the professional standard "District pediatrician", No. 283 dated 19.07.2007 "Criteria for evaluating the efficiency of the work of a district pediatrician", No. 307 dated 28.04.2007 "On the standard of regular medical check-up of a child of the first year of life" [131, 135, 136].

The training of young parents is carried out during classes. Such classes are provided by pediatricians. Thanks to such training, young parents gain knowledge in such areas as: newborn care, hygiene education, measures aimed at preventing developmental abnormalities, disease prevention, massage techniques by age, gymnastics, breastfeeding. The children's polyclinic and antenatal clinic operate together and the principle of continuity prevails in their activities.

Specialists of the general medical network, such as therapists responsible for preserving and strengthening the health of pregnant women and in the postpartum period, are guided by orders of the Ministry of Health of the Russian Federation No. 350 dated 20.11.2002 "On improving outpatient care for the population of the Russian Federation", No. 662 dated 14.09.2006 "On approval of the standard of medical care for women with normal pregnancy" and the Order of the Ministry of Health and Social Development of the Russian Federation No. 543n dated 15.05.2012 "On approval of the Regulations on the organization of primary health care for adults" [132-134]. The orders stipulate a range of duties for working doctors in the field of health care, among which are: educational work in sanitary and hygienic sphere, increasing the level of education of adult and child population in the field of health care, dispensary monitoring of pregnant women and new mothers, conducting consultations at appointments concerning the issue of natural breastfeeding for new mothers, prevention of risk factors, diseases and further development of deviations in the health status of the child population, etc.

When analyzing the regulatory and legal framework of the Russian Federation on the organization of medical care for women during pregnancy, we can say with certainty that antenatal fetal protection is included in the area of responsibility and job duties of both medical personnel of women's clinics and specialists of adult and pediatric polyclinics and polyclinic departments. The current regulatory framework prescribes dispensary monitoring of pregnant women [14, 18, 29, 54, 102, 216, 241].

An analysis of the responsibilities suggests that some of them are repetitive. So, for example, the patronage of a pregnant woman is carried out by specialists of a women's consultation and specialists of a children's polyclinic.

The new procedure for the provision of obstetric and gynecological medical care in the field of obstetrics and gynecology, established by Order No. 1130n, has strict requirements for obstetrician-gynecologists, including issues of oncoscreening and early detection of cancer of a woman's reproductive system. This order replaced the decree of the Ministry of Health No. 572n dated 01.11.2012, which was no longer in force, and was thoroughly reviewed and updated in its development in obstetrics and gynecology [138].

However, the new order adopted by the Ministry of Health of the Russian Federation still has some gaps and shortcomings that should be further elaborated. For example, for female patients with breast diseases, only women over 40 years of age can undergo X-ray mammography during the preventive medical examination. Patients younger than this age are not considered in the order. To eliminate the gap in this document, the Ministry of Health needs to make amendments to the clinical guidelines for medical personnel [139].

The organization of ultrasound examinations for certain categories of patients also requires a more detailed description. This will allow for more accurate diagnosis and effective treatment. It is important to note that the order on medical examinations and preventive examinations is mandatory for obstetrician-gynecologists. They should follow these recommendations and ensure that patients receive the necessary medical care and preventive measures.

Thus, the new procedure for providing medical care in the field of obstetrics and gynecology is an important step in improving the quality of healthcare. However, further work is needed to improve it, address gaps and ensure the best care for all patients, including screening and early detection of reproductive cancers.

1.3. The issues of pregnant women care provision in a megalopolis

In modern Russia, health care issues remain relevant for public discussion. Despite the availability of advanced medical technologies, access to primary health care is not yet provided everywhere due to various reasons, including lack of human and material

resources, as well as peculiarities of climate and geography in different regions of the country [68, 87, 98, 184].

One of the key issues is the shortage of medical workers, especially in remote and sparsely populated areas where the lack of doctors and medical specialists makes access to health services complicated. In addition, some regions have insufficiently equipped medical facilities, which reduces the quality of care provided [81, 98, 110, 177].

Another problem is the limited preventive measures provided in outpatient clinics [191, 200]. Many health care providers focus on treating people who are already sick, rather than actively providing preventive screenings and counseling.

Natural and climatic conditions in some regions of Russia also affect the population, requiring additional efforts to ensure adequate medical care.

Improving access to primary health care requires an increase in the number of qualified health care workers, expanding the network of health care facilities, especially in remote areas, and strengthening preventive care [68, 81, 150, 151, 195].

Obstetric, gynecological and neonatology services are a key element of the health care system at all levels. It covers a wide range of services, including support for women during pregnancy, childbirth, treatment of gynecologic diseases, and family planning [193].

There is a unified system of obstetric and gynecological care in Russia, which ensures coordination of the activities of medical personnel. Much attention has been paid recently to improving diagnostic and treatment methods, as well as improving the skills of medical specialists in this field.

Women's clinics, as the main centers of women's health, provide a wide range of medical services and preventive measures that aimed at protecting reproductive health [146, 201, 238]. Such facilities are managed by obstetrician-gynecologists, who coordinate the provision of comprehensive care to women before, during, and after pregnancy, including family planning and disease prevention [21, 230, 235, 244, 245, 249].

The main task of women's consultations is to ensure the health of the mother and child through qualified obstetric and gynecological care on an outpatient basis [13, 48, 49, 221].

These health care organizations provide a variety of services including gynecological examinations and consultations, pregnancy monitoring, ultrasound and tests to detect various diseases, thus contributing to the health of expectant mothers and their children [47, 106, 108, 140, 163, 171, 239].

It is important to note that the women's health clinic also plays a role in educating and enlightening women about the importance of a healthy lifestyle, regular check-ups and self-breast exams. It conducts information campaigns and activities aimed at raising women's awareness of reproductive health and prevention of various diseases [60, 149, 205, 211].

Although Russia has a clear regulatory framework for outpatient obstetric and gynecological care, including laws, by-laws and orders, there are certain shortcomings and problems in the practice of implementing this type of care. These problems have a negative impact on the accessibility and quality of health care, which is a concern among both patients and health care providers [53, 54, 104, 160, 161, 206].

One of the main problems is the lack of qualified specialists, especially in remote and less developed regions. This complicates the provision of high-quality medical care to pregnant women and patients with gynecological problems [61, 68, 81, 159].

Another significant problem is insufficient funding, which affects the equipment and infrastructure of health facilities, as well as opportunities for training and professional development of medical personnel. In addition, improper organization of work in some healthcare facilities may lead to inefficient use of resources and time, which also affects the quality of patient care [84, 87].

These shortcomings highlight the need for reforms and changes in the system of organization of outpatient obstetric and gynecological care. It is important to ensure sufficient funding, improve training and recruitment of qualified professionals, as well as optimize the management and organization of work in health facilities. Only an integrated

approach to solving these issues will improve the availability and quality of obstetric and gynecological care in Russia [187].

Therefore, it is important to consider the factors that will affect women's health, including their reproductive health. Improper nutrition, lack of physical activity, stress and other unfavorable factors can negatively affect women's health and require additional medical care [4, 11, 36, 65, 71, 116, 197, 215].

Rational use of resources and staging in the organization of outpatient obstetric and gynecological care have become important. However, based on the evidence and previous research, it can be concluded that the work in this area is not well organized and there are some disagreements. Therefore, it is important to develop measures to improve the quality of outpatient care and its accessibility throughout the country in order to improve women's reproductive health and reduce the number of diseases, both in women and in the unborn child [187].

In order to improve the quality of outpatient care and its accessibility throughout the country, it is necessary to carry out reforms in the system of medical care organization. It is important to increase funding and ensure adequate numbers of qualified specialists.

It is also necessary to improve the quality control system and ensure the availability of medical services for all segments of the population. In general, improving the quality of outpatient obstetric and gynecological care is an important task to ensure women's reproductive health and reduce incidence. This requires a collaborative effort between government agencies, health care providers, and the public to create an effective and accessible system of care [61, 99, 101, 104, 233].

To date, the main problem of outpatient obstetric and gynecological care is the low frequency of visits with a single visit to a medical organization, even among women who are subjects to regular medical check-up. This can negatively affect the quality of medical and diagnostic care for women with gynecological problems. If we consider cases where abnormalities were not detected during pregnancy and the child was born with serious malformations, a direct association between outcome and inadequate outpatient screening can be established [11, 51, 85, 94, 161].

Problems at the outpatient stage of obstetric care include: insufficient examination and observation (including ultrasound diagnosis, clinical genetic tests, screening and other methods); incomplete anamnesis collection; non-compliance with the schedule of visits; lack of perinatal consilium in third-level medical organizations; and late hospital admissions [51, 97, 100, 103, 227].

About three quarters of all legal proceedings in gynecological practice are precisely these problems. Optimization of the normative number of outpatient visits to an obstetrician-gynecologist for adults and children is one of the possible solutions to the problem. This will allow modern therapeutic and diagnostic procedures for gynecologic diseases and reduce the number of chronic diseases [94, 99].

Chapter 2. MATERIALS AND METHODS

The present thesis research was carried out at the Department of Public Health and Health Care 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" of the Ministry of Health of the Russian Federation in accordance with the plan of complex research work on the topic "Medical, social and organizational problems of public health care in the North-West" (state registration No.AAAA-A16-116031710019).

2.1. Research base

The present study was conducted in the federal city of St. Petersburg (SPb), which is a separate subject of the Russian Federation, and is part of the Northwestern Federal District (NWFD). The administrative-territorial division of the city is represented by 18 municipal districts. This megalopolis is the second most populous city in the country with a population of 1112462 women of fertile age in 2018, 1335476 - in 2019, 1325606 - in 2020, 1305951 - in 2021 and 1295261 - in 2022. The increase in five years was 14.1%.

The bases of the present study for the evaluation of primary specialized medical and sanitary care in outpatient settings were the following medical organizations: St. Petersburg SCHI "City Polyclinic No.23", department "Women's consultation No.36"; St. Petersburg SCHI "Maternity Hospital No.9", department "Women's consultation"; Consultative and diagnostic department of the perinatal center of the Saint Petersburg State Pediatric Medical University of the Ministry of Health of the Russian Federation.

2.2. Research program

The subject of the study was to evaluate the organization of antenatal fetal protection in women's clinics in St. Petersburg. The object of the study is pregnant women receiving primary specialized medical care in outpatient settings and living in a

megalopolis. The unit of the observation is a pregnant woman.

The study included 4 stages. At the first stage, the purpose and objectives of the study were formed, the research design was developed, the research instruments were selected and the criteria for selecting pregnant women were determined, and a regulatory and legal assessment of the current system of organization of specialized medical care for pregnant women. To study the issue, a content analysis of domestic and foreign literature sources on the organization of primary specialized care for pregnant women was conducted.

At the data collecting stage, pregnant women were interviewed, and data were extracted from medical records and reports and official statistics.

At the third stage, the health status of pregnant women was studied; their access to medical care was analyzed; objective and subjective assessment of the organization of antenatal fetal protection in the conditions of in a women's clinic was carried out; statistical analysis of the obtained results and their visualization were carried out.

At the fourth stage, practical medical and organizational recommendations aimed at improving antenatal fetal protection were developed based on the generalization of the data obtained and the results of the study.

Statistical materials of the Federal State Statistics Service (Rosstat), statistical collections of the Federal State Budgetary Institution "Central Research Institute of Health Care Organization and Informatization" of the Ministry of Health of the Russian Federation [119-123, 152-156] were used in the conducted research. The total number of information units in the study was 1272. The research program in accordance with the purpose and objectives is presented in Table 2.1.

Table 2.1 - Research program

The aim of the research is to develop and scientifically substantiate a set of measures aimed at improving antenatal fetal protection in a women's clinic based on an assessment of the state of organization of medical care for pregnant women in outpatient settings.			
1	2	3	4
No	Research objectives	Research methods	Recording and reporting documents and scope of observations
1.	To assess the indicators of medical and demographic processes and to study the health status of pregnant women	Epidemiological, statistical, retrospective analysis, analytical	- Statistical materials of Rosstat "Demography"; N=5 - Statistical collections "Main indicators of maternal and child health, activities of child protection and obstetrics services in the Russian Federation" 2018-2022; N=5 - Statistical collections "Resources of medical organizations. Medical personnel" 2018-2022; N=5 - Statistical collections "Incidence of the adult population of Russia with a diagnosis established for the first time in life" 2018-2022; N=5 - Form FSN 32 "Information on medical care for pregnant women, women in labor and new mothers" 2018-2022, summary for Russia and St. Petersburg; N=10
2.	To conduct a comparative assessment of the medical and social characteristics and obstetric anamnesis of pregnant women with fetal pathology and identify the features of their quality of life	Statistical, sociological, analytical	- "Questionnaire for assessment of medical and social characteristics and quality of life of a pregnant woman"; N=512 - Form No.111/u-20 "Individual medical card of pregnant woman and new mother"; N=512
3	To evaluate the activities of the outpatient obstetric and gynecological service for antenatal fetal protection and identify its main problems	Statistical, analytical	- "Reports on the work of a women's clinic" for 2018-2022; N=15 - "Questionnaire for assessment of the work of maternity school in antenatal clinics"; N=516 - "Questionnaire for assessment of the satisfaction of pregnant women with the information received in the system of antenatal child health care at women's clinics"; N=457

Continuation of Table 2.1

1	2	3	4
			- Form FSN 32 "Information on medical care for pregnant women, women in labor and new mothers" 2018-2022, summary for Russia and St. Petersburg; N=10
3	To evaluate the activities of the outpatient obstetric and gynecological service for antenatal fetal protection and identify its main problems	Statistical, analytical	- "Reports on the work of a women's clinic" for 2018-2022; N=15 - "Questionnaire for assessment of the work of maternity school in antenatal clinics"; N=516 - "Questionnaire for assessment of the satisfaction of pregnant women with the information received in the system of antenatal child health care at women's clinics"; N=457 - Form FSN 32 "Information on medical care for pregnant women, women in labor and new mothers" 2018-2022, summary for Russia and St. Petersburg; N=10
4.	To develop scientifically based recommendations for improving the organization of antenatal fetal protection in a women's clinic	Analytical	- Materials and results of the conducted research.

In connection with the use of selective method of statistical population formation, the minimum required representative sample size was calculated according to the following formula:

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

N - number of the general population (45645 pregnant women under medical supervision in 2022);

$\bar{p}$ - the approximate frequency (fraction) is unknown, so we take 0.5;

t - critical value of Student's criterion for a given confidence probability, let's take min probability for biomedical research - 95%, in this case t will be equal to 1.96;

$\Delta \bar{p}$ - desired max error of frequency (fraction), we set min error 5% (0.05).

At a confidence level of 95% and a max error of 5%, the sample size should be at least 377 observation units. In our study, a total of 1485 pregnant women (516, 512 and 457 pregnant women in each questionnaire respectively) were surveyed, so the condition is fulfilled.

This study was conducted according to a special program, theoretical and methodological basis of which was the work of scientists in the field of public health and healthcare organization, obstetrics and gynecology, as well as regulatory documents. In accordance with the ***first task***, indicators of medical and demographic processes and indicators characterizing the health of pregnant women were studied on the basis of official statistics from Rosstat, statistical collections and excerpts from the form FSN 32 "Information on medical care for pregnant women, women in labor and new mothers". To achieve this task, the indicators of total fertility, the proportion of women of fertile age in the total number of women, the share of women of early and late reproductive age, perinatal mortality (in the whole country, federal districts and St. Petersburg), the incidence of women of reproductive age XV class of diseases according to ICD-10, the incidence of pregnant women with certain forms of diseases and newborn children (in Russia, Northwestern Federal District and St. Petersburg) for five years were analyzed.

To fulfill the ***second task***, a comparative assessment of the medical and social characteristics, obstetric history and quality of life of pregnant women with fetal pathology at the outpatient stage was carried out on the basis of questionnaire survey of pregnant women and copying of data from medical records. These parameters were assessed between pregnant women carrying a child with CM (main group) and pregnant women carrying a healthy child (control group). 512 pregnant women, including 252 respondents in the main group and 260 in the control group, were randomly surveyed with a special developed form "Questionnaire for the assessment of medical and social characteristics and quality of life of pregnant women", which included at random 23 questions. The main group consisted of women seen at the CDD Perinatal Center, and the control group consisted of women seen at the antenatal clinic. Pregnant women permanently residing in St. Petersburg participated in the study. Before the study, women filled out informed voluntary consent.

The questionnaire consisted of 2 parts: the 1st part of the questionnaire contained questions to assess the medical and social characteristics of the family. The second part dealt with questions to assess the quality of life of pregnant women using the SF-36 questionnaire. After clarifying the objectives of the survey to the respondents, the rules for filling out the SF-36 questionnaire were explained, and then the questionnaire was filled out once by the respondents themselves. Quality of life was analyzed with the following scales: Physical functioning (PF), Role-physical functioning (RP), Bodily pain (BP), General health (GH), Vitality (VT), Social functioning (SF), Role-emotional functioning (RE), Mental health (MH). For all scales, with the complete absence of restrictions or health disorders, the maximum value was 100. The higher the score on each scale, the better the quality of life in this parameter. Statistical data processing was performed using the calculation of average values using Fisher's criterion ($p<0.05$).

Obstetric anamnesis was assessed on the basis of data extracted for the same 512 pregnant women (252 in the main group and 260 in the control group) from the form No. 111/u-20 "Individual medical record of pregnant woman and new mother", which included 18 questions.

To solve the ***third task***, a comparative assessment of the availability of obstetric and gynecological care in the megalopolis was carried out in terms of medical personnel availability. Then an objective comparative assessment of the indicators of antenatal fetal protection activities of the antenatal clinic was carried out: the share of pregnant women with early registration; the share of pregnant women examined by a general practitioner in total and up to 12 weeks; the coverage of ultrasound and biochemical screening. The analysis was carried out in comparison with the indicators for the country and the NWFD as a whole in 2018-2022 according to the data obtained from statistical compilations of the Federal State Budgetary Institution "Central Research Institute of Health Care Organization and Informatization" of the Ministry of Health of the Russian Federation. Further, the dynamics of the specific weight of pregnant women who underwent the assessment of antenatal fetal development in antenatal clinics in St. Petersburg in 2020-2022 was assessed in accordance with the information obtained from "Reports on the work of women's clinics" and the form FSN 32.

Subjective assessment was carried out on the basis of an anonymous survey conducted by random method using two specially designed questionnaire forms. At the first stage, the "Questionnaire for assessment of the satisfaction of pregnant women with the information received in the system of antenatal child health care at women's clinics", which included 20 questions, was used. The study involved 457 women who were under medical supervision in a women's clinic. The study was conducted by QR-code, which was located in the lobby of the women's clinics. The assessment was carried out in general and separately in pregnant women of early and late reproductive age. At the second stage, the quality of the Maternity School was assessed. For this purpose, 516 pregnant women who attended these classes in these structural units of antenatal clinics were surveyed with the "Questionnaire for assessing the work of maternity school in antenatal clinics", which included 26 questions.

Based on the results of the study, medical and organizational measures aimed at improving antenatal fetal protection at the antenatal clinic were developed to solve the ***fourth task***.

A set of methods and techniques was used in the conducted study: data excerpts from medical records, sociological (questionnaires, interviewing), graphic and analytical and qualimetry. In the formation of the statistical population, continuous and selective methods were used. The data of descriptive statistics are reflected in the form of quantitative and qualitative, extensive and intensive indicators, weighted arithmetic mean with standard error The choice of the criterion for testing the significance of differences between the analyzed statistical indicators was based on the nature of data distribution. The degree of compliance with the empirical distribution to the normal distribution of the studied samples was carried out using the Kolmogorov-Smirnov (K-S) criterion. When comparing two groups of independent samples, Student's t-test or its non-parametric equivalent the Mann-Whitney rank U-test was used. The differences were considered significant at $p<0.05$. Database creation, processing, analysis and visualization of the results were carried out using Microsoft Office Excel 2019 (Word, Excel). Statistical analysis was carried out using StatSoft-Statistica 10.0.

Chapter 3. MEDICAL AND DEMOGRAPHIC PROCESSES AND HEALTH STATUS OF MOTHERS AND CHILDREN

3.1. Assessment of the reproductive resource and fertility of women in the Russian Federation

In the conditions of demographic decline due to the decline in the birth rate, which was observed in the Russian Federation and most of its regions after 2016, the problem of population reproduction has acquired truly national proportions. It goes back far beyond the last decade, when geopolitical and social and economic upheavals led to the orientation of society towards single-childhood and the development of a fairly significant number of women's commitment to the ideas of "childfree". Criticality of the situation is especially clear when assessing the dynamics of fertility rates among women of fertile (reproductive age) or total women fertility, which is presented in Table 3.1.

Table 3.1 - Dynamics of total fertility rate in Russia, federal districts and St. Petersburg in 2018-2022 (per 1000 women of fertile age)

Territory	2018	2019	2020	2021	2022	Average value (M±m)	Growth rate /decrease (%)	Difference with M_{RF} (%)
RF	46.26	42.93	42.02	41.16	37.94	42.06±1.34	-18.0*	-
CFD	42.95	39.80	39.13	38.50	35.35	39.15±1.21	-17.7*	↓6.9*
NWFD	44.35	40.88	39.28	38.10	34.36	39.39±1.64	-22.5*	↓6.3*
SFD (Southern)	45.16	42.16	41.10	40.69	36.38	41.10±1.42	-19.4*	↓2.3
NCFD	55.94	53.35	53.85	51.55	50.07	52.95±1.00	-10.5*	↑20.6*
VFD	46.08	41.90	40.69	40.07	36.37	41.02±1.57	-21.1*	↓2.5*
UFD	49.87	45.83	44.85	44.37	41.62	45.31±1.34	-16.5*	↑7.2*
SFD (Siberian)	47.75	43.57	42.07	41.17	38.64	42.64±1.51	-19.1*	↑1.4
FEFD	50.03	46.85	46.81	44.91	41.84	46.09±1.34	-16.4*	↑8.7*
SPb	47.94	44.41	42.38	41.19	36.44	42.47±1.89	-24.0*	↑1.0

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

It was found that the highest level, compared to the Russian average of the total fertility index for five years, was found in the North Caucasian Federal District, the Far Eastern Federal District, and the Ural Federal District. In these federal districts, the differences with the national average were 20.6%, 8.7% and 7.2%, respectively ($p<0.05$). The lowest value of these indicators was in the Central Federal District and the

Northwestern Federal District - below the national average by 6.9% and 6.3%, respectively ($p<0.05$). It was revealed that, both in Russia and in all federal districts, as well as in St. Petersburg, the indicators of total fertility decreased by 2022 ($p<0.05$).

To assess the causes of decline in fertility among women of reproductive age, the dynamics of the specific weight of women of fertile age in the total number of women in Russia, federal districts and St. Petersburg in 2018-2022 was assessed, which is presented in Table 3.2.

Table 3.2 - Dynamics of the share of women of fertile age in the total number of women in Russia, federal districts and St. Petersburg in 2018-2022 (%)

Territory	2018	2019	2020	2021	2022	Average value (M±m)	Growth rate /decrease (%)	Difference with M_{RF} (%)
RF	44.1	43.9	43.6	43.6	43.8	43.8±0.94	-0.6*	-
CFD	42.8	43.3	42.9	42.8	43.1	43.0±0.96	-0.8*	↓1.9*
NWFD	43.6	43.4	43.1	43.1	43.8	43.4±0.13	+0.5*	↓0.9
SFD (Southern)	43.5	43.4	43.2	43.3	43.8	43.4±0.10	+0.5*	↓0.8
NCFD	48.9	48.8	48.5	48.5	49.1	48.7±0.12	+0.3*	↑10.1*
VFD	42.7	42.5	42.3	42.2	42.2	42.4±0.96	-1.1*	↓3.2*
UFD	44.7	44.5	44.3	44.3	44.1	44.4±0.10	-1.3*	↑1.4*
SFD (Siberian)	44.6	44.5	44.3	44.3	44.3	44.4±0.11	-0.8*	↑1.4*
FEFD	45.9	45.7	45.5	45.5	46.1	45.8±0.06	+0.3*	↑4.3*
SPb	45.3	44.9	44.3	44.0	45.0	44.7±0.24	-0.7*	↑2.0*

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

The conducted assessment showed that, while the quantitative values of the average indicators were quite similar, the share of women of fertile age in the total number of women was statistically significantly higher than the national average in the North Caucasian Federal District (by 10.1%), the Far Eastern Federal District (by 4.3%), the Ural Federal District (by 1.4%), the Siberian Federal District (by 1.4%), and St. Petersburg (by 2.0%), and lower in the Volga Federal District (by 3.2%) and the Central Federal District (by 1.9%). At the same time, while the share of women of fertile age was decreasing in the Russian Federation as a whole, in the Central Federal District, the Volga Federal District, the Ural Federal District, in the Northwestern Federal District, the Southern Federal District, the North Caucasian Federal district and the Far Eastern Federal District it increased insignificantly ($p<0.05$).

To find out the reasons for the decrease in fertility of women of reproductive age, the levels and dynamics of indicators of the proportion of women of early and late reproductive age were detailed. It was found that in the whole country, the average proportion of women of early reproductive age in 2018-2022 barely exceeded the level of fifty percent. The largest proportion, which significantly differed from Russia and all federal districts, was in the North Caucasian Federal District (58.3%; $p<0.05$). Slightly more than half of the total number of women aged 15-49, the proportion of women of early reproductive age was in the Volga Federal District (50.9%), the Siberian Federal District (50.6%) and the Southern Federal District (50.4%), and less than half – in the Central Federal District (48.5%), the Northwestern Federal District (49.0%), the Ural federal District (49.8%) and in the megalopolis (49.7%). The average share of women of early reproductive age in the total number of women aged 15-49 in Russia, federal districts and St. Petersburg is shown in Figure 3.1.

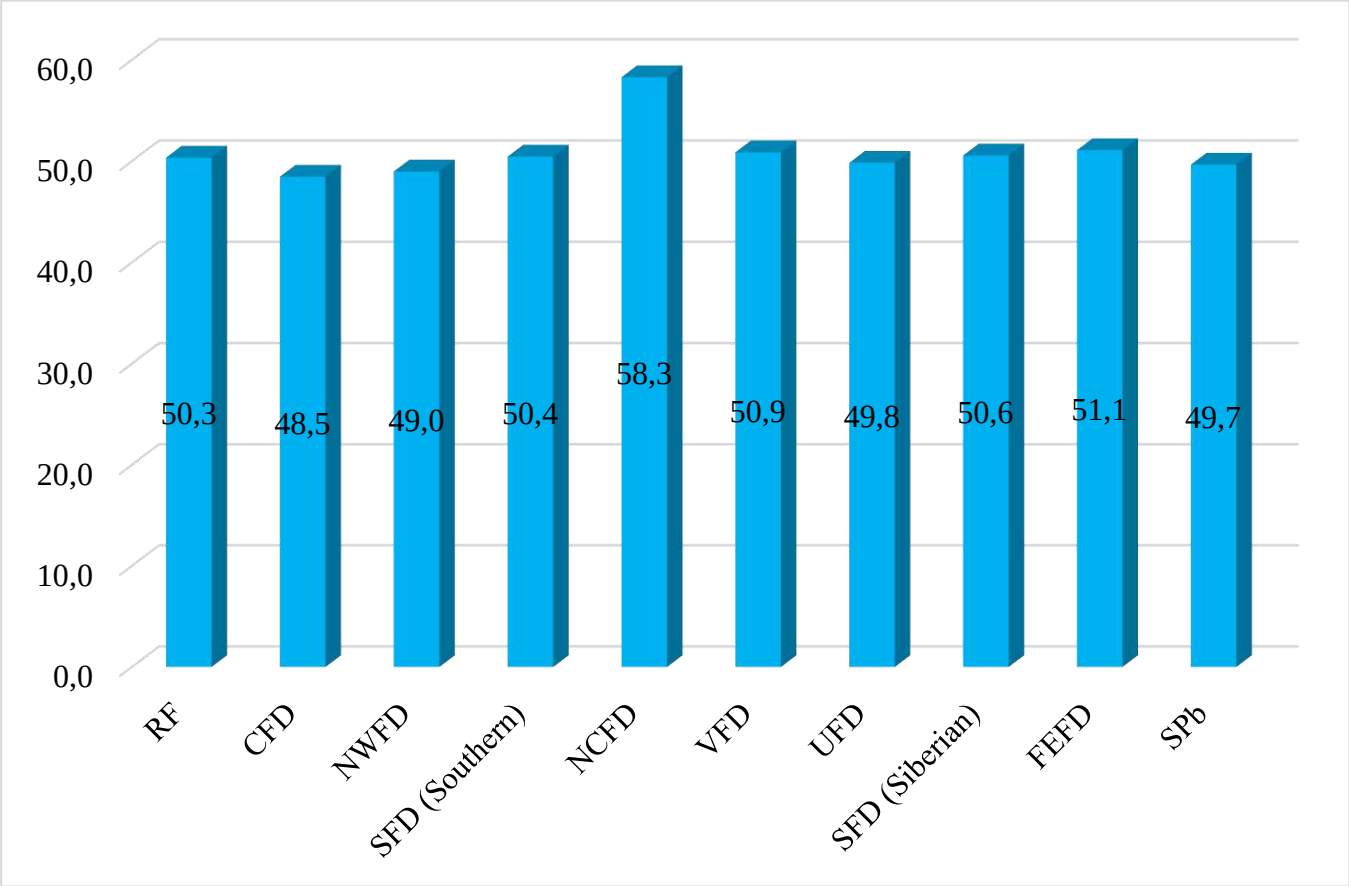

Figure 3.1 - The average share of women of early reproductive age in the total number of women aged 15-49 in Russia, federal districts and St. Petersburg in 2018-2022 (%)

Thus, the share of women who account for most of births, both in Russia as a whole and in all its districts, had very low values. At the same time, the proportion of women of late reproductive age in the fertility structure was very high and in 2018-2022 had a negative annual growth trend, both in the whole country and in all federal districts and St. Petersburg. It was revealed that if in 2018 the average level for federal districts was 46.6%, then by 2022 it reached 51.2%. The growth rate amounted to 9.0% or in absolute figures 4.6% respectively. The dynamics of the proportion of women of late reproductive age in the fertility structure in Russia, federal districts and St. Petersburg in 2018-2022 is presented in Table 3.3.

Table 3.3 - Dynamics of the proportion of women of late reproductive age in the fertility structure in Russia, federal districts and St. Petersburg in 2018-2022 (%)

Territory	2018	2019	2020	2021	2022	Average value (M±m)	Growth rate /decrease (%)	Difference with M_{RF} (%)
RF	47.5	48.5	49.6	50.8	51.9	49.7±0.78	+8.5*	-
CFD	47.9	50.8	52.1	53.4	53.6	51.5±1.04	+10.6*	↑3.7*
NWFD	48.5	49.7	51.0	52.2	53.8	51.0±0.92	+9.8*	↑2.7*
SFD (Southern)	47.3	48.4	49.5	50.6	51.9	49.6±0.80	+8.9*	↓0.2
NCFD	40.1	40.8	41.7	42.7	43.2	41.7±0.75	+7.2*	↓16.0*
VFD	46.9	47.9	48.9	50.0	52.0	49.1±0.88	+9.7*	↓1.0
UFD	47.9	49.0	50.1	51.2	52.6	50.2±0.82	+8.9*	↑1.0
SFD (Siberian)	47.3	48.4	49.4	50.4	51.9	49.4±0.79	+8.9*	↓0.4
FEFD	47.2	48.0	48.8	49.7	50.9	48.9±0.65	+7.4*	↓1.5*
SPb	47.0	48.6	50.5	52.3	53.3	50.3±1.15	+11.9*	↑1.4*

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

Thus, in Russia and its federal districts, a decrease in the birth rate occurs against the background of not only a general decrease in the proportion of women of fertile age in half of the districts, but also with a change in the ratio of women in the structure of reproductive age. There is a decrease in the proportion of women of early reproductive age with an annual growth of share of women of late reproductive age. St. Petersburg had the highest rates of decline in the total fertility rate (-24.0%) compared to all indicators in the federal districts against the background of the highest rates of increase in the proportion of women of late reproductive age (+11.9%).

3.2. Comparative assessment of perinatal mortality rates in the federal districts of the Russian Federation

The perinatal mortality is an indicator of the provision of medical care to children during pregnancy, childbirth and the first week of life in women's clinics and obstetric care organizations. So, the values of antenatal, intranatal and postnatal mortality can be used to assess the level of medical care at the outpatient and hospital (inpatient) stages. It was found that the highest perinatal mortality rate in Russia was observed in the Far Eastern Federal District (8.22‰), the Southern Federal District (8.06‰) and the Northwestern Federal District (7.66‰), and the lowest in the Ural federal District (6.85‰), the North Caucasian Federal District (6.23‰) and the Central Federal District (6.19‰). Assessment of the dynamics of indicators revealed that in the federal districts and in the country as a whole by 2022 the perinatal mortality rate was decreasing, with the exception of the Southern Federal District, where an increase of 3.5% was observed. The dynamics of perinatal mortality in Russia and federal districts in 2018-2022 is presented in Table 3.4.

Table 3.4 - Dynamics of perinatal mortality in Russia and federal districts in 2018-2022 (per 1000 live and still births)

Territory	2018	2019	2020	2021	2022	Average value (M±m)	Growth rate /decrease (%)	Difference with M_{RF} (%)
RF	7.23	7.10	7.25	7.32	6.76	7.13±0.10	-6.5*	-
CFD	6.31	6.19	6.12	6.13	6.19	6.19±0.03	-1.9	↓13.2*
NWFD	7.66	7.89	7.64	8.05	7.07	7.66±0.17	-7.7	↑6.9*
SFD (Southern)	7.68	7.45	8.56	8.67	7.96	8.06±0.24	+3.5	↑11.6*
NCFD	6.41	6.6	6.19	6.32	5.64	6.23±0.16	-12.0*	↓12.6*
VFD	8.14	7.43	7.56	7.93	6.95	7.60±0.21	-14.6*	↑6.2*
UFD	7.00	6.74	7.08	6.94	6.48	6.85±0.11	-7.4	↓4.0
SFD (Siberian)	7.15	7.67	8.07	7.55	6.92	7.47±0.20	-3.2	↑4.6
FEFD	8.21	8.16	8.31	8.47	7.96	8.22±0.08	-3.0	↑13.3*

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

In this case, the average perinatal mortality in St. Petersburg (7.26‰) was higher than the national average by 1.8%, but lower than the federal district average by 5.2%.

However, these differences were not statistically significant (p>0.05). At the same time, in contrast to the federal district to which it belongs, the perinatal mortality in the megalopolis has increased (+3.2%; p>0.05). The dynamics of perinatal mortality in the Russian Federation and St. Petersburg is shown in Figure 3.2.

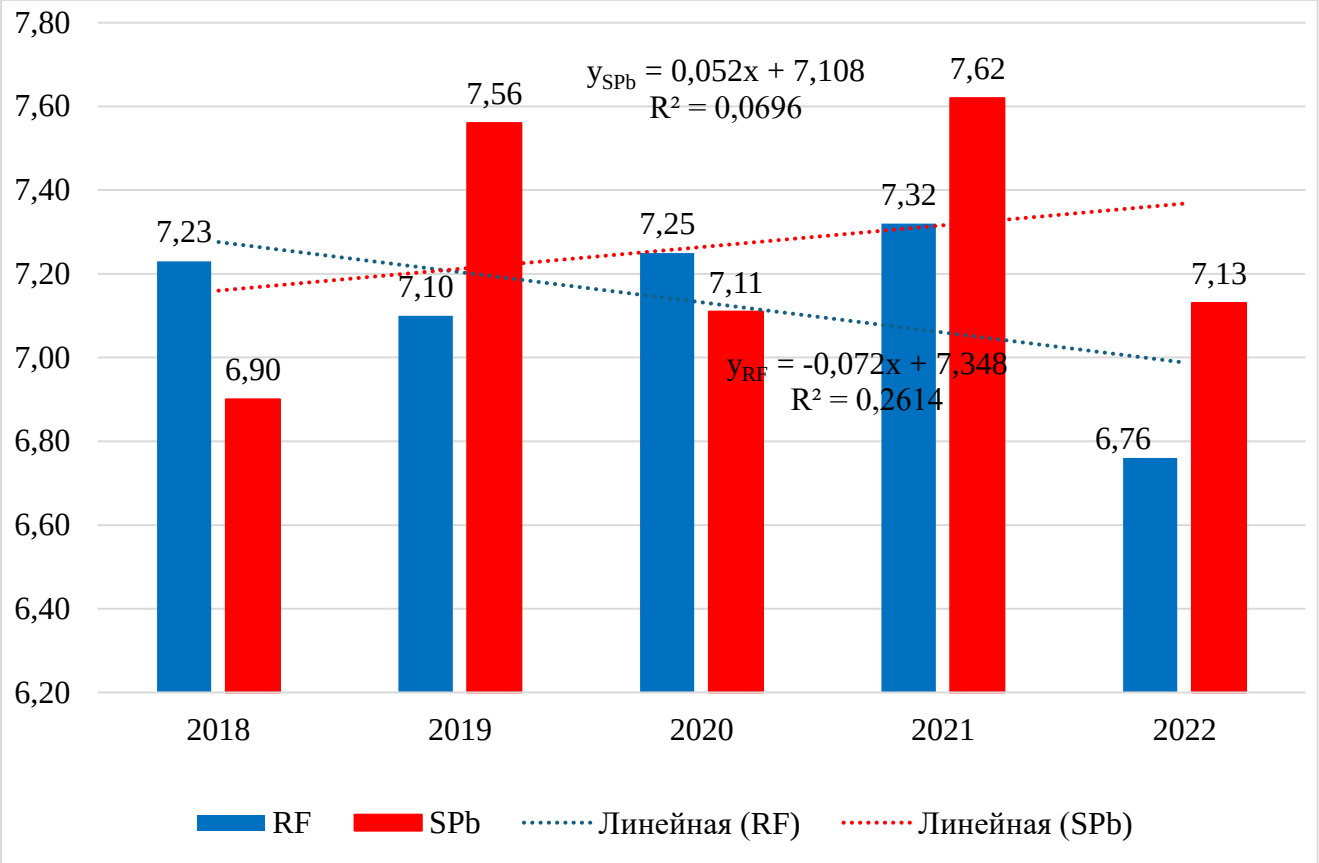

Figure 3.2 - Dynamics of perinatal mortality in Russia and St. Petersburg in 2018-2022 (per 1000 live and still births)

The conducted assessment of stillbirth rate revealed that if in the Siberian and the Ural Federal Districts the average indicator in the studied period did not show significant differences with the national average, then in the Central Federal District and the North Caucasian Federal District it was lower by 11.4% and 29.5%, respectively (p<0.05), and in the Northwestern Federal District, Southern Federal District and Far Eastern Federal District it was higher by 10.9%, 12.6% and 15.4% respectively (p<0.05). By 2022, stillbirth rates were declining in the country as a whole, in the NWFD (-3.0%), VFD (-9.2%), UFD (-4.1%) and the FEFD (-6.6%). In other federal districts, they increased slightly (p>0.05). The dynamics of stillbirths in Russia and the federal districts over a five-year follow-up period is presented in detail in Table 3.5.

Table 3.5 - Dynamics of stillbirth rate in Russia and federal districts in 2018-2022 (per 1000 live and still births)

Territory	2018	2019	2020	2021	2022	Average value (M±m)	Growth rate /decrease (%)	Difference with M_{RF} (%)
RF	5.51	5.44	5.67	5.77	5.34	5.55±0.07	-3.1*	
CFD	4.93	4.89	4.91	4.93	4.95	4.92±0.05	+0.4	↓11.4*
NWFD	6.03	6.28	6.33	6.64	5.85	6.23±0.14	-3.0	↑10.9*
SFD (Southern)	6.15	5.95	6.75	6.74	6.18	6.35±0.16	+0.5	↑12.6*
NCFD	3.83	4.08	3.89	3.94	3.83	3.91±0.05	0.0	↓29.5*
VFD	6.28	5.73	5.96	6.42	5.7	6.02±0.14	-9.2*	↑7.8*
UFD	5.43	5.15	5.65	5.72	5.21	5.43±0.11	-4.1	↓2.2
SFD (Siberian)	5.22	5.73	6.27	5.92	5.39	5.71±0.19	+3.5	↑2.8
FEFD	6.66	6.55	6.59	6.78	6.22	6.56±0.10	-6.6	↑15.4*

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

When assessing the stillbirth in the megalopolis in the period 2018-2022, it was found (Figure 3.3) that since 2019 they exceeded the national average. The five-year average stillbirth in St. Petersburg (6.10%) was 9.1% higher than the average in Russia ($p<0.05$). At the same time, if there was a decrease in the stillbirth rate in the country in general, in the megalopolis the figures increased by 9.5% over five years.

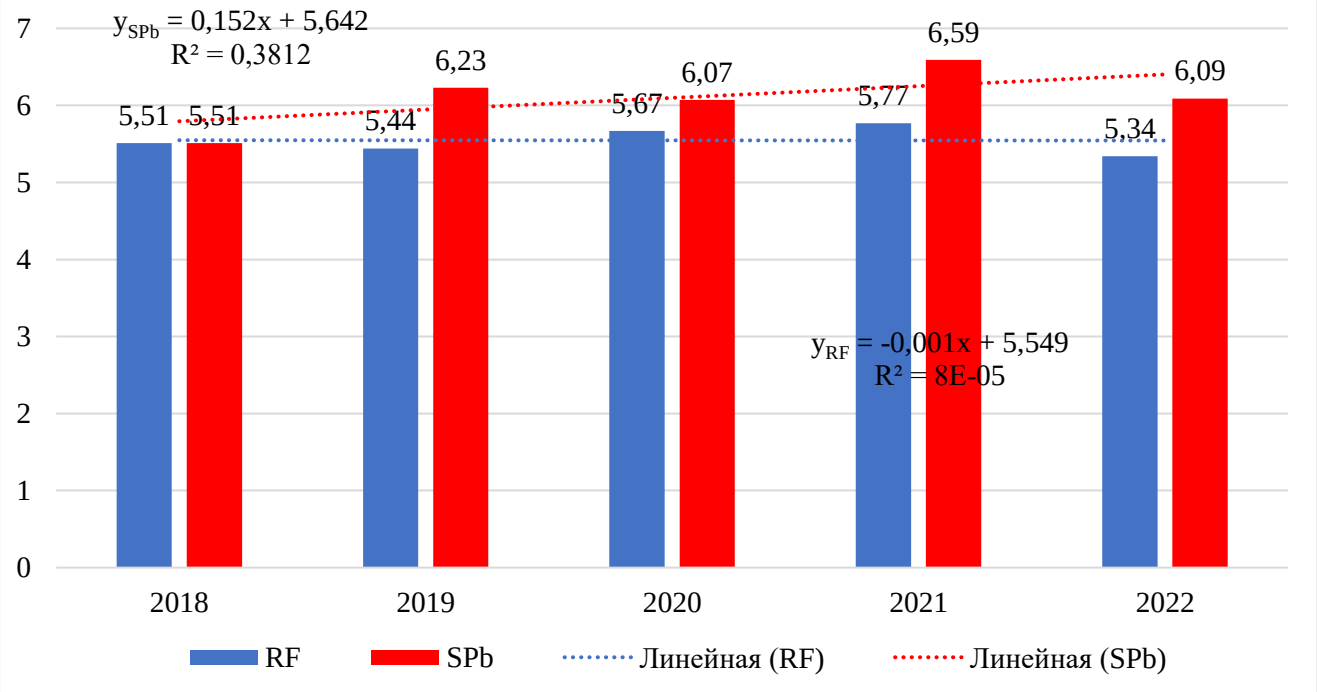

Figure 3.3 - Dynamics of stillbirth rate in Russia and St. Petersburg in 2018-2022 (per 1000 live and still births)

The level of medical care for antenatal fetal protection in antenatal clinics and in pregnancy pathology departments can be assessed by the value of antenatal mortality. The highest mortality rate of children during pregnancy was observed in the Far Eastern Federal District (Figure 3.4). It was 10.1% higher than the national average (6.08% vs. 5.18%; $p<0.05$). Also, antenatal mortality rates were higher than the national average in the Northwestern Federal District (by 9.9%; $p<0.05$), the Southern Federal District (by 12.2%; $p<0.05$) and the Volga Federal District (by 9.9%; $p<0.05$). Antenatal mortality in the North Caucasian Federal District was significantly lower than the national average. Its difference with the national average was 28.9% (3.68% vs. 5.18%; $p<0.05$). In the Central Federal District, antenatal mortality rates were also significantly lower than the national average (by 10.2%; $p<0.05$).

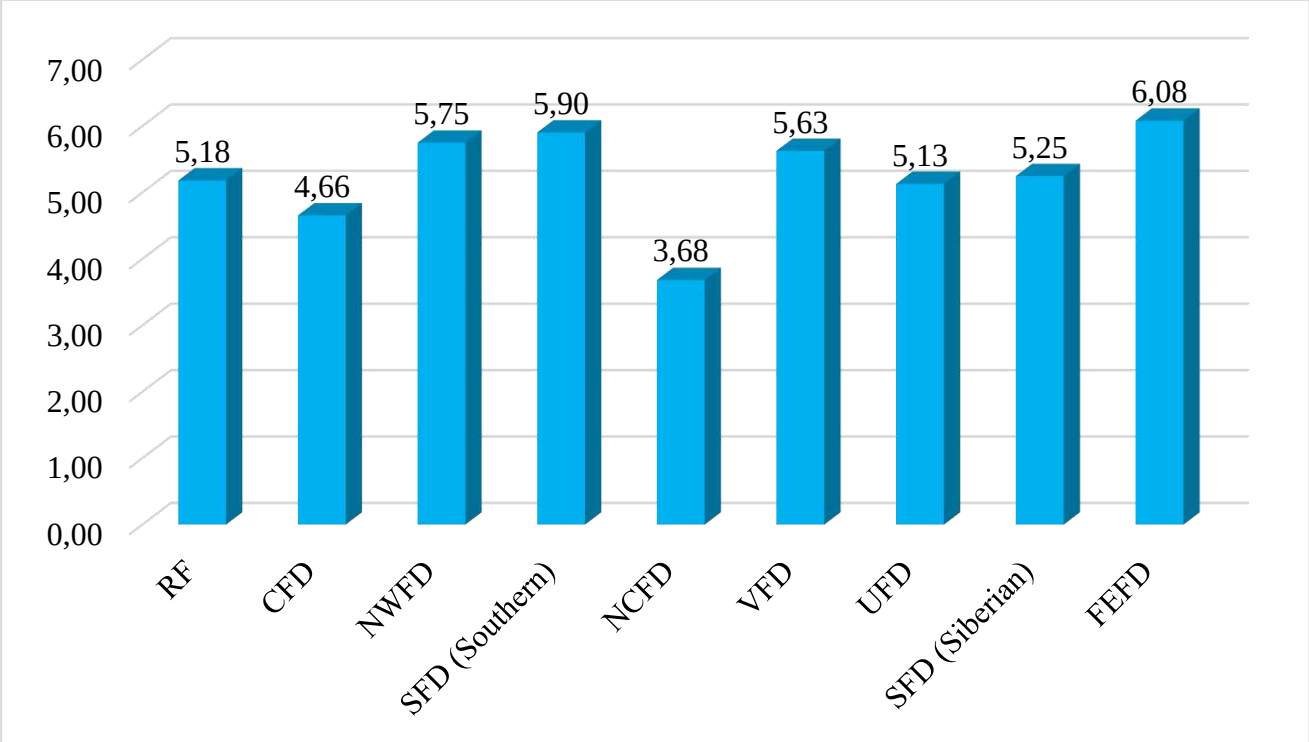

Figure 3.4 - Average antenatal mortality in Russia and federal districts in 2018-2022 (per 1000 live and still births)

It was found that in 2021 there was an increase in antenatal mortality in Russia and in almost all its federal districts (Figure 3.5). The exceptions were the Southern ederal and the Siberian Federal districts, where this rise was observed a year earlier. Evaluation of the dynamics of antenatal mortality in Russia and federal districts in 2018-2022 revealed that by 2022 from the level of 2018 it decreased slightly in the Russian

Federation as a whole (-0.4%), as well as in the Far Eastern Federal District (-3.5%) and the Ural Federal District (-2.9%), but this decrease had no significant differences ($p>0.05$). There was a statistically significant differences in indicators only in the Volga Federal District (by 7.4%; $p<0.05$). In the remaining federal districts, there was an increase in antenatal mortality rates by 2022: in the Central Federal District - by 3.2%, in the Northwestern Federal District - by 2.7%, in the Southern Federal District - by 1.9%, in the North Caucasian Federal District - by 3.3% and in the Siberian Federal District - by 5.7%. However, that increase had not statistically significant differences from 2018 levels ($p>0.05$).

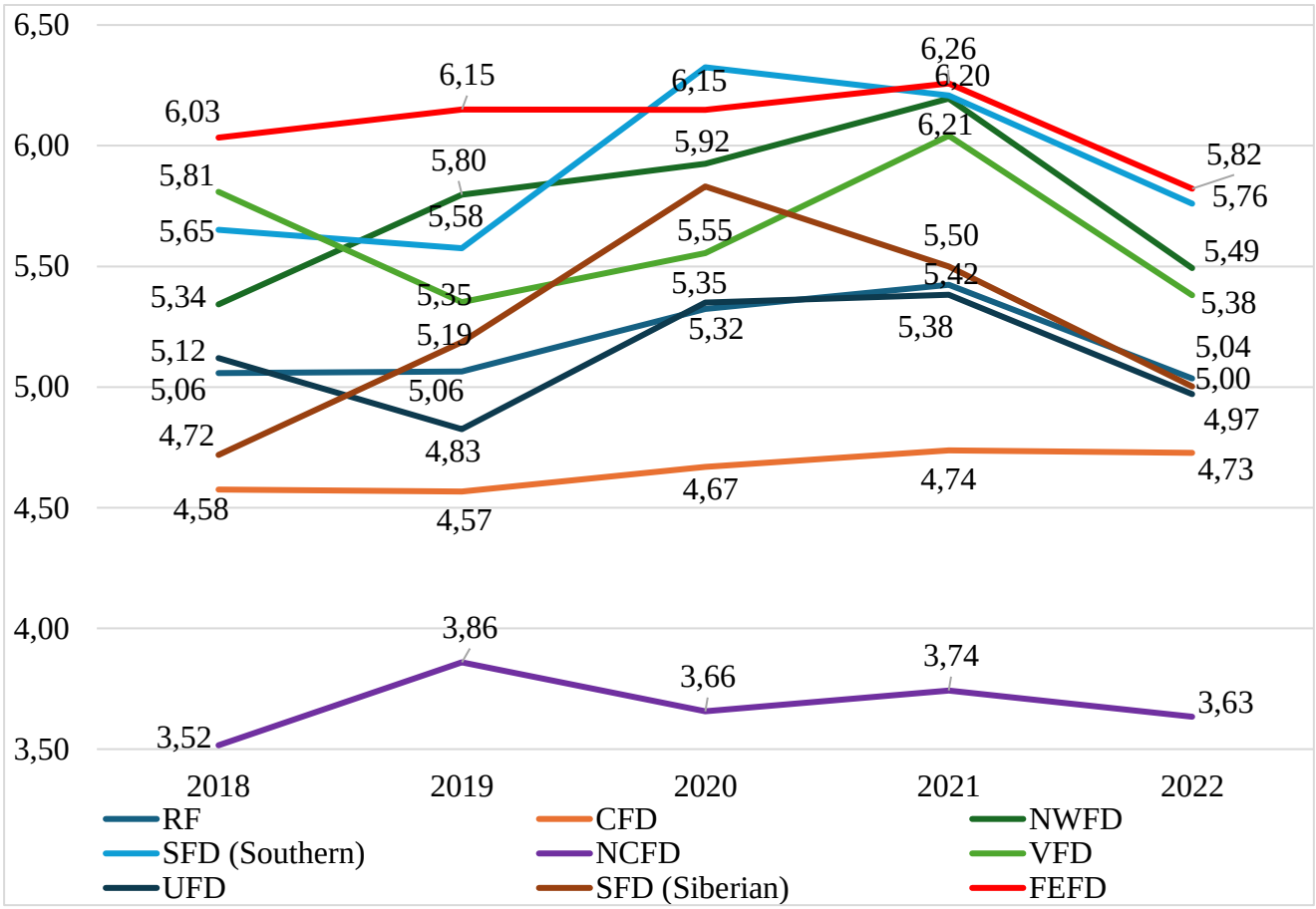

Figure 3.5 - Dynamics of antenatal mortality in Russia and federal districts in 2018-2022 (per 1000 live and still births)

Analysis of antenatal mortality in St. Petersburg revealed (Figure 3.6) that the difference in the five-year average antenatal mortality in the megalopolis (5.03‰) exceeded the Russian average by 10.1% ($p<0.05$). At the same time, in 2018 it was almost at the average Russian level and amounted to 5.76% (lower by 0.5%; $p<0.05$). Starting from 2019, antenatal mortality in the megalopolis began to exceed the national average

significantly and grew until 2021, after which they decreased. Overall, antenatal mortality in St. Petersburg increased by 11.8% ($p<0.05$) by 2022 from values in 2018.

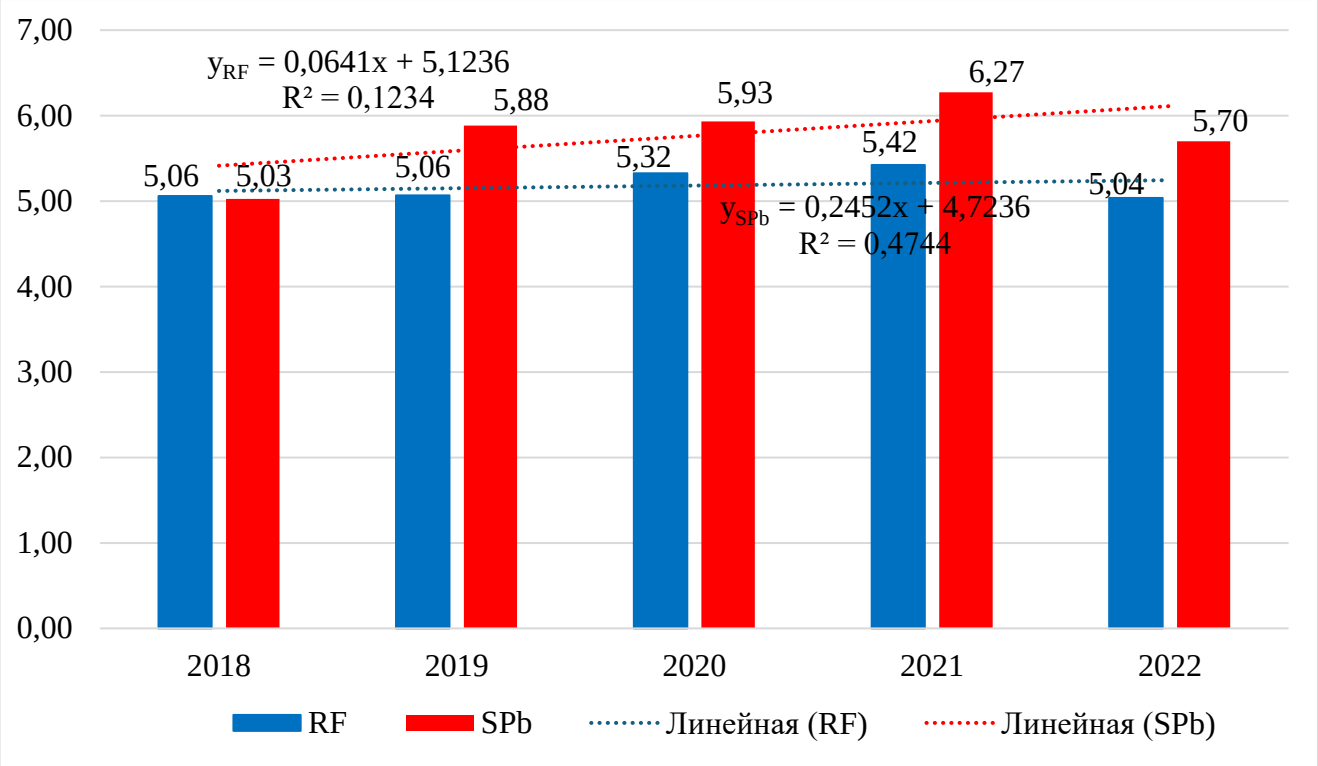

Figure 3.6 - Dynamics of antenatal mortality in Russia and St. Petersburg in 2018-2022 (per 1000 live and still births)

In order to study the contribution of antenatal mortality to perinatal mortality, a comparative assessment of the indicators of the specific weight of antenatal mortality in the structure of perinatal mortality in Russia and its federal districts in 2018-2022 was carried out (Figures 3.7 and 3.8). It amounted to more than 70% (except for the North Caucasian Federal District) and almost in all districts of Russia the share of antenatal mortality exceeded the average Russian values. The exceptions were the North Caucasian Federal District and the Siberian Federal District, where it was below the national average (59.2% and 70.2% vs. 72.7%; $p<0.05$). Assessment of the indicators dynamics revealed that the share of antenatal mortality in the structure of perinatal mortality in 2022 to the level of 2018 increased both in Russia as a whole and in most of its federal districts: in Russia - by 6.1%, in the Central Federal District - by 5.1%, in the Northwestern Federal District - by 10.2%, in the North Caucasian Federal District - by 14.9%, in the Volga Federal District - by 7.8%, in the Ural Federal District - by 4.6%, in the Siberian Federal District - by 8.7% ($p<0.05$) and in the Far Eastern Federal District - by 0.5% ($p>0.05$). A

decrease was observed only in the Southern and the Far Eastern federal districts (by 1.7% and 0.5%, respectively; p>0.05).

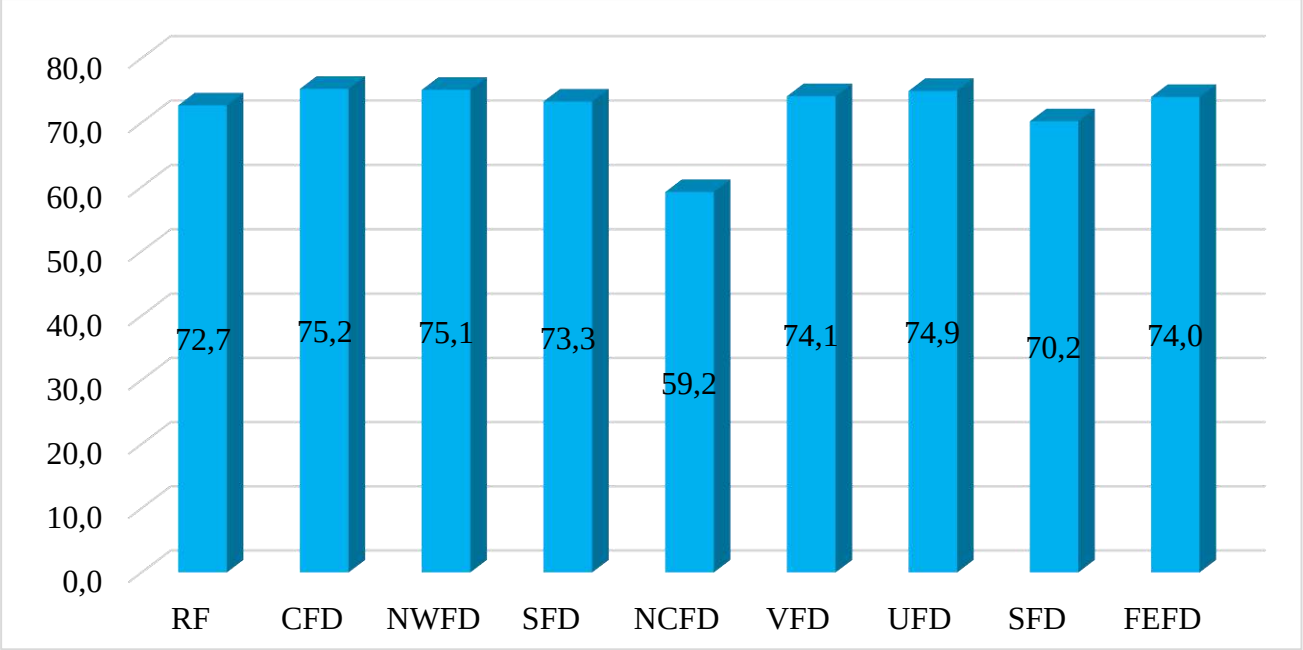

Figure 3.7 - Average share of antenatal mortality in the structure of perinatal mortality in Russia and federal districts in 2018-2022 (%)

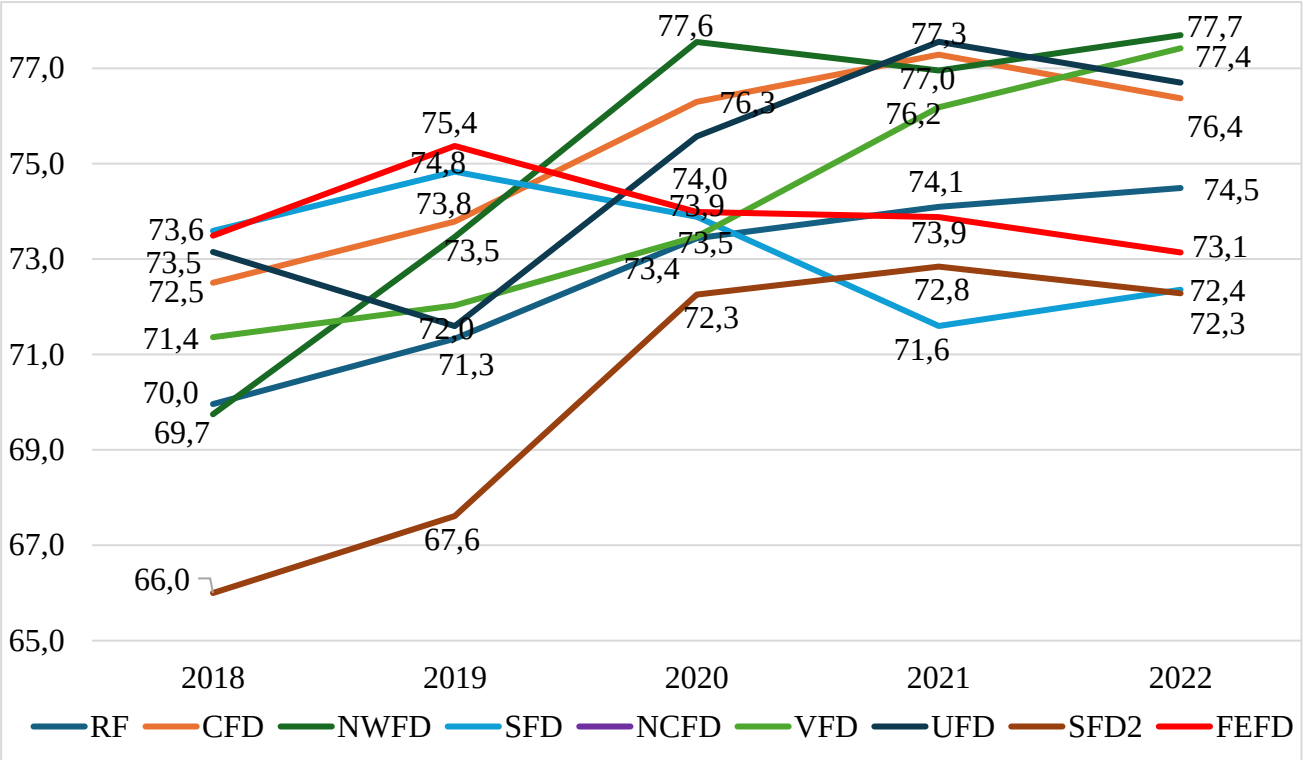

Figure 3.8 - Dynamics of the share of antenatal mortality in the structure of perinatal mortality in Russia and federal districts in 2018-2022 (%)

An assessment of the proportion of antenatal mortality in the structure of perinatal mortality in St. Petersburg revealed (Figure 3.9) that it significantly exceeded not only

the indicators for the country, but also for all federal districts. On average, the proportion of antenatal mortality remained 79.3% over five years. At the same time, if the indicators for Russia had a steady growth trend, the megalopolis growth of the specific weight of antenatal mortality in the structure of perinatal mortality was traced up to 2020 inclusive (to the level of 83.4%), and from 2021 there was a decrease to 79.9%. In general, over five years, the growth rate of indicators amounted to 8.9% or 9.0% in absolute values ($p<0.05$).

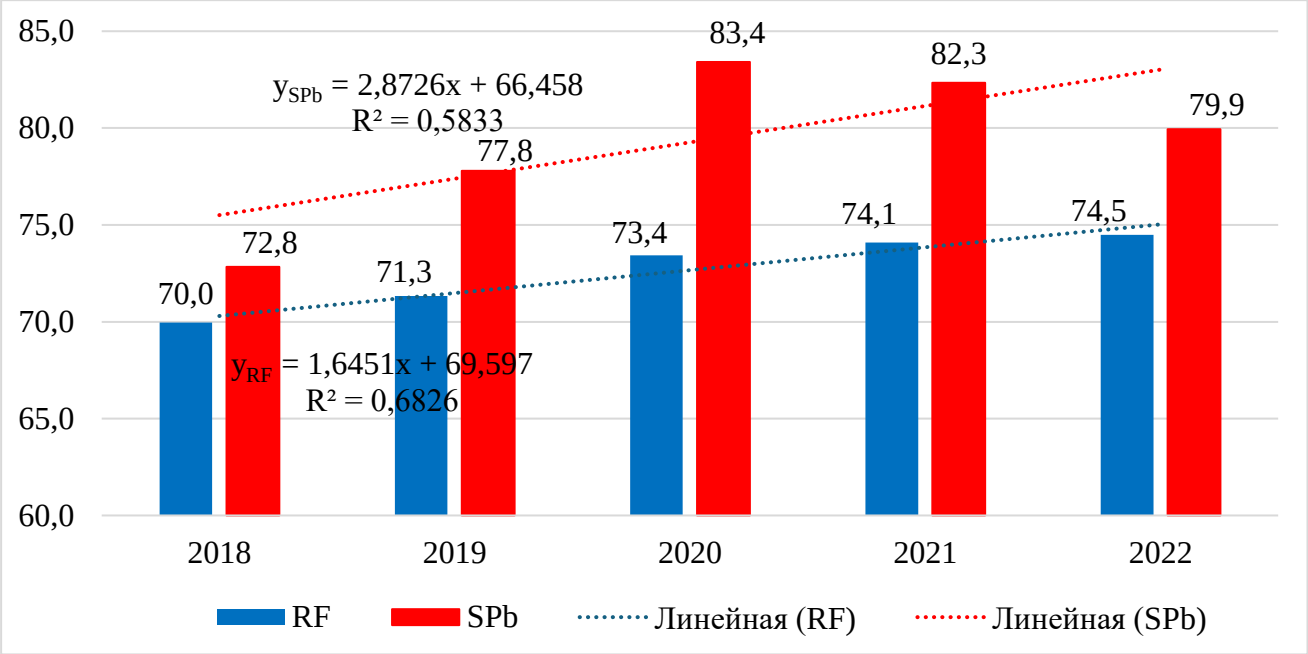

Figure 3.9 - Dynamics of the share of antenatal mortality in the structure of perinatal mortality in Russia and St. Petersburg in 2018-2022 (%)

The conducted study allowed us to establish that the average specific weight of antenatal mortality in the structure of stillbirth in Russia and federal districts in 2018-2022 was more than 90% (Figure 3.10). The highest values were in the Central Federal District and the Ural Federal District, which exceeded the Russian average by 1.2% and 1.1%, respectively ($p>0.05$). The lowest rates were observed in the Northwestern Federal District and the Siberian Federal District (below the national average by 1.2% and 1.6%; $p>0.05$).

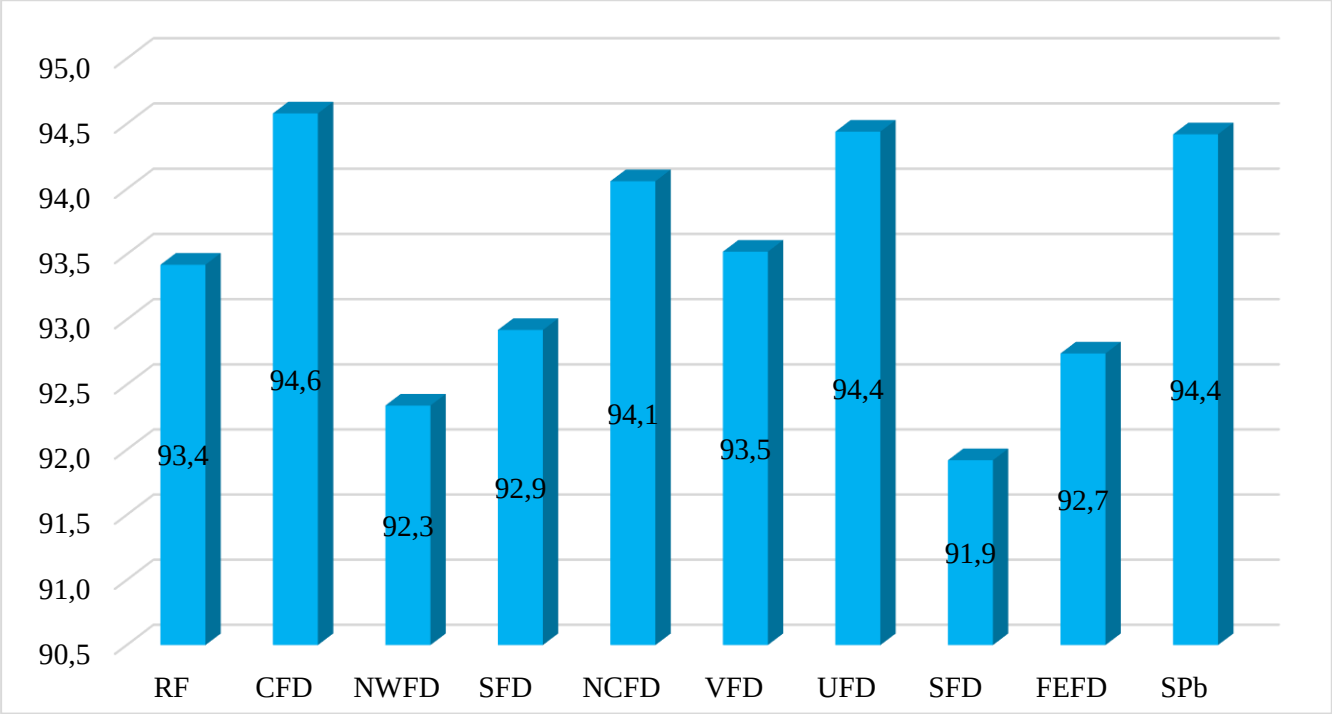

Figure 3.10 - Average share of antenatal mortality in the structure of stillbirth rate in Russia and federal districts in 2018-2022 (%)

An assessment of the dynamics of the share of antenatal mortality in the structure of stillbirths revealed that both in the Russian Federation as a whole and in all its federal districts there was a uniform trend towards a slight increase in the indicators (Table 3.6). The most significant growth was observed in the Northwestern Federal District (+5.6%) and the Far Eastern Federal District (+3.2%).

Table 3.6 - Dynamics of the specific weight of antenatal mortality in the structure of stillbirth rate in Russia and federal districts in 2018-2022

Territory	2018	2019	2020	2021	2022	Average value (M±m)	Growth rate /decrease (%)	Difference with M_{RF} (%)
RF	91.8	93.1	93.9	94.0	94.3	93.4±0.45	+2.7*	-
CFD	92.8	93.4	95.1	96.1	95.5	94.6±0.63	+2.8	↑1.2
NWFD	88.6	92.3	93.6	93.3	93.9	92.3±0.97	+5.6*	↓1.2
SFD (Southern)	91.9	93.7	93.7	92.1	93.2	92.9±0.39	+1.4	↓0.5
NCFD	91.8	94.6	94.0	95.0	94.9	94.1±0.59	+3.3*	↑0.7
VFD	92.5	93.4	93.2	94.1	94.4	93.5±0.37	+2.0	↑0.1
UFD	94.3	93.7	94.7	94.1	95.4	94.4±0.29	+1.2	↑1.1
SFD (Siberian)	90.4	90.5	93.0	92.9	92.8	91.9±0.60	+2.6	↓1.6
FEFD	90.6	93.9	93.3	92.3	93.6	92.7±0.60	+3.2*	↓0.7

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

In St. Petersburg, the share of antenatal mortality in the structure of stillbirth exceeded not only the average for the Northwestern Federal District, but also the average for Russia (94.4% vs. 93.4%). However, while the value of the indicator was above the national average in 2019-2021, it was below the national average in 2018 and 2022. The assessment of the dynamics of indicators revealed that, in general, over five years, in the absence of a stable trend, the increase in the proportion of antenatal mortality in the megalopolis amounted to 2.6% or 2.4% in absolute terms. The dynamics of the proportion of antenatal mortality in the structure of stillbirth in St. Petersburg in 2018-2022 is shown in Figure 3.11.

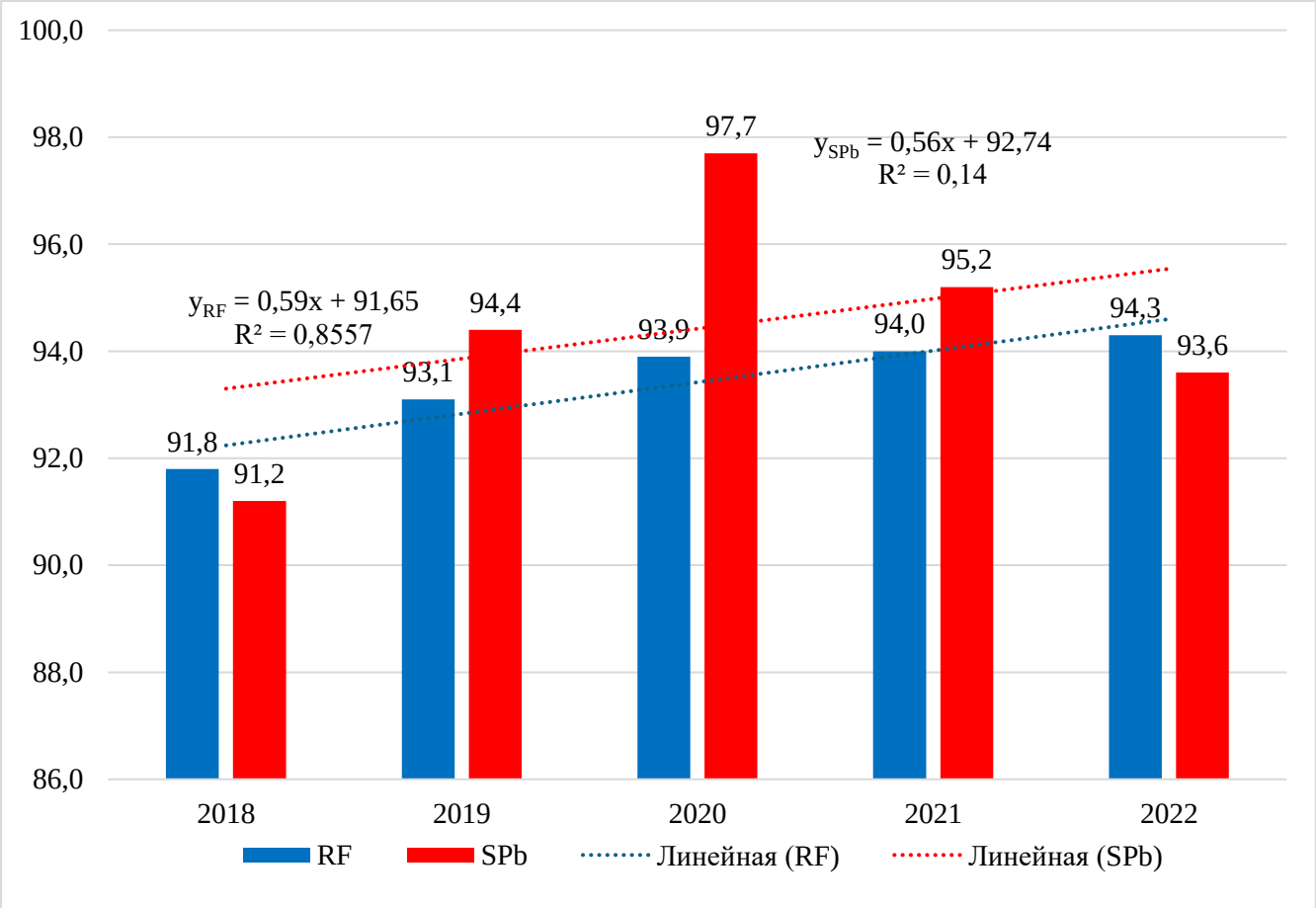

Figure 3.11 - Dynamics of the share of antenatal mortality in the structure of stillbirth rate in Russia and St. Petersburg in 2018-2022

The indicators of perinatal mortality, stillbirth and antenatal mortality in the megalopolis exceeded the average Russian level and tended to increase. The share of antenatal mortality in the structure of perinatal mortality in St. Petersburg significantly exceeded not only the national figures, but also the figures for all federal districts of

Russia, and increased by 8.9% over five years. The proportion of antenatal mortality in the structure of stillbirth rate exceeded not only the national average, but also in most federal districts, including the Northwestern Federal District, and tended to increase.

3.3. The incidence of pregnant women and newborn children

A mother's health status during pregnancy is crucial to the health of her child. To assess maternal health, the incidence of pregnant women, women in labor and new mothers in Russia, federal districts and St. Petersburg according to ICD-10 class XV "Pregnancy, childbirth and the puerperium" (Table 3.7) were analyzed. It was found that only in the Central Federal District the average incidence of women over five years was lower than the national average (by 11.3%; $p<0.05$). In the other federal districts, the incidence rates of pregnant women, women in labor and new mothers were slightly higher than the national average. The incidence rates of women in the Volga Federal District and the Siberian Federal District were significantly higher than the national average (5.7% and 5.3%, respectively).

Table 3.7 - Dynamics of incidence among pregnant women, women in labor and new mothers in Russia, federal districts and St. Petersburg in 2018-2022 (per 100 thousand female population of reproductive age).

Territory	2018	2019	2020	2021	2022	Average value (M±m)	Decrease rate (%)	Difference with M_{RF} (%)
RF	6697.5	6488.5	6103.9	6049.5	5592.6	6186.4±191.1	-16.5*	-
CFD	5629.8	5834.3	5360.2	5594.6	5014.6	5486.7±140.0	-10.9*	↓11.3*
NWFD	7480.4	6013	5878.5	6316.9	5880.7	6313.9±302.4	-21.4*	↑2.0*
SFD (Southern)	6562.0	5979.4	6605.3	7034.9	6133.6	6463.0±187.0	-6.5*	↑4.3*
NCFD	6625.4	7738.4	5881.1	6413.6	5661.8	6464.1±363.4	-14.5*	↑4.3*
VFD	7367.1	7163.2	6418.1	5990.2	5862.9	6560.3±303.8	-20.4*	↑5.7*
UFD	6852.1	6910.5	6574.4	6122.7	5598.7	6411.7±246.3	-18.3*	↑3.5*
SFD (Siberian)	7418.4	6577.7	6489.7	6181.4	6010.8	6535.6±243.3	-19.0*	↑5.3*
FEFD	6612.5	6508.6	6596.6	5880.5	5762.1	6272.1±185.8	-12.9*	↑1.4
SPb	7152.2	5914.8	5737.3	6191.6	5350.4	6069.3±303.2	-25.2*	↓1.9*

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

It was found that the incidence of pregnant women, women in labor and new mothers in Russia and the federal districts decreased in 2022 to the level of 2018 ($p<0.05$). The most significant rates of decline were observed in the Northwestern Federal District (21.4%), the Volga Federal District (20.4%) and the Siberian Federal District (19.0%).

An assessment of incidence of women of reproductive age in St. Petersburg made it possible to establish that the five-year average incidence rate of women with ICD-10 class XV was 1.9% lower than the national average ($p<0.05$). It was revealed that the incidence of megalopolis women decreased annually until 2020 inclusive, in 2021 it increased to the level of 6191.6 cases of diseases per 100 thousand female population of reproductive age, and in 2022 it decreased again to the value of 5350.4 cases per 100 thousand. In general, the rate of decrease in the incidence of pregnant women, women in labor and new mothers in the megalopolis was higher than in Russia as a whole and its federal districts and amounted to 25.2% ($p<0.05$).

The study assessed the incidence of pregnant women, which has the most significant impact on the child's health. Pre-existing hypertension can lead to a delay in fetal development, the development of eclampsia in the mother, premature placental abruption, premature birth, fetal and pregnant death, etc. The conducted assessment of the prevalence of arterial hypertension in pregnant women revealed (Table 3.8) that in St. Petersburg, the five-year average incidence rate was statistically higher than the national and federal district averages by 23.4% and 8.2%, respectively ($p<0.05$). At the same time, both in Russia as a whole, and in the district and the megalopolis, the incidence of pre-existing hypertension, which complicated pregnancy, decreased ($p<0.05$). Evaluation of the proportion of hypertension complicating pregnancy from all diseases of the “Pregnancy, childbirth and the puerperium” class revealed that the proportion of these diseases in the megalopolis was also higher than in Russia and the Northwestern Federal District as a whole (5.0% vs. 4.0% and 4.2%; $p<0.05$).

Table 3.8 - Dynamics of the incidence of pre-existing hypertension complicating pregnancy in Russia, NWFD and St. Petersburg in 2018-2022 (per 1000 women who have completed pregnancy)

Territory	Indicator	2018	2019	2020	2021	2022	Average value (M±m)	Growth rate /decrease (%)	Difference with M_{RF} (%)
RF	‰	57.71	58.42	55.65	55.37	57.60	56.95±0.61	-0.2	-
	Class XV (%)	4.1	4.0	4.0	3.9	4.0	4.0±0.03	-3.4*	-
NWFD	‰	68.90	75.33	68.12	63.82	64.88	68.21±2.02	-5.8*	↑16.5*
	Class XV (%)	4.1	5.2	4.6	3.8	3.4	4.2±0.31	-17.1*	↑4.8*
SPb	‰	76.29	81.30	75.24	68.31	70.42	74.31±2.29	-7.7*	↑23.4*
	Class XV (%)	5.1	6.1	5.5	4.1	4.2	5.0±0.38	-18.0*	↑20.4*

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

Preeclampsia is one of the most severe complications of pregnancy, which can cause placental abruption, premature birth, sudden intrauterine fetal death, and others. The study showed that the prevalence of moderate preeclampsia and severe preeclampsia (in total) in the megalopolis was also significantly higher ($p<0.05$) than in the country as a whole and in the NWFD (by 49.0% and 12.3%, respectively). The share of preeclampsia in the total number of women with ICD-10 class XV diseases was 1.9 times higher than the national average and 1.3 times higher than the federal district average ($p<0.05$). At the same time, both the prevalence of preeclampsia and its share in the incidence structure of the female population of reproductive age decreased almost annually. The dynamics of the incidence of pregnant women with moderate and severe preeclampsia in Russia, the Northwestern Federal District and St. Petersburg is presented in Table 3.9.

Table 3.9 - Dynamics of incidence of moderate and severe preeclampsia in pregnant women in Russia, NWFD and St. Petersburg in 2018-2022 (per 1000 women who have completed pregnancy)

Territory	Indicator	2018	2019	2020	2021	2022	Average value (M±m)	Growth rate /decrease (%)	Difference with M_{RF} (%)
RF	‰	23.51	22.13	20.27	21.59	20.9	21.68±0.55	-11.1*	-
	Class XV (%)	1.7	1.5	1.4	1.5	1.4	1.5±0.05	-13.8*	-
NWFD	‰	56.22	38.16	33.33	29.46	29.24	37.28±5.00	-48.0*	↑41.8*
	Class XV (%)	3.4	2.6	2.3	1.8	1.2	2.2±0.37	-65.7*	↑64.7*
SPb	‰	71.79	34.21	33.58	37.41	35.66	42.53±7.34	-50.3*	↑49.0*
	Class XV (%)	4.8	2.5	2.5	2.3	2.1	2.8±0.50	-55.7*	↑56.3*

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

Threatened miscarriage is a complication of pregnancy that leads to prematurity or intrauterine fetal death. It was found that, on average, over five years in the megalopolis, the prevalence threatened miscarriage was almost at the level of the national average ($p>0.05$), but at the same time 12.1% lower than the average for the Northwestern Federal District ($p<0.05$). Over the five years studied, the prevalence of threatened miscarriage in Russia, the NWFD, and St. Petersburg decreased significantly (by 19.1%, 25.1%, and 17.7%, respectively; $p<0.05$). The assessment of the contribution of threatened miscarriage to the incidence of pregnant women, women in labor and new mothers revealed that in St. Petersburg in 2018-2022, the average the specific weight of this pathology was 11.0%, which did not differ significantly from the national figures for the country and the federal district as a whole ($p>0.05$). Also, as in Russia and the Northwestern Federal District, the proportion of threatened miscarriage in the megalopolis area tended to decrease ($p<0.05$). The dynamics of the prevalence of threatened abortion in Russia, the Northwestern Federal District and St. Petersburg are presented in Table 3.10.

Table 3.10 - Dynamics of the prevalence of threatened miscarriage in Russia, NWFD and St. Petersburg in 2018-2022 (per 1000 women who have completed pregnancy)

Territory	Indicator	2018	2019	2020	2021	2022	Average indicator (M±m)	Growth rate /decrease (%)	Difference with M_{RF} (%)
RF	‰	178.11	182.21	164.02	146.11	144.04	162.90±7.88	-19.1*	-
	Class XV (%)	12.7	12.4	11.7	10.2	10.0	11.4±0.56	-21.3*	-
NWFD	‰	209.79	202.95	186.88	169.23	157.13	185.20±9.91	-25.1*	↑12.0*
	Class XV (%)	12.6	14.0	12.7	10.1	9.9	11.9±0.80	-21.4	↑4.2
SPb	‰	177.21	171.2	165.31	154.77	145.92	162.88±5.63	-17.7*	-
	Class XV (%)	11.8	12.7	12.1	9.4	8.7	11.0±0.79	-26.6*	↓3.7

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

As well as threatened miscarriage, the threat of premature birth in a significant number of cases leads to prematurity or fetal death. The study showed that this pregnancy complication was less frequent in St. Petersburg in 2018-2022 than the national and county average by 5.5% and 7.6%, respectively ($p<0.05$) and also decreased in the years studied. The share of the threat of premature birth in the total number of diseases of the XV class of diseases in the megalopolis for an average of five years was equal to the average value, were higher than the national average by 2.2%. Evaluation of the dynamics of the share of the threat of premature birth in the incidence structure of women of reproductive age showed that in pregnant women in Russia, in the Northwestern Federal District and St. Petersburg in 2018-2022 it was decreasing ($p<0.05$). The dynamics of the prevalence of the threat of premature birth in pregnant women is presented in Table 3.11.

Table 3.11 - Dynamics of prevalence of the threat of premature birth in pregnant women in Russia, NWFD and St. Petersburg in 2018-2022 (per 1000 women who have completed pregnancy)

Territory	Indicator	2018	2019	2020	2021	2022	Average value (M±m)	Growth rate /decrease (%)	Difference with M_{RF} (%)
RF	‰	127.03	182.22	114.06	105.17	105.02	126.70±14.44	-17.3	-
	Class XV (%)	9.1	12.4	8.1	7.3	7.3	8.8±0.94	-19.8	-
NWFD	‰	146.14	203.34	110.15	96.58	91.23	129.49±20.80	-37.6	↑2.2
	Class XV (%)	8.8	14.0	7.5	5.8	4.5	8.1±1.64	-48.9	↓8.0
SPb	‰	112.68	171.40	106.28	108.08	100.10	119.71±13.08	-11.2	↓5.5
	Class XV (%)	7.6	12.7	7.8	6.6	6.0	8.1±1.19	-21.2	↓8.0

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

Rh-immunizations can lead to spontaneous abortion, and after delivery it becomes the cause of hemolytic jaundice of newborns. Analysis of the prevalence of Rh-immunization and other forms of isoimmunization in pregnant women in the megalopolis revealed a significant excess of indicators over the national and district average values (68.2% and 28.2%, respectively; $p<0.05$). The share of this pathology in the structure of incidence of pregnant women, in labor and new mothers was higher than the average values in Russia and the federal district by 3.0 and 1.4 times, respectively ($p<0.05$). At the same time, while the prevalence and proportion of Rh-immunization and other forms of isoimmunization in pregnant women decreased in the country as a whole ($p<0.05$), in the Northwestern Federal District and St. Petersburg in 2018-2022 ($p<0.05$). The dynamics of the incidence of Rh-immunization and other forms of isoimmunization in pregnant women are presented in Table 3.12.

Table 3.12 - Dynamics of the prevalence of Rh-immunization and other forms of isoimmunization in pregnant women in Russia, NWFD and St. Petersburg in 2018-2022 (per 1000 women who have completed pregnancy)

Territory	Indicator	2018	2019	2020	2021	2022	Average value (M±m)	Growth rate /decrease (%)	Difference with M_{RF} (%)
RF	‰	22.22	22.27	22.74	19.82	20.69	21.55±0.55	-6.9	-
	Class XV (%)	1.6	1.5	1.6	1.4	1.4	1.5±0.04	-10.1	-
NWFD	‰	46.53	51.44	51.23	46.61	53.11	49.78±1.35	+12.4	↑56.7
	Class XV (%)	2.8	3.5	3.5	2.8	3.3	3.2±0.16	+15.2	↑53.1
SPb	‰	51.51	62.72	67.88	73.27	83.47	67.77±5.32	+38.3	↑68.2
	Class XV (%)	3.5	4.7	5.0	4.5	5.0	4.5±0.27	+44.1	↑66.6

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

Despite the fact that the frequency of births complicated by umbilical cord pathology is an indicator of the performance of obstetric care organizations, it is at the outpatient stage during ultrasound that this pathology should be detected. The choice of delivery tactics depends on the presence of umbilical cord pathology in a woman in labor, so this indicator can be attributed to the quality of diagnostics of women's clinics. The study showed that the frequency of births complicated by umbilical cord pathology in 2018-2022 in St. Petersburg was on average 2.8 times less frequent than the national average and 2.1 times less frequent than in the Northwestern Federal District ($p<0.05$). During the study period, there was a positive dynamic of reduction in the frequency of such births both in Russia and in the NWFD and St. Petersburg (15.4%, 18.7%, and 39.8%, respectively; $p<0.05$). Assessment of the share of births complicated by umbilical cord pathology in the structure of incidence of women 15-49 years old with class XV diseases revealed that their share in the megalopolis averaged 1.2%, which is statistically lower than in the Russian Federation and the NWFD as a whole ($p<0.05$). Like the incidence of births complicated by umbilical cord pathology, the proportion of such births in the incidence structure decreased almost annually between 2018 and 2022 ($p<0.05$). The dynamics of the frequency of the indicated births over the five-year follow-up period is presented in Table 3.13.

Table 3.13 - Dynamics of the frequency of births complicated by umbilical cord pathology in Russia, NWFD and St. Petersburg in 2018-2022 (per 1000 births)

Territory	Indicator	2018	2019	2020	2021	2022	Average indicator (M±m)	Growth rate /decrease (%)	Difference with M_{RF} (%)
RF	‰	54.60	53.23	49.56	44.60	46.19	49.64±1.93	-15.4*	-
	Class XV (%)	3.9	3.6	3.5	3.1	3.2	3.5±0.14	-18.0*	-
NWFD	‰	38.51	41.79	36.29	35.48	31.32	36.68±1.73	-18.7*	↓26.1*
	Class XV (%)	2.3	2.9	2.5	2.1	1.1	2.2±0.30	-53.2*	↓37.5*
SPb	‰	22.41	17.61	17.42	16.41	13.48	17.47±1.44	-39.8*	↓64.8*
	Class XV (%)	1.5	1.3	1.3	1.0	0.8	1.2±0.12	-46.4*	↓66.0*

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

The incidence of newborns, its magnitude and dynamics, is in many respects an integral indicator of the quality of obstetric and gynecological care at the outpatient and inpatient stages. It was revealed that in the megalopolis over the all period under study, the incidence of newborns was significantly higher in all the studied years than the average in the country and the federal district. The difference with the five-year average in the Russian Federation amounted to 25.3%, and with the average in the NWFD - 13.2% ($p<0.05$). At the same time, if the incidence of children in the country as a whole has grown insignificantly (+1.4%), in the megalopolis the increase over five years amounted to 24.0% ($p<0.05$). The dynamics of the prevalence of the threat of premature birth in pregnant women in Russia and the megalopolis is presented in Table 3.14.

Table 3.14 - Dynamics of incidence of newborns in obstetrics organizations in Russia and St. Petersburg in 2018-2022 (per 1000 live births)

Territory	2018	2019	2020	2021	2022	Average value (M±m)	Growth rate /decrease (%)	Difference with M_{RF} (%)
RF	314.5	310.9	305.6	316.0	318.9	313.2±2.29	+1.4	-
NWFD	335.7	355.4	357.8	392.2	378.5	363.9±9.79	+11.3	↑13.9
SPb	355.6	379.6	406.0	485.5	468.2	419.0±25.08	+24.0	↑25.3

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

Thus, the incidence of women of reproductive age in St. Petersburg with the XV class of diseases was lower than the national and average values and its decline was higher than in Russia as a whole and in all its districts (-25.2%; $p<0.05$). The study showed that the incidence of arterial hypertension, moderate to severe preeclampsia, Rh-immunization and other forms of isoimmunization in pregnant women in the megalopolis was higher than the national and district average indicators. At the same time, the incidence of threatened miscarriage was almost at the level of the national average, and the incidence of threat of premature birth, as well as labor complicated by umbilical cord pathology, was less frequent than the national and district averages. At the same time, arterial hypertension (-7.7%), moderate to severe preeclampsia (-50.3%), threatened miscarriage (-17.7%), threat of premature birth (-11.2%), and the frequency of childbirth complicated by umbilical cord pathology (39.8%) decreased statistically in the megalopolis, and the prevalence of Rh-immunization and other forms of isoimmunization in pregnant women increased (+38.3%). The incidence of neonatal incidence in St. Petersburg during all the years under study was significantly higher than the national and the Northwestern Federal District averages (by 25.3% and 13.2%, respectively; $p<0.05$), and its increase over five years amounted to 24.0% ($p<0.05$).

Chapter 4. MEDICAL AND SOCIAL CHARACTERISTICS AND OBSTETRIC HISTORY OF PREGNANT WOMEN WITH FETAL PATHOLOGY AND THEIR QUALITY OF LIFE

4.1. Comparative assessment of medical and social characteristics of pregnant women with fetal pathology

Public health as the most important potential of the country, largely depends on its conditions and lifestyle, heredity, health status and environmental situation. Therefore, medical and social characteristics, quality of life and obstetric history of the mother largely determine the health status of the future child. The data obtained made it possible to establish that all pregnant women (100%) in both the main and control groups were citizens of the Russian Federation. At the same time, 95.7% of the pregnant women studied were Russian by nationality. Representatives of other nationalities accounted for 4.3%, including Ukrainians - 1.9%, Belarusians - 1.2%, and Chuvash, Udmurt and Kalmyk women - 0.4% each.

All other nationalities were in the main group. In the control group, all 100% of pregnant women were Russian. Thus, statistically significant, both among all pregnant women and among pregnant women in the main group, were Russian women ($p<0.01$).

This study showed that 95.3% women attended antenatal clinics and 4.7% didn't ($p<0.01$). Comparative evaluation showed that in the main group, all 100% women were observed in the antenatal clinic, while in the control group, there was a statistically significant predominance of those women who were observed in the antenatal clinic over those pregnant women who were not (90.8% vs. 9.2%; $p < 0.01$).

The findings revealed that most of the pregnant women belonged to the age group of 35-39 years (33.9%). The age group below 20 years included 0.8% of pregnant women, 20-24 years - 4.3%, 25-29 years - 29.7%; 30-34 years - 25.4% and 40-44 years - 5.9%. The average age of pregnant women was 32.12±0.35 years. The age of women in the main group was significantly higher (33.19±0.51 years) than in the control group (31.30±0.46 years) ($p<0.05$). The study showed that there were statistically significantly

more mothers aged 35-39 among pregnant women with a sick child (p<0.05). The age distribution of pregnant women and their husbands is shown in Table 4.1.

Table 4.1 - Distribution of pregnant women and their husbands by age in the main and control groups (%)

Age, years	Main group	Control group	All women
Pregnant women			
Up to 20	1.6	-	0.8
20-24	1.6	6.9	4.3
25-29	23.0	36.2	29.7
30-34	24.0	26.9	25.4
35-39	44.0 *	23.9 *	33.9
40-44	6.0	6.2	5.9
Total	100.0	100.0	100.0
Pregnant women			
15-34 years old	50.0 *	70.0 *#	60.2 #
35-49 years old	50.0 *	30.0 *#	39.8 #
Husbands (partners)			
Age, years	Main group	Control group	Total
Up to 20	0.8	-	0.4
20-24	0.8	6.2	3.5
25-29	12.0	8.5	10.2
30-34	16.6	42.3	30.0
35-39	33.3 *	23.1 *	28.1
40-44	33.3 *	9.2 *	21.1
45 and older	1.6	6.2	4.0
Total	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 assessment of the distribution of mothers by age showed statistically significant differences between the proportions of pregnant women aged 35-39 in the main and control groups (p <0.05). Similar differences in the main and control groups were found between the rates of the proportion of pregnant women of early reproductive age (p <0.05) and the proportion of pregnant women of late reproductive age (p <0.05). In addition, both among all the women studied and in the control group, there was a significant predominance of pregnant women aged 35-49 (p <0.05), which was not

typical for the main group, where the share of women of early and late reproductive ages was equal.

The survey revealed that the majority of husbands were aged 30-39 (58.1%). At the same time, 3.9% of husbands were under the age of 25, 10.2% - 25-29 years old, 21.1% - 40-44 years old and 4.0% - 45 years and older. The average age of husbands was 35.4±0.43 years. In the main group, it was 36.43±0.58 years, in the control group — 34.35±0.60 years ($p<0.05$). Comparative evaluation of the main and control groups revealed statistically significant differences between the groups of husbands aged 35-39 ($p<0.05$) and 40-44 years ($p<0.01$).

This study showed that in the majority of pregnant women (52.3%) it was the first child, the second - in 32.0% of women, the third – in 10.5%, the fourth and more – in 5.1%. It was found that the proportion of pregnant women with a second child was statistically higher in the mothers of the main group – 41.3% vs. 23.1% ($p<0.05$). The average number of children in families with a child with CM was 1.24±0.06 and in families with healthy children was 1.65±0.10 ($p<0.01$). The distribution of families by the number of children in the family is shown in Table 4.2.

Table 4.2 - Distribution of families by the number of children in the family in the main and control groups (%)

Number of children	Main group	Control group	All women
First	46.8	57.7	52.3
Second	41.3*	23.1 *	32
Third	10.3	10.8	10.5
Fourth and more	1.6	8.5	5.1
Total	100.	100.0	100.0

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

A study of the distribution of pregnant women by level of education revealed that most of the respondents had higher education and specialized secondary education (71.9% and 17.6% respectively), while 4.7% and 0.8% had incomplete higher education and only primary education respectively. Comparative analysis showed that the proportion of pregnant women with secondary (7.7%), specialized secondary (20%) and incomplete higher (7.7%) education was higher in the control group than in the main

group. Assessment of the distribution of pregnant women by level of education showed a significant difference between the main and control groups in the share of pregnant women with higher education (79.4% vs. 64.6%) ($p<0.05$). The distribution of pregnant women by level of education is shown in Table 4.3.

Table 4.3 - Distribution of pregnant women by level of education in the main and control groups (%)

Education	Main group	Control group	All women
Primary	1.6	-	0.8
Secondary	2.4	7.7	5.1
Specialized secondary	15.1	20.0	17.6
Incomplete higher	1.6	7.7	4.7
Higher	79.4 *	64.6 *	71.9
Total	100.0	100.0	100.0

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

Evaluation of the results of the anonymous questionnaire made it possible to establish that the majority of respondents classified themselves as employees of budgetary organizations (26.9%), employees (25.8%) and housewives (21.1%). Distribution of mothers by social status showed no significant difference between the indicators of the main and control groups. However, the proportion of employees and entrepreneurs among pregnant women in the main group was higher than in the control group by 24.1% and 45.7%, respectively. In the control group, compared to the main group, there were 23.6% more workers. Table 4.4 shows the distribution of pregnant women by social status who had a healthy child and a child with CM.

Table 4.4 - Distribution of pregnant women by social status in the main and control groups (%)

Social status	Main group	Control group	All women
Working	15.9	20.8	18.4
Employee of a budgetary organization	26.9	26.9	26.9
Employee of a commercial structure	29.4	22.3	25.8
Entrepreneur	12.7	6.9	9.8
Housewife	20.6	21.5	21.1
Self-employed	1.6	1.5	1.6
Student (school)	0.8	-	0.4
Total	100.0	100.0	100.0

The assessment of the financial situation of pregnant women revealed that 48.4% of women believed that they had an average income and had enough money for a normal life. 34.4% of respondents believed that their income was relatively high, and 8.6% assessed their material well-being as low. 5.9% of pregnant women replied that they had no financial difficulties, and 2.3% found it difficult to answer this question. Only 0.4% of pregnant women considered themselves poor and did not have enough money even for minimal expenses. A comparative assessment of the financial situation in the main and control groups allowed us to establish that in both groups the largest number of pregnant women attributed themselves to people with average income (44.0% in the main group vs. 53.1% in the control group). A statistically significant difference when comparing pregnant women in the main and control groups was determined only between women who had a relatively high income ($p<0.05$). The distribution of pregnant women by financial status in the main and control groups is shown in Figure 4.1.

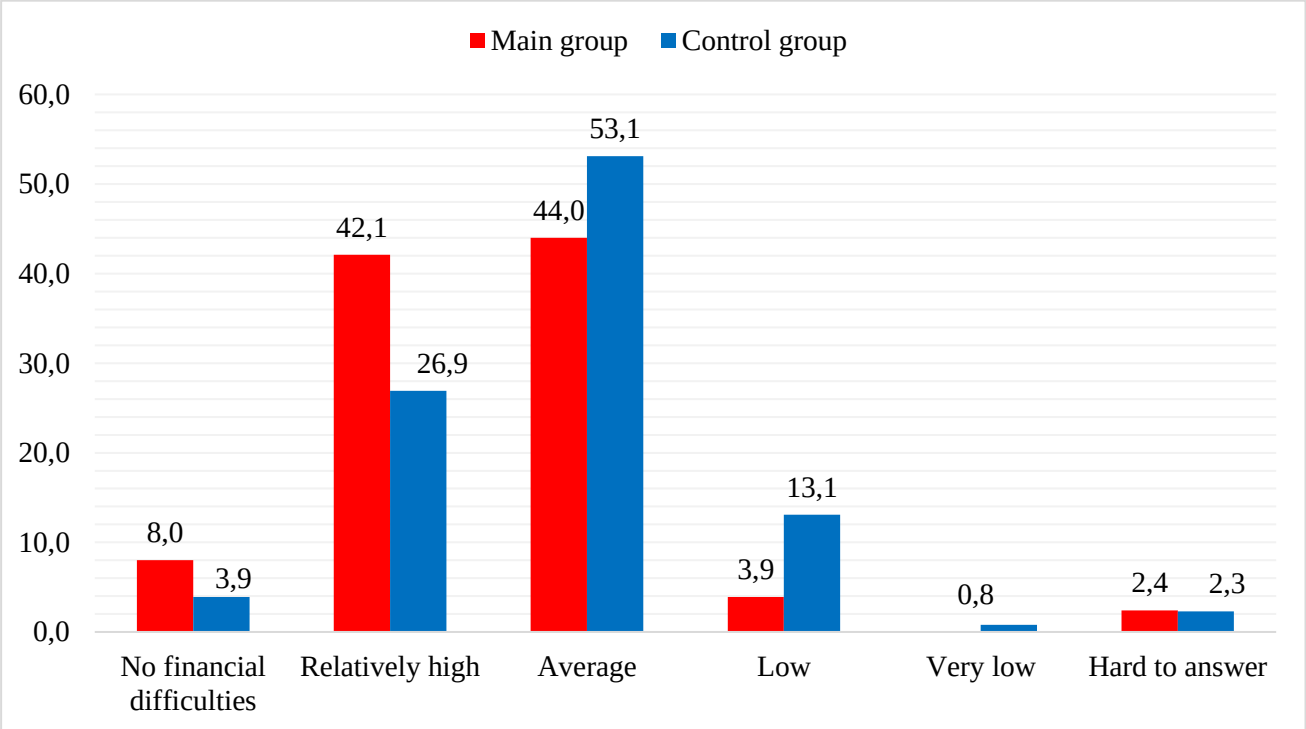

Figure 4.1 - Distribution of pregnant women by financial status in the main and control groups (%)

The vast majority of pregnant women lived in registered marriages (85.9%), 8.6% were in common-law marriages, 3.5% were unmarried, and 0.8% were divorced (Figure 4.2).

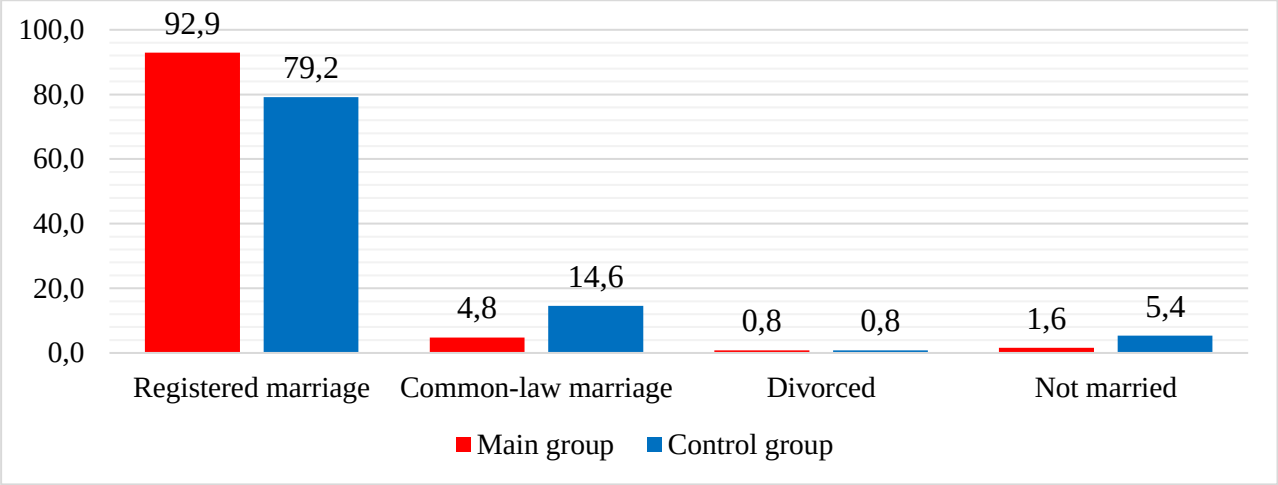

Figure 4.2 - Distribution of pregnant women by marital status in the main and control groups (%)

Assessment of the distribution of pregnant women by marital status revealed a significant difference between women with registered marriages in the main and control groups ($p<0.05$). The proportion of pregnant women in registered marriages was higher among pregnant women who had a child with health problems (92.9% vs. 79.2%).

The assessment of mothers' attitudes towards bad habits showed that most women did not have them at all (78.5%), while 21.5% had them. Both in the main and control groups, pregnant women with absolutely no bad habits significantly prevailed ($p<0.05$). However, there were more such respondents in the main group (85.0% vs. 72.3%). The proportion of pregnant women who consumed alcoholic beverages before pregnancy was higher in women carrying healthy babies (16.9% vs. 6.3%) (Figure 4.3). The proportion of women who smoke was higher in the control group (10.3% vs. 7.7%).

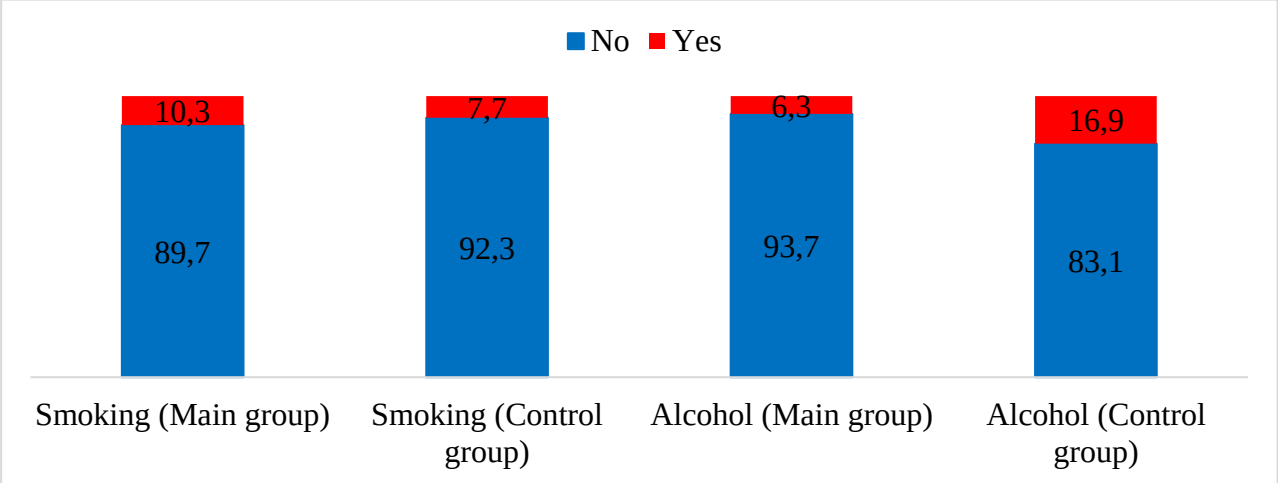

Figure 4.3 - Distribution of women in relation to harmful habits before pregnancy in the main and control groups (%)

The analysis of attitudes towards bad habits among women during pregnancy showed that most of them did not have bad habits (91.0%), while 9.0% did (Figure 4.4). In the group of pregnant women carrying a child without pathology, women who did not have bad habits prevailed over women who had them (83.1% vs. 16.9%). At the same time, respondents without bad habits significantly prevailed among both the main and control groups ($p<0.01$). However, there were more such pregnant women in the main group (99.2%).

Assessment of the distribution of pregnant women in relation to smoking and alcohol during pregnancy showed no statistically significant difference between the main and control groups. However, the proportion of respondents who drank alcohol during pregnancy was higher among women carrying a healthy child (16.9% vs. 0.0%), as were women who smoked (7.7% vs. 0.8%).

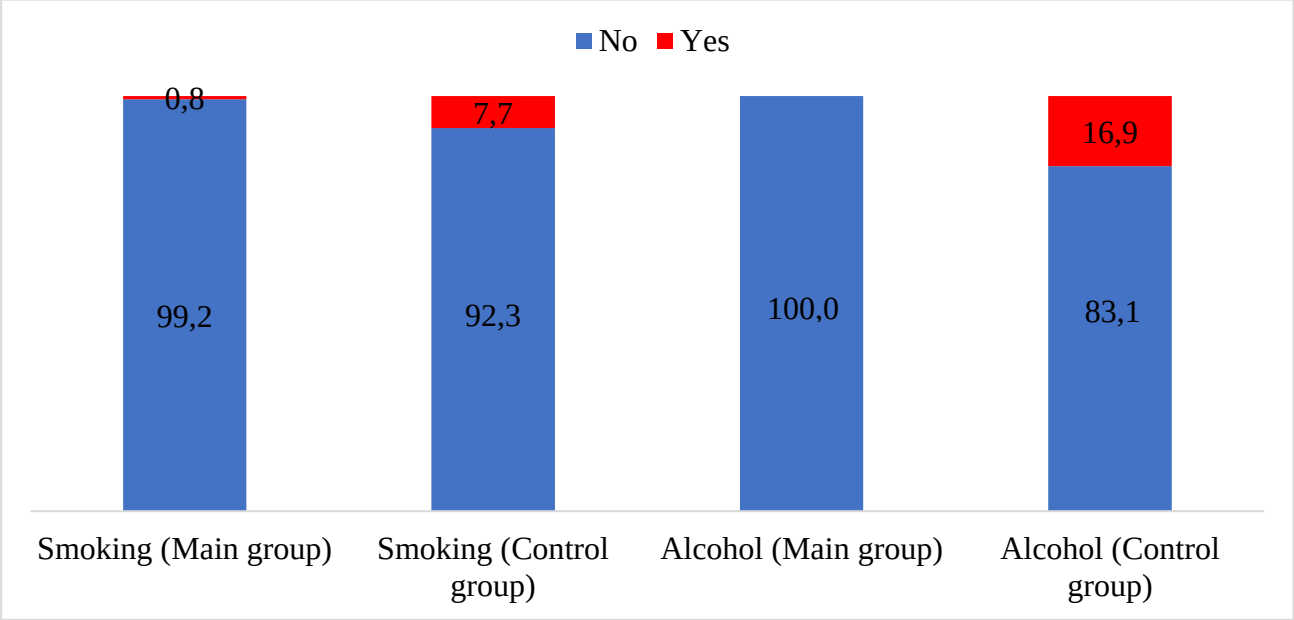

Figure 4.4 - Distribution of women in relation to harmful habits before pregnancy in the main and control groups (%)

A comparative analysis of medical and social characteristics of pregnant women in the main and control groups showed that pregnant women in the main group were significantly higher: the proportion of women of older reproductive age with a higher average age in the group, as well as their husbands; the proportion of families with a second child with a lower average number of children in the family; the proportion of pregnant women with higher education; the proportion of employees of commercial

structures and entrepreneurs with a higher proportion of high-income women, as well as the proportion of women in a registered marriage and smokers before pregnancy. At the same time, there were fewer women who consumed alcoholic beverages and smoked before and during pregnancy.

4.2. Fetal health assessment and comparative assessment of obstetric history of pregnant women

The study of fetal health and comparative assessment of obstetric history of pregnant women was based on the data obtained from medical records. The study showed that in the structure of fetal pathology the most common were individual conditions arising in the perinatal period, the share of which amounted to 90.6%, and the proportion of CM was 9.4%. It was found that the highest rate of detection of fetal pathology was at 15 to 21 weeks of pregnancy. At the same time, 54.0% of the detected cases were accounted for by the second screening ultrasound. It was revealed that women carrying a child with pathology had a single pregnancy in 98.4% of cases. Multiple pregnancy was registered only in 1.6% of cases. There were no women with multiple pregnancies in the control group. The timing of fetal disease detection during pregnancy in the main groups is presented in Figure 4.5.

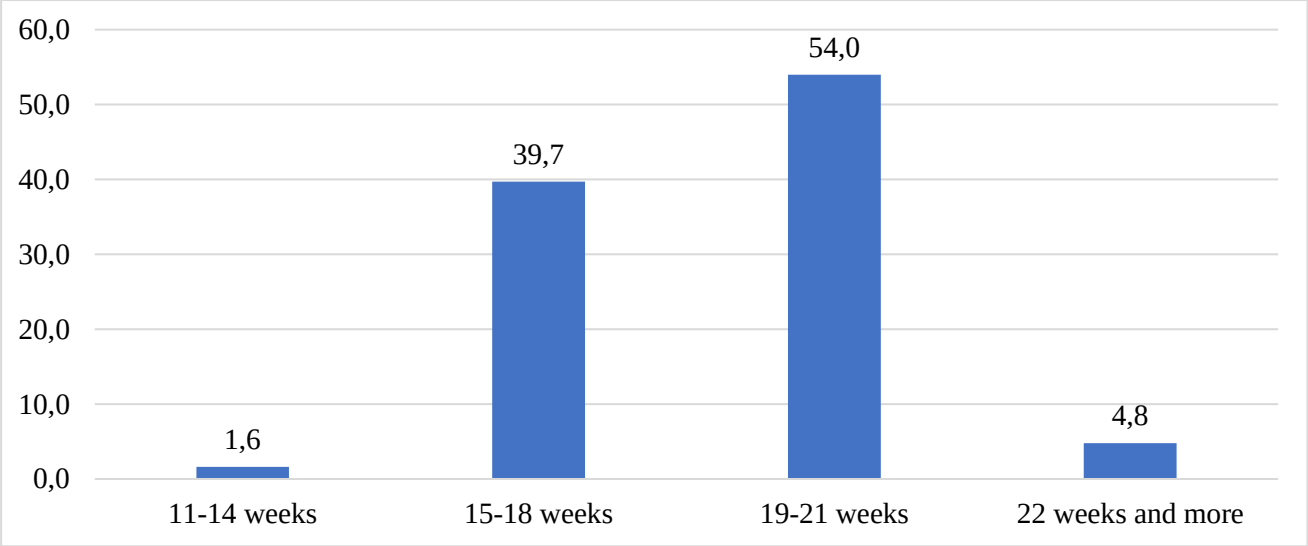

Figure 4.5 - Timing of detection of fetal diseases during pregnancy in the main groups (%)

Distribution assessment of children by gender revealed that, in general, the ratio of pregnant women with male and female children was almost equal. However, the main group had predominantly male children and the control group had female children. In the majority of cases, the pregnancy occurred naturally (90.6%). At the same time, there were 1.7 times more women in the main group who became pregnant through IVF (11.9% vs. 6.9%). The results of the study are presented in Table 4.5.

Table 4.5 - Distribution of pregnant women depending on the gender of the child and the onset of pregnancy in the main and control groups (%)

Gender	Main group	Control group	All women
Child's gender			
Male	67.5 *#	38.5 *	52.7
Female	32.5 #	61.5	46.1
Total	100.0	100.0	100.0
Onset of pregnancy			
Natural	88.1 #	93.1 #	90.6 #
IVF	11.9 #	6.9 #	9.4 #
Total	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 results of the study showed that most of the women had first pregnancy (41.0%), second pregnancy - 24.6%, third - 22.6%, fourth - 7.4%, fifth - 2.3%, sixth - 0.8% and seventh pregnancy - 1.2%. In the control and main groups of women, this pregnancy was the first (44.6% vs. 37.3%) (Figure 4.6). Second pregnancy in the control group amounted to 27.7%, third pregnancy - 16.9%, fourth - 6.2%, fifth - 1.5%, sixth - 0.8%, and seventh pregnancy - 2.3%. The average number of pregnancies in the main group was 2.21±0.10, and in the control group - 2.03±0.11.

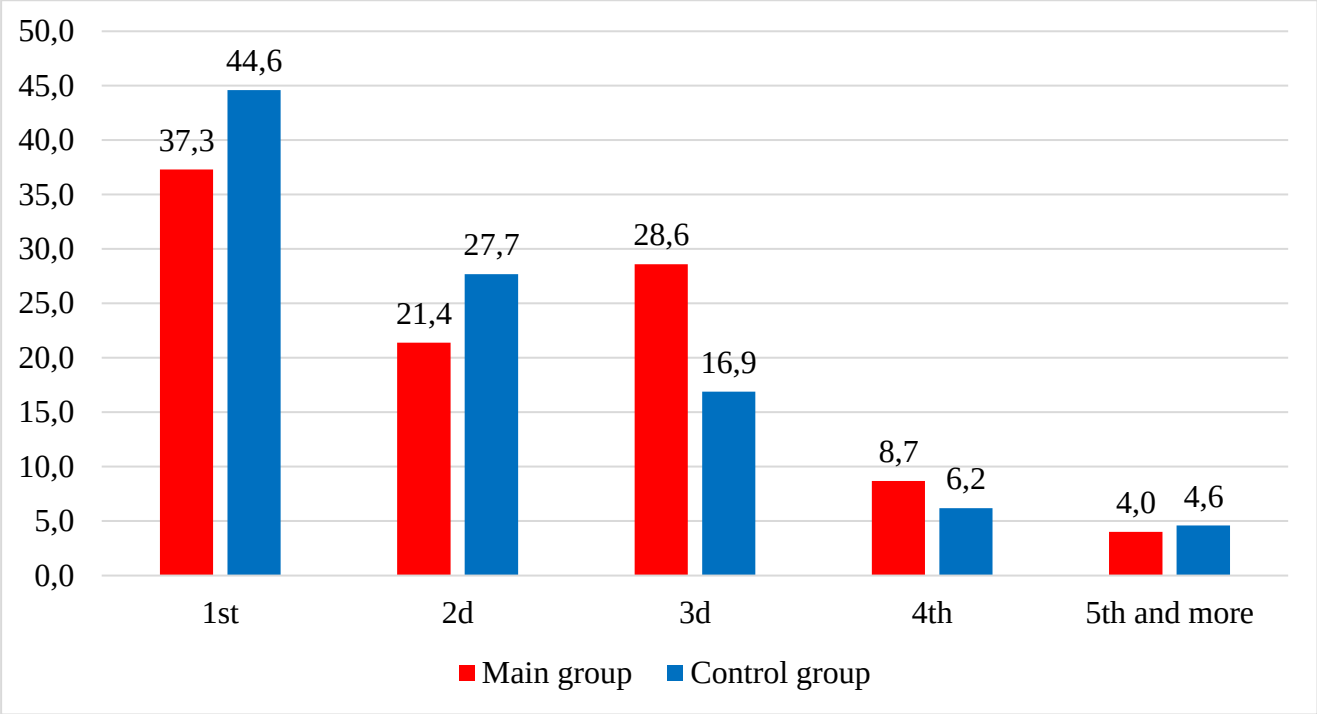

Figure 4.6 - Distribution of pregnant women by number of pregnancies in the main and control groups (%)

Despite the fact that in most cases this pregnancy was the first in both the main and control groups, the proportion of first-pregnant women in the control group was higher (44.6% vs. 37.3%), as was the proportion of women pregnant with a second child (27.7% vs. 21.4%). At the same time, the proportion of pregnant women with a third child was statistically higher among the mothers in the main group (28.6% vs. 16.9%; $p<0.05$).

The data obtained revealed that 88.3% of the pregnant women had early registration for pregnancy (before 12 weeks) and the remaining 11.7% were registered between 12 and 22 weeks of pregnancy (Figure 4.7). The proportion of pregnant women with early registration in the main group was 84.9 and 91.5% in the control group. 15.1% pregnancies in the main group and 8.5% in the control group were registered after 12 weeks. An assessment of the distribution of pregnant women by the timing of registration showed statistically significant differences. In both, the main and control groups, women who were registered before 12 weeks of pregnancy prevailed over those who were registered after 12 weeks ($p<0.01$). Thus, among mothers carrying children with pathology, the share of those who were subject to medical check-up at the women's clinic later than the recommended dates was 1.8 times higher.

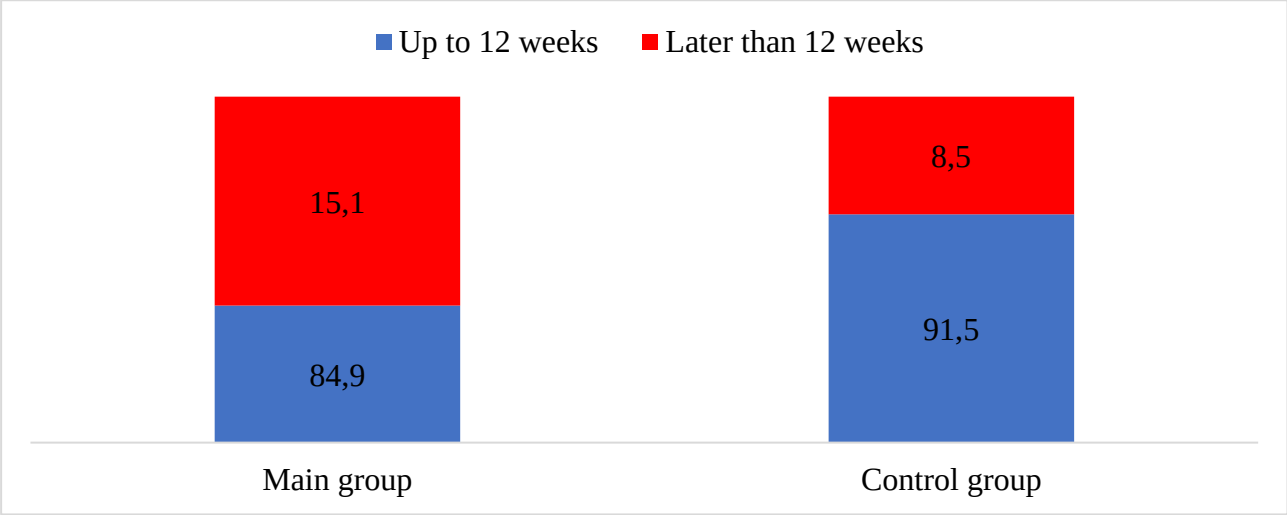

Figure 4.7 - Distribution of women by timing of pregnancy registration at the antenatal clinic in the main and control groups (%)

The study revealed that 22.4% of women had a history of abortion (including spontaneous) - 28.5% in the control group vs. 14.1% in the main group ($p<0.05$). It was found (Figure 4.8) that a greater proportion of pregnant women had no history of surgical abortion before the present pregnancy (82.0% vs. 18.0%; $p<0.01$) (excluding spontaneous abortions). Women without surgical abortion predominated significantly in both groups ($p<0.01$). At the same time, it was found that the proportion of pregnant women who had abortions before the present pregnancy was higher in the main group than in the control group (23.0% vs. 13.1%).

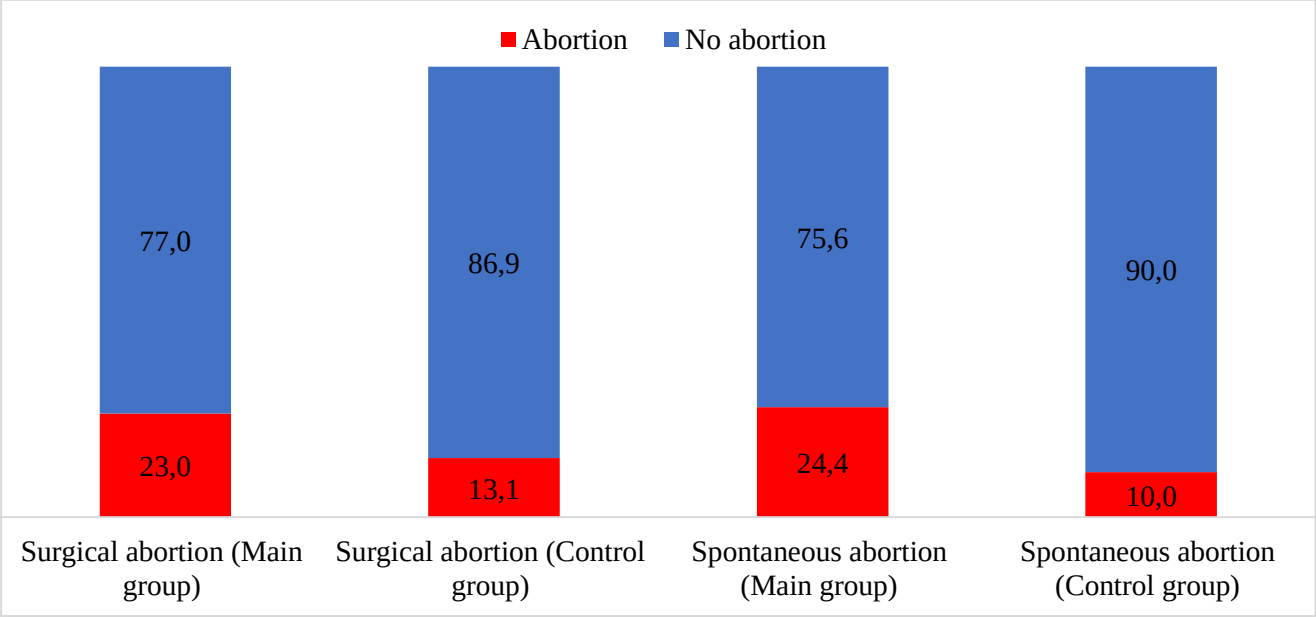

Figure 4.8 - Distribution of pregnant women by history of spontaneous and surgical abortions in the main and control groups (%)

The majority of pregnant women had one abortion – 14.2%, and two or more - 3.8%. In the main and control groups, women with a history of one surgical abortion (18.0% vs. 10.0%) prevailed over those with two or more (5.0% vs. 3.1%). Assessment of the distribution of pregnant women by the number of abortions showed no significant differences in the main and control groups. 14.3% of the women who participated in the study had an abortion before 12 weeks and only 3.7% after 12 weeks. 16.2% of women in the main group had abortions before 12 weeks, and 6.8% after 12 weeks. In the control group, 11.8% of women had abortions before 12 weeks, and 1.3% after 12 weeks of pregnancy.

It was found that 12.5% of women had abortions for medical reasons (missed miscarriage, ectopic pregnancy, embryo defect), 5.1% had abortions at the woman's request, and 0.4% had abortions for social reasons (rape). The main causes of abortions in the main group were for medical reasons (14.3%), at request (7.9%) and social – 0.8%. In the control group, the main reasons for abortions were: for medical reasons (missed miscarriage and ectopic pregnancy, embryo defect) - 10.7% and at the woman's request - 2.4%. There were more abortions related to a woman's health status in the main group than in the group of mothers carrying healthy children.

Analysis of the distribution of pregnant women by history of spontaneous abortions (miscarriages) showed that the majority of women had no history of spontaneous abortions (83.2%), while 16.8% had them (Figure 4.8). Assessment of the distribution of pregnant women by the presence of spontaneous abortions in the history of pregnancy made it possible to establish statistically significant ($p<0.05$) predominance of pregnant women who had no miscarriages in the main and control groups (75.6% and 90.0%, respectively). Thus, spontaneous abortions occurred in 24.4% of pregnant women in the main group vs. 10.0% in the control group ($p<0.05$).

Among women who had spontaneous abortion, those with a history of 1 miscarriage prevailed – 16.0%, over pregnant women with 2 or more – 0.8%. It was also found that among the main and control groups, women with 1 spontaneous termination also prevailed – 23.0% and 9.2%, with 2 or more – 1.4% and 0.8%. Both, in the main and control groups, women with one spontaneous miscarriage statistically prevailed ($p<0.05$).

In addition, there were significant differences between the proportion of pregnant women with one spontaneous abortion in the main and control groups (23.0% vs. 9.2%; $p<0.05$).

Evaluation of the results of the study revealed that 16.3% of women had a miscarriage before 12 weeks, after 12 weeks – 3.5%, among whom 3.1% - from 12 to 22 weeks, 0.4% - from 22 to 24 weeks. It was found that 17.3% of women in the main group had a miscarriage before 12 weeks, and 7.1% had a miscarriage after 12 weeks: from 12 to 22 weeks - 6.3%, from 22 to 24 weeks - 0.8%. In the control group, which included women with healthy fetuses, 10.0% had a miscarriage before 12 weeks. Comparative assessment revealed statistically significant differences in the proportion of spontaneous abortions before 12 weeks in the main and control groups ($p<0.05$).

A study of the distribution of women according to the causes of miscarriage showed that in the majority of women, who participated in the study, the main cause of spontaneous abortion was of unknown genesis (8.2%). 5.1% of the pregnant women cited the cause of missed miscarriage, 2.3% cited other causes, and 1.2% cited infection. The first place in the structure of the causes of miscarriages in the main group was occupied by an unknown cause (12.3%), the second - by a missed miscarriage (8.0%), the third - by other causes (3.2%), the fourth - by infection (0.8%). In the control group, the cause of miscarriage was also unknown in most pregnant women – 4.7%, missed miscarriage - 2.3%, infection and others - 1.5% each. Statistically significant differences were determined between the proportion of pregnant women who had miscarriage for unknown reasons in the main and control groups (12.7% vs. 4.6%; $p<0.05$). There were also significant differences between the groups in the proportion of women who had spontaneous abortion due to a missed miscarriage (8.0% vs. 2.3%; $p<0.05$).

The study showed that 2.4% of women had a history of premature birth and the main causes of premature birth were hemolytic disease, placental abruption and infection (0.8% each). In the main group, premature births amounted to 4.0%, and in the control group – 0.8%. The study of the distribution of pregnant women in the main group according to the term of premature birth showed that 1.6% of women had premature birth before 28 weeks and 2.4% after 28 weeks. The main causes of premature birth in women of the main group were placental abruption and infection (1.6% each), hemolytic disease

(0.8%). In the control group, only one woman had a history of premature birth at 30 weeks of pregnancy due to hemolytic disease of the child (0.8%).

Analysis of the distribution of pregnant women according to the detection of fetal diseases in previous pregnancies showed that 8.6% of women had fetal diseases. There were 11.1% of such women in the main group, and 1.8 times more in the control group (6.2%). In the structure of fetal diseases, the largest share belonged to individual conditions that occur in the perinatal period (4.6%), and the share of CM amounted to 4.0%. In the main group, the proportion of individual conditions that occurred in the perinatal period was 4.6%, and 6.5% - for CM. In the control group, the proportion of individual conditions that occurred in the perinatal period was 4.8%, and 1.4% - for CM.

It was found (Figure 4.9) that 38.3% of pregnant women had a history of chronic diseases. Among both pregnant women of the main and control groups, women who did not have chronic diseases significantly prevailed ($p<0.05$). However, there were more pregnant women with chronic diseases in the main group than in the control group (49.2% vs. 27.7%; $p<0.05$).

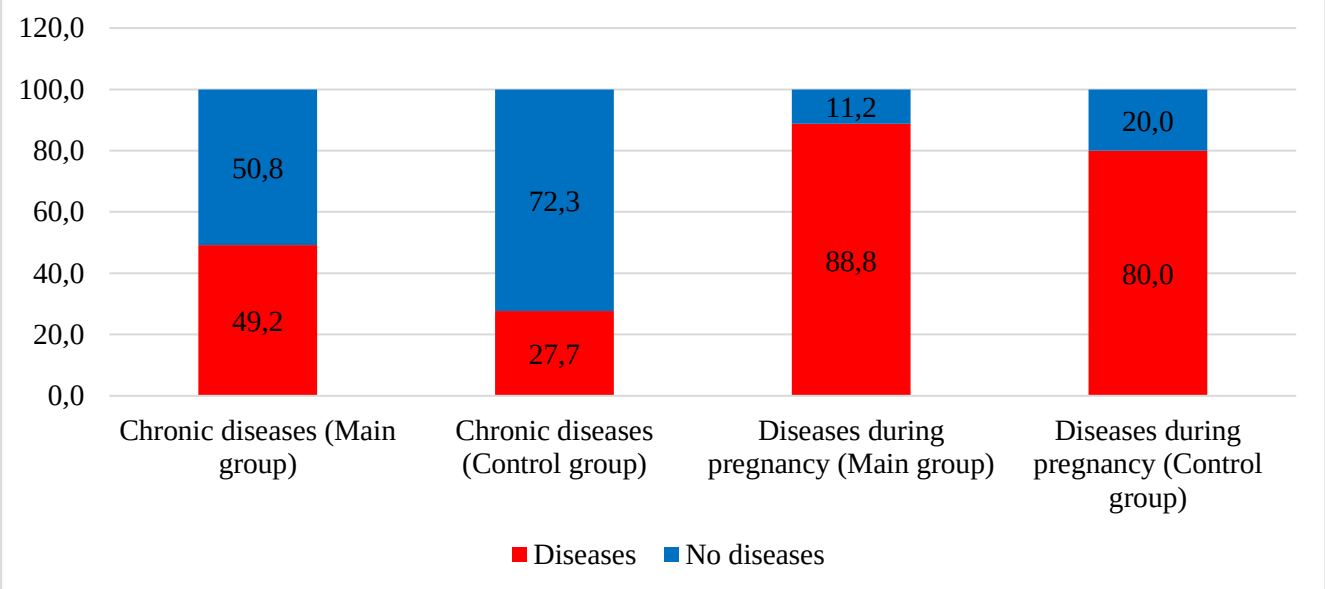

Figure 4.9 - Distribution of pregnant women by the presence of chronic and diseases during pregnancy in the main and control groups (%)

The analysis of the data obtained showed that in most pregnant women, diseases of the endocrine system, eating disorders and metabolic disorders occupy the first place among chronic diseases according to ICD-10 – 9.4%; diseases of the respiratory and

genitourinary systems (7.8%); diseases of the digestive system (7.0%) take the second place (Table 4.6). There were differences in the classes of diseases that occupied the first places in the structure of chronic pathology in pregnant women of the main and control groups. The first place in the structure of chronic pathology in the main group was occupied by diseases of the endocrine system, eating disorders and metabolic disorders (16.6%). In the control group respiratory diseases took the first place (9.2%). However, a statistically significant difference between the indicators in the main and control groups was determined only when comparing pregnant women with chronic diseases of the endocrine system, eating disorders and metabolic disorders ($p<0.05$).

Table 4.6 - Structure of chronic pathology of pregnant women depending on ICD-10 class (%)

ICD-10 disease class	Main group	Control group	All women
XIV Diseases of the genitourinary system (N00-N99)	10.3	5.4	7.8
IV Diseases of the endocrine system, nutritional and metabolic disorders (E00-E90)	16.6 *	2.3 *	9.4
XI Diseases of the digestive system (K00-K93)	10.3	4.0	7.0
X Respiratory diseases (J00-J99)	6.3	9.2	7.8
VII Diseases of the eye of its appendages (H00-H59)	6.3	2.3	4.3
Other	7.0	8.5	7.8
Total	100.0	100.0	100.0

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

An analysis of the distribution of mothers by the presence of hereditary disease showed that 3.1% of women had it, in almost equal proportions in both the main and control groups (3.2% vs. 3.1%, respectively).

The analysis of the distribution of pregnant women depending on the presence of hereditary diseases in husbands revealed that 7.8% of men had them. The proportion of men with hereditary diseases was 4.1 times higher among pregnant women in the main group (12.7% vs. 3.1%; $p<0.05$).

An assessment of the distribution of women depending on the presence of the disease during pregnancy showed that the majority of pregnant women had them (84.4%). In both the main and control groups, the proportion of women who had diseases during pregnancy significantly prevailed over the proportion of pregnant women who did not

have them ($p<0.01$). However, there were more complications during pregnancy (88.8% vs. 80.0%) in the main group. The distribution of pregnant women by the presence of chronic diseases and diseases ocurred during pregnancy in the main and control groups is shown in Figure 4.9.

An assessment of the incidence of women during pregnancy, taking into account the grouping of diseases in the XV class of diseases showed that in the majority of pregnant women, regardless of the group, diseases such as anemia, toxicosis, endocrine system diseases, as well as venous complications and hemorrhoids during pregnancy prevailed. A statistically significant difference was found between the proportion of pregnant women in the main and control groups with the following diseases (Table 4.7): endocrine system diseases ($p<0.01$), venous complications and hemorrhoids during pregnancy ($p<0.05$), anemia ($p<0.05$) and preeclampsia ($p<0.05$).

Table 4.7 - Structure of diseases in women during pregnancy in the main and control groups (%)

Disease	Main group	Control group	All women
Diseases of the endocrine system (O24, O99.2, O26.0)	36.5 *	17.0 *	26.5
Venous complications and hemorrhoids during pregnancy (O22, O22.4, O22.0, O26.0)	22.2 *	12.3 *	17.2
Circulatory systems diseases developed during pregnancy (O99.4)	9.5	6.2	7.8
Anemia of pregnant women (O99.0)	49.2 *	34.6 *	41.8
Preeclampsia (moderate and severe) (O14-O16)	12.0 *	2.3 *	7.0
Toxicosis (O21)	35.7	43.1	39.5
Other	10.3	10.8	7.4
Total	100.0	100.0	100.0

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

The assessment showed that in most pregnant women it was the first pregnancy (41%), they had male children (52.7%) and pregnancy occurred naturally (90.6%). Most of the women registered for pregnancy before 12 weeks (88.3%) and 18.0% had a history of surgical abortions. It was revealed that 14.3% of expectant mothers had an abortion before 12 weeks of pregnancy, 12.5% had abortions for medical reasons, and 16.8% of pregnant women had spontaneous miscarriages. In 8.6% of pregnant women, fetal diseases were detected in previous pregnancies, the largest proportion of which related to certain conditions occurring in the perinatal period (4.6%). 38.3% of women had a history

of chronic diseases, 3.1% had hereditary diseases, and their husbands - 7.8%, and 84.4% had diseases during pregnancy. In women carrying a child with health abnormalities, the detection of pathology in most cases was from 15 to 21 weeks of pregnancy (93.7%), and in the structure of fetal pathology, the most common were individual conditions that occur in the perinatal period (90.6%).

A comparative analysis of obstetric history revealed that women with fetal pathology had a higher proportion of: male children; primigravida; were pregnant with their first and with a second child; pregnancies with the use of ART; were subject for regular medical check-up after 12 weeks of pregnancy; had surgical abortions in the anamnesis; abortions for up to 12 weeks; abortions for medical reasons; spontaneous abortions; miscarriages up to 12 weeks of pregnancy; spontaneous abortions for unknown reasons; spontaneous abortions due to frozen pregnancy; preterm birth in the anamnesis; premature birth due to placental abruption and infection; revealed fetal pathology in previous pregnancies; CM in previous pregnancies; diseases of the endocrine system, eating disorders and metabolic disorders in this pregnancy; hereditary diseases in her; hereditary diseases in her husband; complications during this pregnancy; anemia during pregnancy.

4.3. Comparative assessment of the quality of life of pregnant women with fetal pathology

The study of quality of life (QoL) indicators of pregnant women was carried out in two stages. At the first stage, the quality of life of pregnant women in general, in a group of women carrying a child with pathology, and pregnant women carrying healthy children, were studied, with subsequent comparative analysis. At the second stage, the quality of life of the respondents was compared depending on the early and late reproductive age in the main and control groups, as well as a comparative analysis of quality of life in the group of women aged 15-34 and 35-49 carrying a child with health abnormalities. Table 4.8 and Figure 4.10 present the average standardized measures of QoL according to the SF-36 questionnaire: physical functioning (PF), role-based

functioning due to physical condition (RP), bodily pain (BP), general health (GH), vitality (VI), social functioning (SF), role functioning due to emotional condition (RE) and mental health (MH).

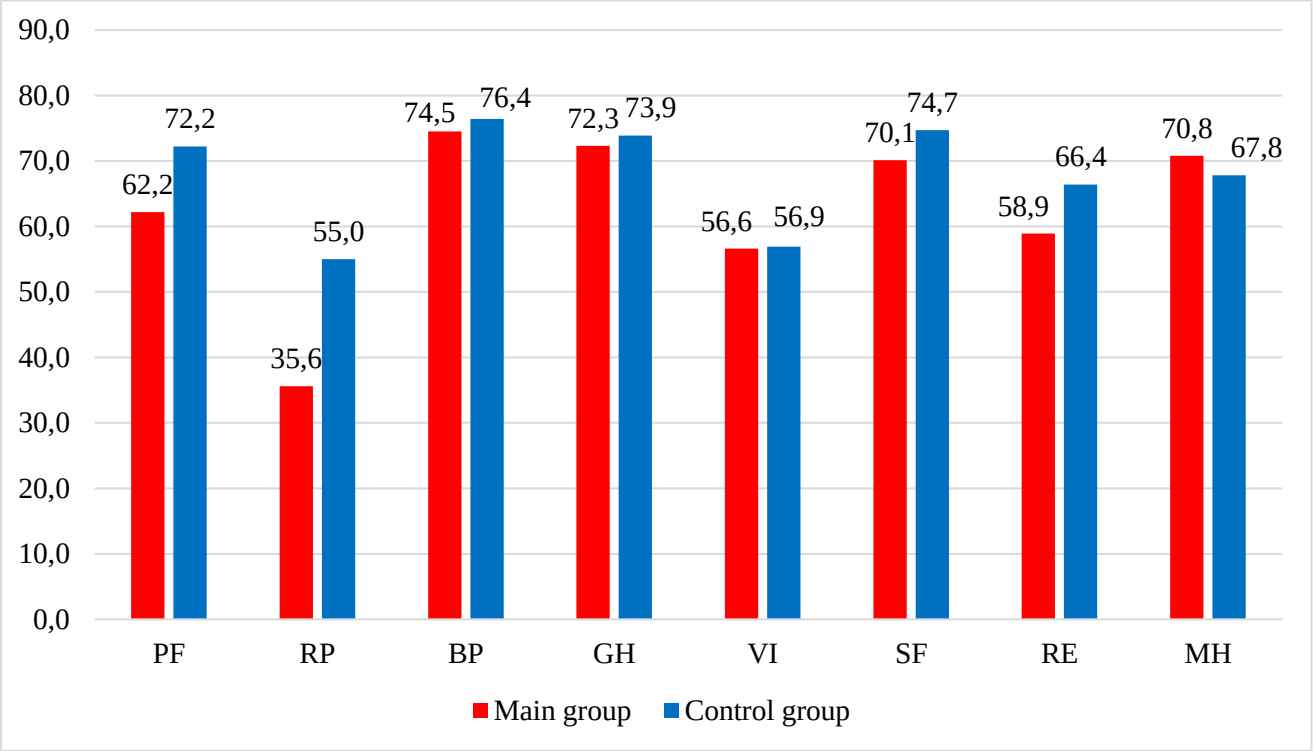

Figure 4.10 - Average values of quality of life in the main and control groups in points

Table 4.8 - Average values of the main SF-36 scales in the main and control groups in points (standard deviation)

SF-36 scales	Main group	Control group	Significance level (p)
PF	62.2 (24.2)	72.2 (22.6)	p<0.05
RP	35.6 (43.1)	55.0 (38.3)	p<0.05
BP	74.5 (26.0)	76.4 (25.0)	-
GH	72.3 (18.9)	74.0 (14.8)	-
VI	56.6 (21.4)	56.9 (15.9)	-
SF	70.1 (23.9)	74.7 (21.9)	-
RE	58.9 (43.8)	66.4 (37.5)	-
MH	70.8 (18.0)	67.8 (15.9)	-

QoL indicators on almost all scales of the SF-36 questionnaire are lower in pregnant women carrying a child with pathology, and only the rate of MH is higher compared to respondents carrying a healthy child (70.8 vs. 67.8). Statistically significant differences were found on the PF and RP scales (p<0.05). It should be noted that CM has a negative

impact on all areas of a pregnant woman's life, which is clearly shown in the QoL profiles (Figure 4.11).

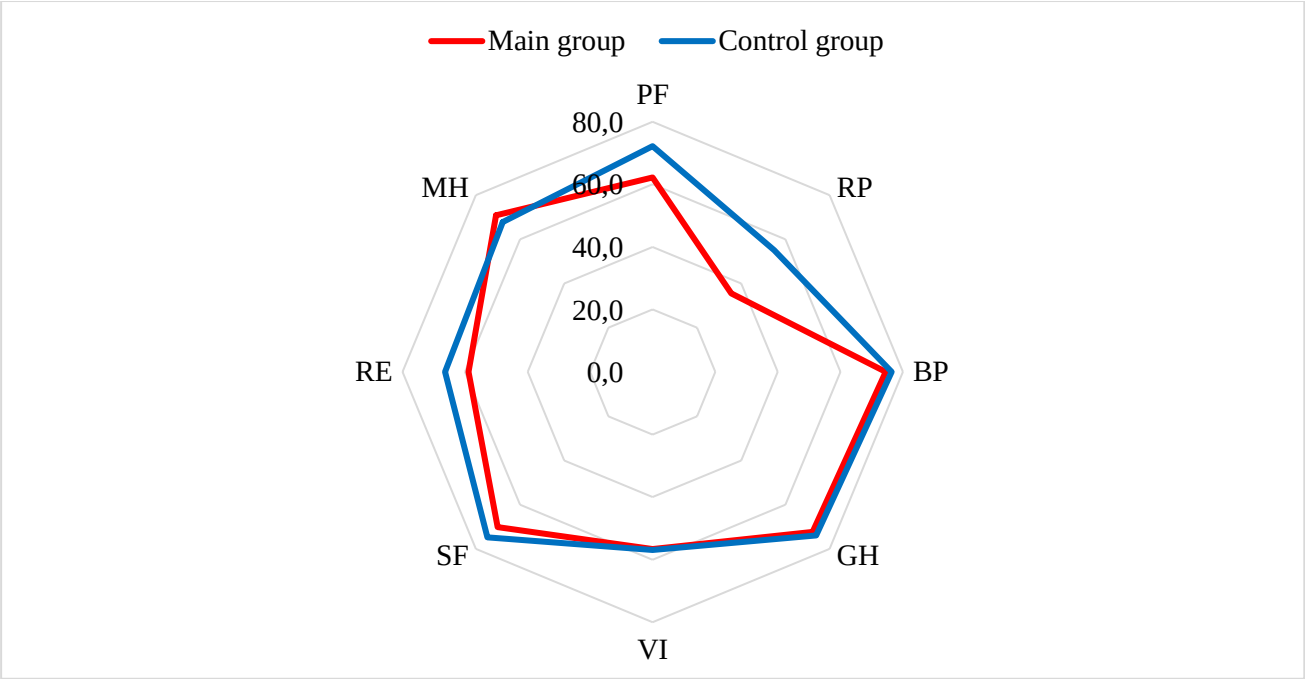

Figure 4.11 - Profiles of the quality of life of pregnant women carrying a child with pathologies and in the comparison group

Tables 4.9, 4.10 and 4.11 present the indicators of the quality of life of pregnant women who are subjects to medical check-up in the women's clinics of the megalopolis, depending on age. A comparative analysis of the quality of life of pregnant women depending on early and late reproductive age among the main and control groups, as well as a comparative analysis of the quality of life of women aged 15-34 and 35-49 in the main group was carried out.

Table 4.9 - Comparison of indicators of quality of life of pregnant women of early reproductive age in the main and control groups in points (standard deviation)

SF-36 scales	Main group, n=63	Control group, n=91	Significance level (p)
PF	66.6 (23.3)	73.3 (22.2)	-
RP	35.1 (41.1)	57.4 (36.4)	$p<0.05$
BP	71.9 (28.6)	77.0 (25.3)	-
GH	72.7 (14.9)	74.4 (15.4)	-
VI	52.2 (23.4)	57.1 (15.6)	-
SF	67.6 (24.7)	74.5 (21.9)	-
RE	57.0 (42.7)	70.0 (36.4)	$p<0.05$
MH	68.2 (19.9)	68.1 (15.6)	-

Table 4.10 - Comparison of indicators of quality of life of pregnant women of late reproductive age in the main and control groups in points (standard deviation)

SF-36 scales	Main group, n=63	Control group, n=39	Significance level (p)
PF	57.7 (24.4)	69.6 (23.5)	p<0.05
RP	36.1 (45.3)	49.4 (42.3)	-
BP	76.9 (23.1)	74.8 (24.6)	-
GH	71.8 (22.2)	72.9 (13.2)	-
VI	61.0 (18.4)	56.4 (16.6)	-
SF	72.6 (23.1)	75.3 (22.3)	-
RE	60.3 (45.1)	58.9 (39.3)	-
MH	73.5 (15.7)	67.0 (16.5)	p<0.05

Table 4.11 - Comparison of indicators of quality of life of pregnant women of early and late reproductive age in the main group in points (standard deviation)

SF-36 scales	Women 15-34 years old, n=63	Women 35-49 years old, n=63	Significance level (p)
PF	66.6 (23.3)	57.7 (24.4)	p<0.05
RP	35.1 (41.1)	36.1 (45.3)	-
BP	71.9 (28.6)	76.9 (23.1)	-
GH	72.7 (14.9)	71.8 (22.2)	-
VI	52.2 (23.4)	61.0 (18.4)	p<0.05
SF	67.6 (24.7)	72.6 (23.1)	-
RE	57.0 (42.7)	60.3 (45.1)	-
MH	68.2 (19.9)	73.5 (15.7)	-

The data obtained revealed that the life expectancy of pregnant women of early reproductive age carrying a child with CM is lower than in the group of pregnant women carrying a child without health abnormalities (Figure 4.12).

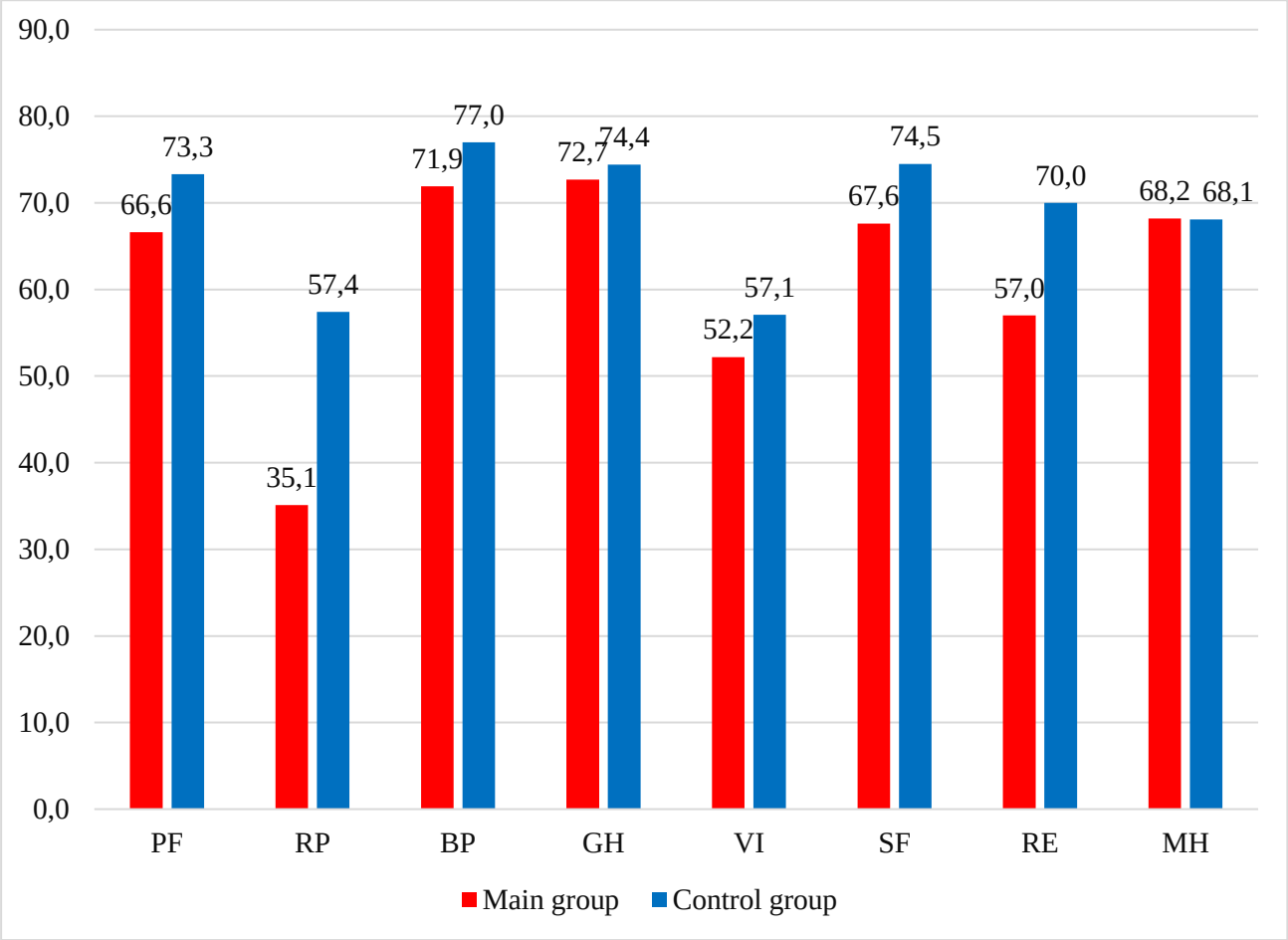

Figure 4.12 - Average indicators of the quality of life of pregnant women of early reproductive age in the main and control groups

However, the MH indicators of pregnant women in the main and control groups were almost the same (68.2 vs. 68.1). Statistically significant differences in the main and control groups were found between the indicators of RP ($p<0.05$) and RE ($p<0.05$).

The analysis of QoL indicators of pregnant women aged 35-49 showed (Figure 4.13) that BP (76.9 vs. 74.8), VI (61.0 vs. 56.4), RE (60.3 vs. 58.9) and MH (73.5 vs. 67.0) were higher in the main group of women. The control group of pregnant women had higher QoL in terms of PF (69.6 vs. 57.7), RP (49.4 vs. 36.1), GH (72.9 vs. 71.8) and SF (75.3 vs. 72.6). The revealed differences in the quality of life of women of late reproductive age are statistically significant on PF ($p<0.05$) and MH ($p<0.05$) scales.

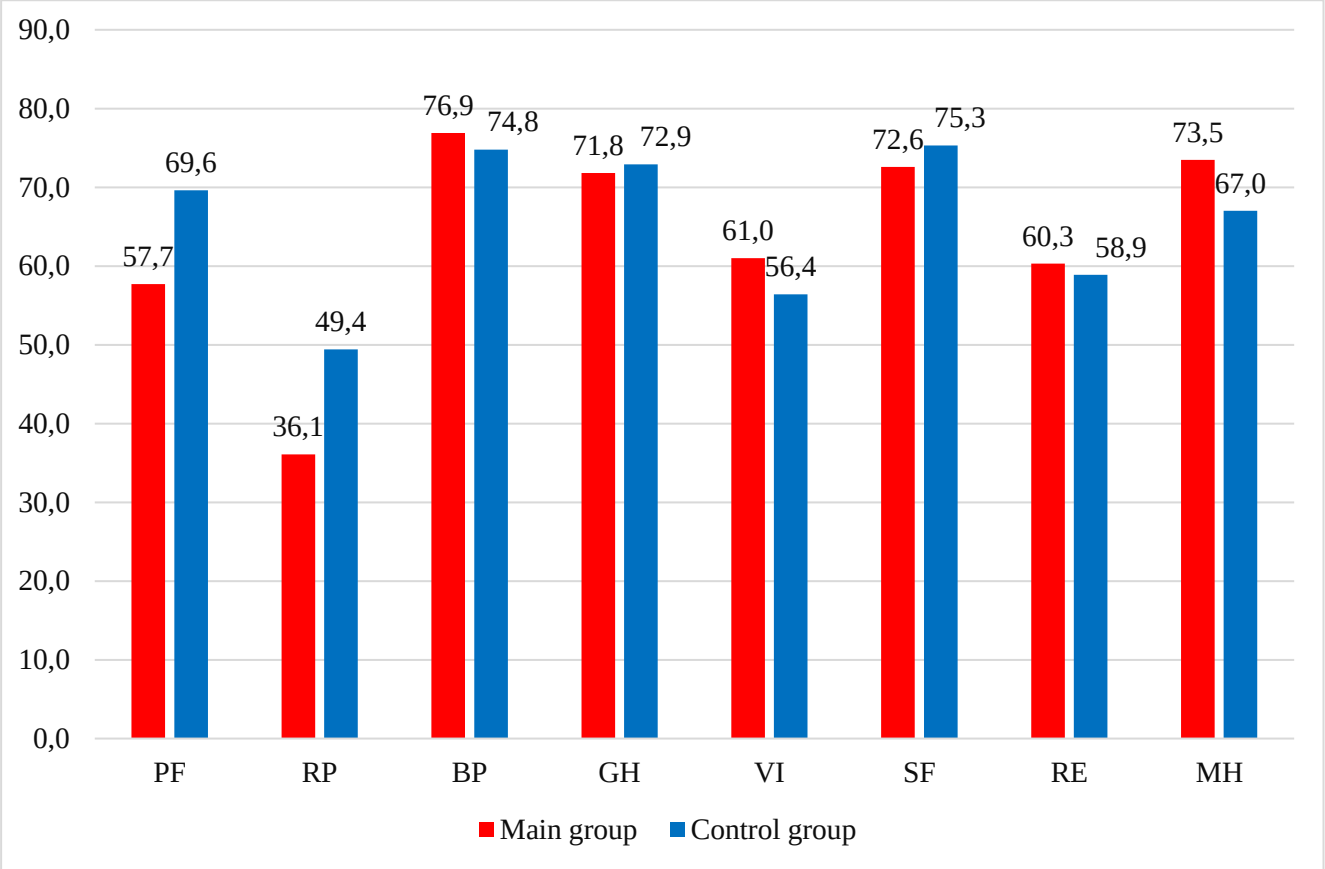

Figure 4.13 - Average indicators of the quality of life of pregnant women of late reproductive age in the main and control groups

Additionally, the quality of life of pregnant women in the main group was analyzed depending on the early and late reproductive age of the woman (Figure 4.14). The quality of life of the respondents in the group of pregnant women carrying a child with health abnormalities differs depending on age. The assessment of QoL indicators in the main group of respondents allowed us to establish that women of early reproductive age have lower QoL indicators in comparison with women of 35-49 years old according to RP, BP, VI, SF, RE and MH scales.

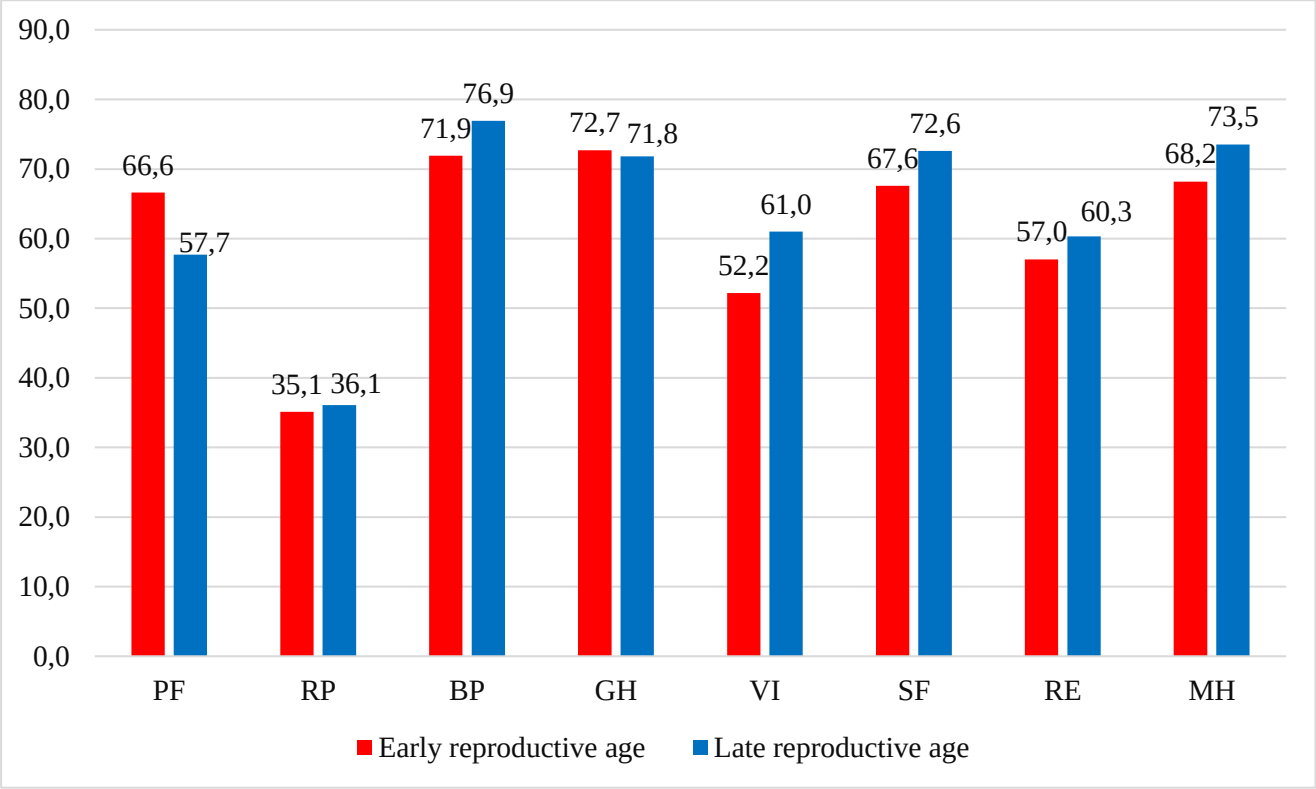

Figure 4.14 - Average quality of life of pregnant women aged 15-34 and 35-49 in the main group

However, women aged 15-35 have higher QoL values on PF and GH scales. Statistically significant differences were found on PF ($p<0.05$) and VI ($p<0.05$) scales.

Chapter 5. ACTIVITIES OF OUTPATIENT OBSTETRIC AND GYNECOLOGICAL SERVICES IN ANTENATAL FETAL CARE

5.1. State of personnel provision of obstetric and gynecological services in St. Petersburg

Indicators of the availability of medical personnel are used to assess the availability of medical care to the population. Assessment of the provision of obstetrician-gynecologists and midwives to the female population of St. Petersburg gives an idea of the availability of obstetric and gynecological care to pregnant women in the megalopolis. The conducted study of the provision of obstetric and gynecological services with medical personnel revealed that for the entire period of 2018-2022, the provision of obstetrician-gynecologists for women of reproductive age in St. Petersburg exceeded the indicators for the country and the federal district. The dynamics of the provision of obstetric and gynecological services in Russia, the Northwestern Federal District and St. Petersburg with medical personnel is shown in Table 5.1.

Table 5.1 - Dynamics of provision of obstetric and gynecological services of Russia, NWFD and St. Petersburg with medical personnel in 2018-2022 (per 10000 female population of reproductive age)

Territory	2018	2019	2020	2021	2022	Average value (M±m)	Growth rate /decrease (%)	Difference with M_{RF} (%)
Obstetricians and gynecologists								
RF	4.59	4.54	4.47	4.35	4.19	4.42±0.07	-8.7	-
NWFD	4.61	4.55	4.56	4.38	4.35	4.49±0.05	-5.6	↑1.6
SPb	5.61	5.77	5.79	5.58	5.27	5.60±0.09	-6.1	↑21.1 *
Midwives								
RF	6.5	6.4	6.1	6.0	5.7	6.14±0.14	-12.3	-
NWFD	5.3	5.3	5.1	4.8	4.6	5.02±0.14	-13.2	↓18.2 *
SPb	4.4	4.4	4.4	4.2	3.8	4.24±0.12	-13.6	↓30.9 *

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

On average, over five years, this indicator in the megalopolis was 21.0% higher than the national average and 19.9% higher than the district average ($p<0.05$), respectively. At the same time, both in Russia, the Northwestern Federal District and the megalopolis, there was a negative decrease in the provision of obstetrician-gynecologists by 8.7%, 5.6% and 6.1%, respectively.

The provision of midwives for women of reproductive age in St. Petersburg during the entire study period of 2018-2022 was below the average values in Russia and the federal district. In 2022, the difference with the national average was up to 30.9%, and with the average - 15.5%. At the same time, in the megalopolis the provision of midwives over five years has decreased less significantly than in the Russian Federation and the Northwestern Federal District. The decline in the provision of midwives in the megalopolis was higher than in Russia and the Northwestern Federal District, and amounted to 13.6% vs. 13.2% and 12.3%, respectively.

In order to assess the contribution of St. Petersburg's human resource to the total number of obstetrician-gynecologists and midwives of the federal district, the dynamics of the share of obstetrician-gynecologists and midwives in 2018-2022 was assessed. It was found that despite the decrease in the provision of obstetric and gynecological services with obstetrician-gynecologists, their share in the personnel resource of the Northwestern Federal District has increased over five years. The same trend was observed when analyzing the proportion of midwives in St. Petersburg in the total number of midwives in the Northwestern Federal District. Assessment of the contribution of obstetrician-gynecologists and midwives of St. Petersburg to the total number of obstetrician-gynecologists and midwives of the Northwestern Federal District in 2018-2022 revealed that the proportion of doctors was significantly higher than the average medical personnel. On average over five years, the proportion of obstetrician-gynecologists in the federal district amounted to 49.1%, and the proportion of midwives was 33.6% ($p<0.05$). The dynamics of the proportion of obstetrician-gynecologists in St. Petersburg in the Northwestern Federal District in 2018-2022 is shown in Figure 5.1.

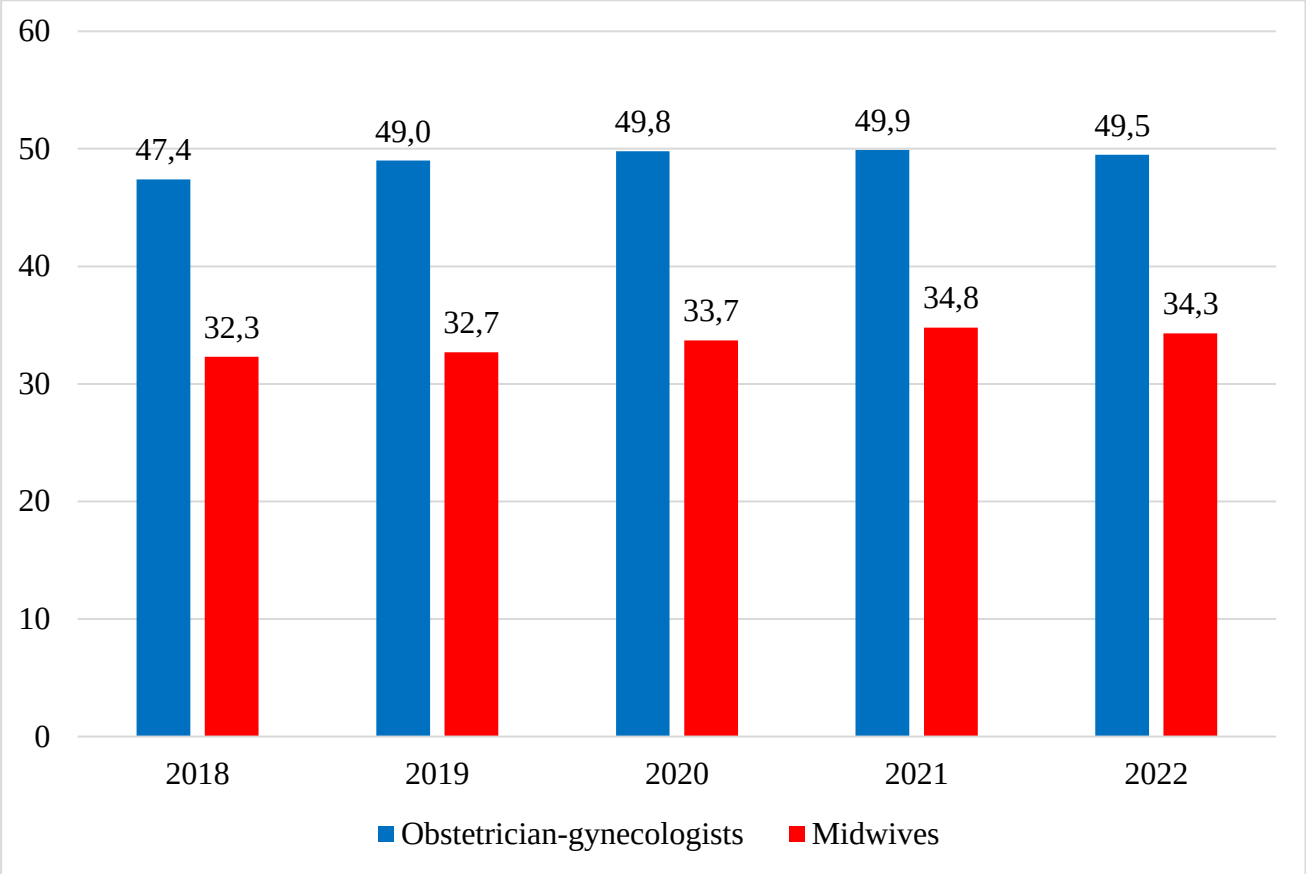

Figure 5.1 - Dynamics of the proportion of obstetricians and gynecologists in St. Petersburg in the Northwestern Federal District in 2018-2022 (%)

The quality and outcomes of medical care can be indirectly determined by analyzing the qualification indicators of medical personnel. They characterize the level of qualification of doctors and nursing personnel. It was found that the proportion of obstetrician-gynecologists with a qualification category in St. Petersburg was higher than in Russia and the Northwestern Federal District. On average, in 2018-2022, the proportion of doctors of this profile with the category in the megalopolis was 56.1% vs. 51.1% on average in the country and the district ($p<0.05$). However, during the study period, the proportion of obstetrician-gynecologists with a qualification category decreased both in the Russian Federation as a whole ($p<0.05$), and in the Northwestern Federal District and megalopolis ($p>0.05$). The dynamics of the proportion of obstetrician-gynecologists with a qualification category in Russia, the Northwestern Federal District and St. Petersburg in 2018-2022 is shown in Figure 5.2.

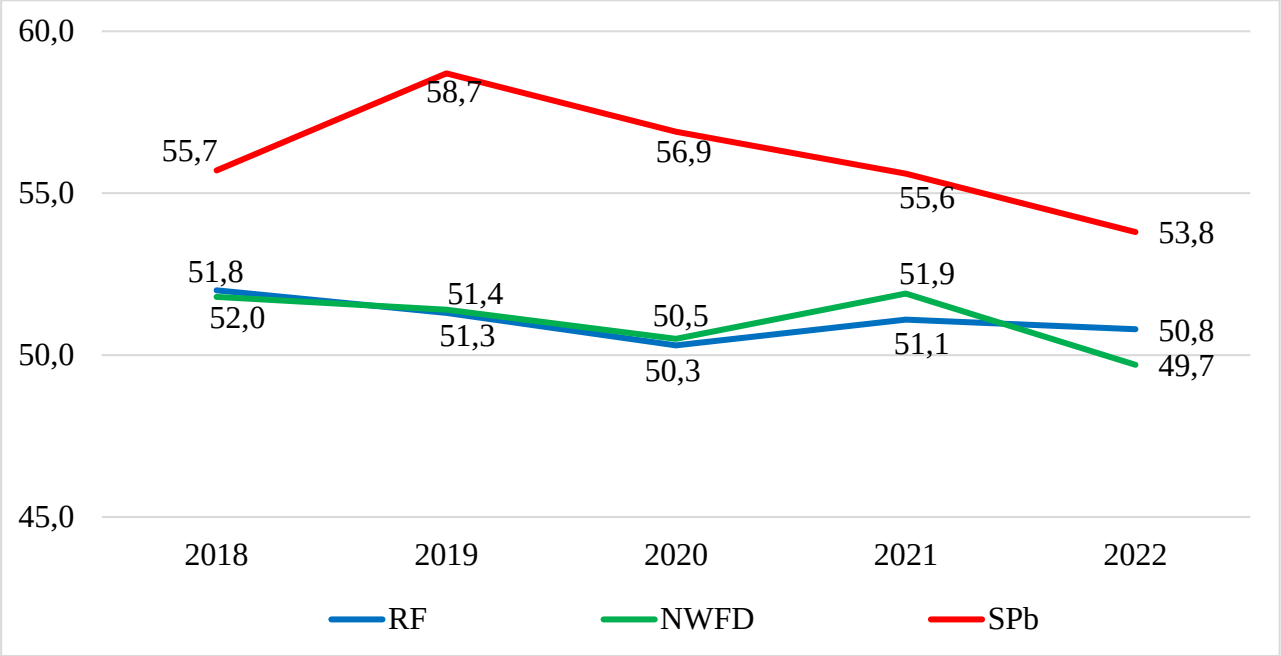

Figure 5.2 - Dynamics of the proportion of obstetricians and gynecologists with a qualification category in Russia, NWFD and St. Petersburg in 2018-2022 (%)

An assessment of the qualification indicators of secondary medical personnel revealed that the proportion of midwives with a qualification category in St. Petersburg was also significantly higher than in Russia and the Northwestern Federal District. In 2018-2022 the proportion of midwives with the category in the megalopolis was 68.5% against the national average and the district average values of 55.3% and 57.2%, respectively ($p<0.05$). An assessment of the dynamics of the proportion of midwives with a qualification category in Russia, the Northwestern Federal District and St. Petersburg revealed a significant decrease in indicators ($p<0.05$). In contrast to the dynamics of the proportion of obstetrician-gynecologists with a qualification category, which had reliable differences only in the indicators for Russia as a whole. The dynamics of the proportion of midwives with a qualification category in Russia, the Northwestern Federal District and St. Petersburg in 2018-2022 is shown in Figure 5.3.

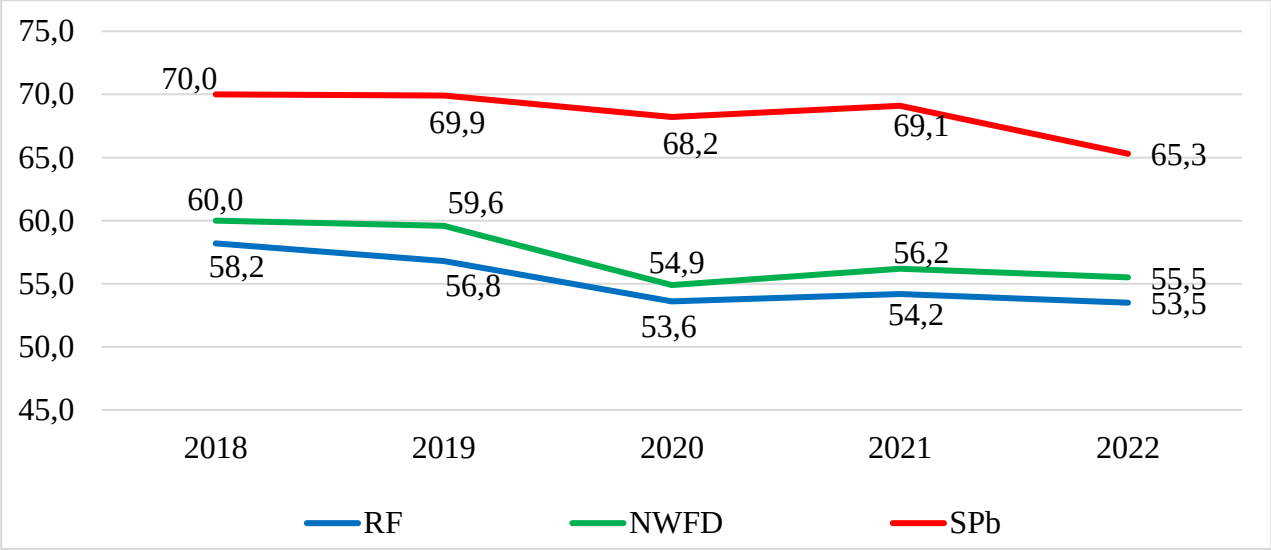

Figure 5.3 - Dynamics of the proportion of midwives with a qualification category in Russia, the Northwestern Federal District and St. Petersburg in 2018-2022 (%)

Thus, the conducted research has shown that the megalopolis has features of resourcing the obstetric and gynecological service with personnel, which may be largely related to the peculiarities of the organizational structure of its healthcare and the federal significance of the city.

5.2. Organization of antenatal fetal protection in a women's clinic

Obstetrician-gynecologists of the women's consultation carry out medical supervision of pregnant women, form groups of high obstetric and perinatal risk in order to prevent and early detect complications of pregnancy, childbirth and the postpartum period, and also direct pregnant women to prenatal screening to form risk groups for chromosomal abnormalities and congenital anomalies (malformations) in the fetus. In accordance with the legislation of the Russian Federation, pregnant women are included in a separate category of citizens who have the right to prenatal diagnosis of child development disorders [180]. Prenatal detection of fetal developmental disorders refers to a system of measures included in the antenatal fetal protection. Today, the following stages of antenatal fetal protection in the conditions of a women's consultation are distinguished [50, 79]: pregravid preparation; systematic monitoring of the course of pregnancy; timely diagnosis and treatment of extragenital diseases and complications of

pregnancy; application of special methods of research to assess the physical development of the fetus and indicators of its vital signs.

Pregravid preparation is a set of therapeutic, diagnostic, preventive, and social measures that includes assessment of existing risk factors and elimination and/or reduction of their impact for the preparation of women and their partners in the periods before or between pregnancies, aimed at successful conception, normal pregnancy and the birth of a healthy child [141]. According to clinical recommendations, pregravid preparation in conditionally healthy couples includes: anamnesis collection; examination; counseling; vitamin and micro-nutrient supplementation and consultations with specialists in case of detection of extragenital disease. It was found that only 24% underwent pregravid preparation before the present pregnancy, and it was 19.1% less frequent in women with fetal pathology than in pregnant women with a healthy child.

The second stage of antenatal fetal protection is systematic monitoring of the course of pregnancy. It includes early registration of pregnancy with an obstetrician-gynecologist at a women's clinic, which, in accordance with the current order of the Ministry of Health, is carried out up to 12 weeks of pregnancy. Then, throughout the pregnancy, the health status of the woman is continuously monitored at the antenatal clinic [138]. The study showed (Table 5.2) that the proportion of pregnant women with early pregnancy registration in St. Petersburg antenatal clinics in the period 2018-2022 were slightly higher than the national average ($p>0.05$), but lower than the federal district average ($p<0.05$). Over the five years studied, the proportion of pregnant women registered before 12 weeks of pregnancy in the antenatal clinics of the megalopolis increased ($p>0.05$).

Table 5.2 - Dynamics of the share of pregnant women with early pregnancy registration in antenatal clinics in Russia, NWFD and St. Petersburg in 2018-2022 (per 100 women who have completed pregnancy)

Territory	2018	2019	2020	2021	2022	Average value (M±m)	Growth rate /decrease (%)	Difference with M_{RF} (%)
RF	87.6	88.0	87.4	88.8	89.7	88.3±0.42	+2.3 *	-
NWFD	89.2	89.8	88.9	89.1	89.5	89.3±0.16	+0.3	↑1.1 *
SPb	88.3	89.0	88.2	88.8	88.8	88.6±0.15	+0.6	↓0.3

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

At the third stage of antenatal fetal protection, timely diagnosis and treatment of extragenital diseases and pregnancy complications are carried out. For this purpose, during the physiological course of pregnancy, a woman is examined by a general practitioner at least twice [138]. Indicators of the proportion of pregnant women examined by a general practitioner and the proportion of pregnant women examined by a general practitioner before 12 weeks of pregnancy are among the indicators characterizing the level of medical work with pregnant women. In this case, the first examination is carried out no later than 7-10 days from the initial visit to the women's clinic. It was revealed that the proportion of pregnant women examined by a general practitioner before 12 weeks was lower than the national average ($p<0.05$), but higher than the district average ($p<0.05$). At the same time, in the Northwestern Federal District and the megalopolis, this indicator was decreasing, and in the whole country it was growing ($p<0.05$). The dynamics of the proportion of pregnant women examined by a general practitioner (total) and before 12 weeks of pregnancy in antenatal clinics in Russia, NWFD and St. Petersburg is presented in Table 5.3.

Table 5.3 - Dynamics of the share of pregnant women examined by a general practitioner (total) and up to 12 weeks of pregnancy in antenatal clinics in Russia, the NWFD and St. Petersburg in 2018-2022 (per 100 women who have completed pregnancy)

Territory	2018	2019	2020	2021	2022	Average value (M±m)	Growth rate /decrease (%)	Difference with M_{RF} (%)
Examined by therapists - total								
RF	97.8	98.0	96.7	96.7	97.8	97.4±0.29	-	-
NWFD	97.0	97.2	96.1	95.1	95.0	96.1±0.46	-2.1 *	↓1.3 *
SPb	97.1	97.7	97.8	96.8	97.3	97.3±0.19	+0.2	↓0.1
Examined by therapists up to 12 weeks of pregnancy								
RF	87.3	88.0	85.5	88.2	89.4	87.7±0.64	+2.3 *	-
NWFD	84.4	86.6	84.1	84.4	82.7	84.4±0.62	-2.0 *	-3.8 *
SPb	85.5	88.3	84.2	86.2	84.7	85.8±0.72	-0.9 *	-2.2 *

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

An assessment of the proportion of pregnant women examined by a general practitioner (total) made it possible to establish that these indicators practically corresponded to the indicators for the country as a whole, both in terms of value and change over the five years under study. At the same time, the proportion of pregnant

women examined by a therapist (total) in the megalopolis was above the average level ($p<0.05$).

At the fourth stage of antenatal fetal protection, special research methods are used to assess the physical development of the fetus and its vital signs. These include screening methods of examination: ultrasound and biochemical screening of serum marker levels. In case of pathology detection, a pregnant woman is prescribed, if indicated, a consultation with a medical geneticist. In accordance with the current Order, ultrasound is performed twice at gestation periods of 11-14 weeks and 19-21 weeks [138]. It was found (Table 5.4) that the coverage of pregnant women with ultrasound was above the average for the country ($p<0.05$) and the federal district ($p>0.05$), but, both in Russia as a whole and in the NWFD and St. Petersburg in 2018-2022, it was decreasing ($p<0.05$). The detection of fetal abnormalities during the same period in the country, district and city increased significantly: 3.3 times in Russia, 2.5 times in the NWFD and 2.6 times in St. Petersburg. In the megalopolis, the incidence of fetal abnormalities was 16.2% higher than the national average ($p<0.05$).

Table 5.4 - Dynamics of ultrasound coverage of pregnant women in antenatal clinics in Russia, NWFD and St. Petersburg in 2018-2022 (per 100 women who have completed pregnancy)

Territory	2018	2019	2020	2021	2022	Average value (M±m)	Growth rate /decrease (%)	Difference with M_{RF} (%)
Fetal ultrasound performed - total								
RF	96.8	97.7	90.5	91.4	93.5	94.0±1.42	-3.4 *	-
NWFD	96.8	97.3	92.3	92.5	93.1	94.4±1.09	-3.8 *	↑0.4 *
SPb	96.4	97.8	91.2	93.4	94.1	94.6±1.16	-2.4 *	↑0.6 *
Number of fetuses with detected abnormalities								
RF	1.50	1.59	3.24	4.22	4.91	3.1±0.69	+69.5 *	-
NWFD	1.58	1.65	3.32	4.36	3.88	3.0±0.57	+59.3 *	↓3.2
SPb	1.65	1.77	5.50	5.36	4.37	3.7±0.85	+62.2 *	↑16.2 *

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

An assessment of the coverage of pregnant women with biochemical screening at antenatal clinics in the megalopolis revealed that it was higher than the average for the Russian Federation and the NWFD (Table 5.5). The difference with the national average was 3.6% ($p<0.05$), and with the district average – 3.0% ($p<0.05$). The coverage of

pregnant women with biochemical screening increased both in the whole country ($p<0.05$) and in the Northwestern Federal District ($p<0.05$) and St. Petersburg ($p>0.05$).

Table 5.5 - Dynamics of coverage of pregnant women with biochemical screening in antenatal clinics in Russia, NWFD and St. Petersburg in 2018-2022 (per 100 women who have completed pregnancy).

Territory	2018	2019	2020	2021	2022	Average value (M±m)	Growth rate /decrease (%)	Difference with M_{RF} (%)
Sample taken for biochemical screening-total								
RF	87.8	88.8	89.8	90.8	92.0	89.8±0.74	+4.6 *	-
NWFD	90.4	91.6	87.3	90.7	91.8	90.4±0.81	+1.5 *	↑0.7
SPb	93.0	94.7	91.7	93.6	93.2	93.2±0.49	+0.2	↑3.6 *
Number of women with detected abnormalities								
RF	3.21	3.28	0.90	0.86	0.89	1.82±0.58	-72.3 *	-
NWFD	2.08	2.12	0.73	0.89	0.87	1.33±0.31	-58.2 *	↓26.9 *
SPb	1.46	1.56	0.68	0.94	0.73	1.07±0.18	-50.0 *	↓41.2 *

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

However, while the incidence of fetal abnormalities was increasing, the incidence of women with abnormalities was decreasing ($p<0.05$): 3.6 times in Russia, 2.4 times in the NWFD, and 2.0 times in St. Petersburg. At the same time, in the megalopolis, the average five-year incidence of abnormalities in pregnant women was 1.7 times higher than the national average, and the average for the district was 1.3 times ($p<0.05$).

Evaluation of the proportion of pregnant women who underwent antenatal development assessment in antenatal clinics at 11-14 weeks and 19-21 weeks of gestation made it possible to establish (Table 5.6) that these indicators tended to increase (by 3.3% and 1.6%, respectively; $p<0.05$). The average proportion of pregnant women who underwent an assessment of antenatal development at 11-14 weeks in 2020-2022 was 90± 0.93, and at 19-21 weeks - 92.8± 0.58.

Table 5.6 - Dynamics of the share of pregnant women who underwent assessment of antenatal fetal development in St. Petersburg antenatal clinics in 2020-2022 (per 100 women who have completed pregnancy)

Indicator	2020	2021	2022	Average value (M±m)	Growth rate /decrease (%)
Proportion of pregnant women evaluated for antenatal fetal development at 11-14 weeks gestation	88.7	91.2	91.7	90.0±0.93	+3.3 *
Frequency of detected chromosomal anomalies and (or) CM	1.4	1.1	1.3	1.3±0.09	-7.1
Frequency of interrupted pregnancies	0.5	0.5	0.6	0.5±0.03	+16.7 *
Frequency of detection of fetuses at risk of fetal growth retardation	5.0	5.0	4.1	4.7±0.3	-18.0 *
Proportion of pregnant women at risk of premature birth	7.7	0.7	4.6	4.3±2.03	-40.3 *
Proportion of pregnant women at risk of preeclampsia	3.2	3.6	4.7	3.8±0.44	+31.9 *
Proportion of pregnant women evaluated for antenatal fetal development at 19-21 weeks of gestation - ultrasound	91.7	93.6	93.2	92.8±0.58	+1.6 *
Frequency of detection of chromosomal anomalies and (or) CM	0.7	0.9	0.7	0.8±0.07	-
Frequency of interrupted pregnancies	0.2	0.2	0.2	0.2	-

* - statistically significant differences of indicators between the estimated indicators ($p<0.05$)

The analysis of the indicators revealed a decrease in the frequency of detected CM by 7.1% ($p>0.05$), the frequency of detection of fetuses at risk of growth retardation by 18.0% ($p<0.05$) and the proportion of pregnant women at risk of premature birth by 40.3% ($p<0.05$). It was found also that the proportion of pregnant women who underwent termination of pregnancy and the proportion of pregnant women at risk of preeclampsia statistically significantly increased by 16.7% and 31.9%, respectively ($p<0.05$).

The measures for antenatal fetal protection, carried out in the antenatal clinic, in addition to the above, include: balanced nutrition, compliance with the regime of the day, sleep, rest and physical activity; systemic protection of somatic health, including the prevention of non-infectious and infectious diseases, as well as intrauterine infections of the fetus (TORCH-infection); prevention of CM - taking folic acid in the first three months of pregnancy.

The data obtained from the survey of expectant mothers for satisfaction with the work of the antenatal fetal care clinic revealed that the average age of pregnant women was 32.29± 0.34 years. The proportion of pregnant women of early reproductive age was 56.8% (on average 27.13±0.24 years), and pregnant women of late reproductive age - 43.2% (on average 39.4±0.26 years). In the majority of pregnant women (49.9%), this was the first pregnancy, the second - in 31.5% of women, the third – in 13.1%, the fourth and more – in 5.3%. In the group of women of early reproductive age, 64.2% were primigravida compared to 29.2% in the group of late reproductive age ($p<0.05$). Assessment of the distribution of women by number of pregnancies showed a statistically significant difference between the groups in the proportion of pregnant women who had a third (29.2% vs. 1.5%) and fourth or more pregnancies (8.3% vs. 3.0%) ($p<0.05$).

The functions of the antenatal clinic include physical and psycho-prophylactic preparation of pregnant women for childbirth, preparation of the family for childbirth, as well as consulting and provision of the services on preparation for childbirth [138]. It was found that the majority of pregnant women (81.4%) received information on pregnancy health issues from medical personnel at the antenatal clinic. 61.3% of respondents received it from the Internet, 44.6% from private clinics, 6.1% from magazines, 4.4% from the media. The study showed that pregnant women of both early and late reproductive age were guided by similar ways of obtaining information when choosing sources of information ($p>0.05$). However, in the group of women of early reproductive age, there were pregnant women who received this information from the media (7.5%). The distribution of pregnant women by obtaining information on the health of pregnant women is shown in Figure 5.4.

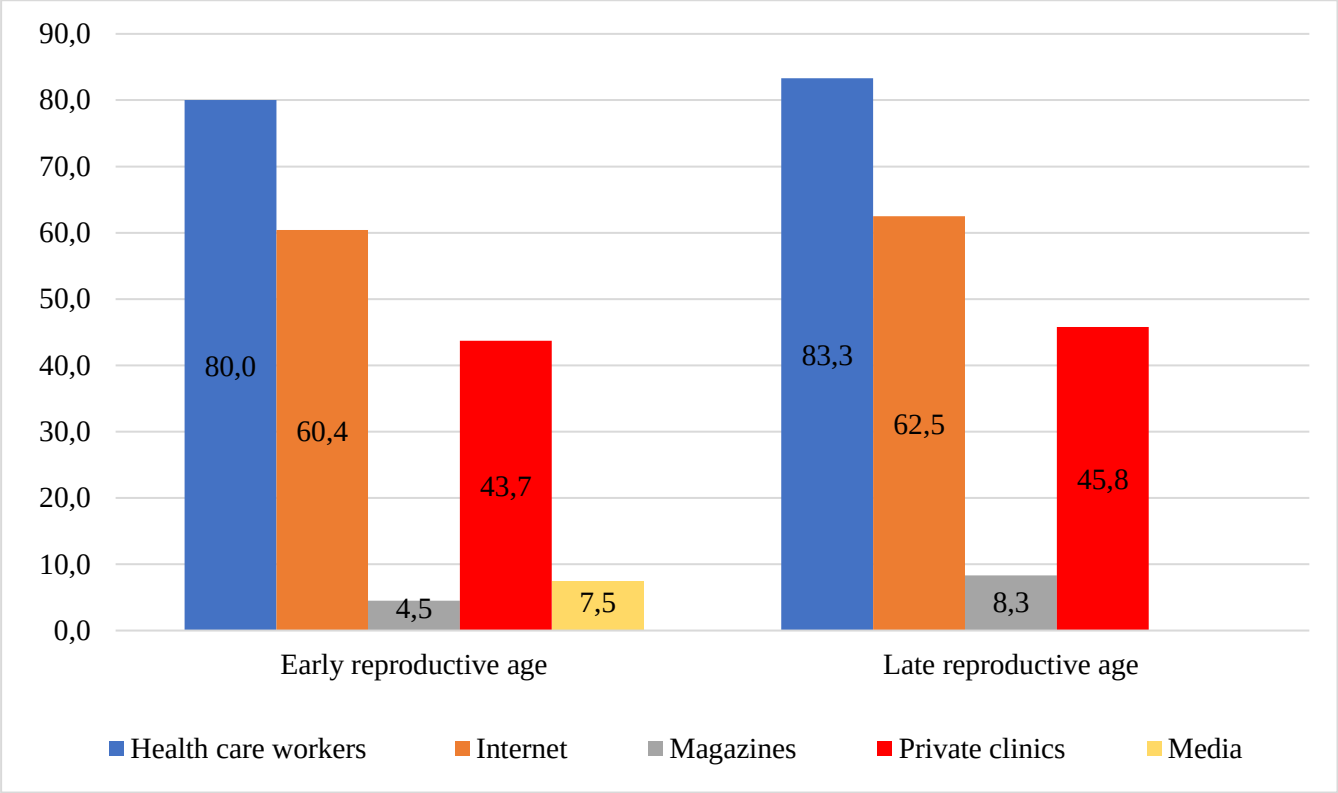

Figure 5.4- Distribution of pregnant women by obtaining information on the health of pregnant women (%)

The majority of pregnant women were satisfied with the sanitary and educational work of obstetrician-gynecologists (37.6%). More satisfied than dissatisfied with the information received from the doctor - 32.4%, more dissatisfied than satisfied - 21.9%, dissatisfied - 4.4% and did not receive this information - 3.5% of pregnant women. In the group of pregnant women of early reproductive age, compared with pregnant women of late reproductive age, there were fewer fully satisfied with the information (41.7% vs. 34.7%) and fewer rather dissatisfied than satisfied (19.6% vs. 25.0%). In addition, among women of early reproductive age, there were women who did not receive any information about pregnancy from their doctor (6.0%). The distribution of pregnant women by satisfaction with information received from an obstetrician-gynecologist is shown in Figure 5.5.

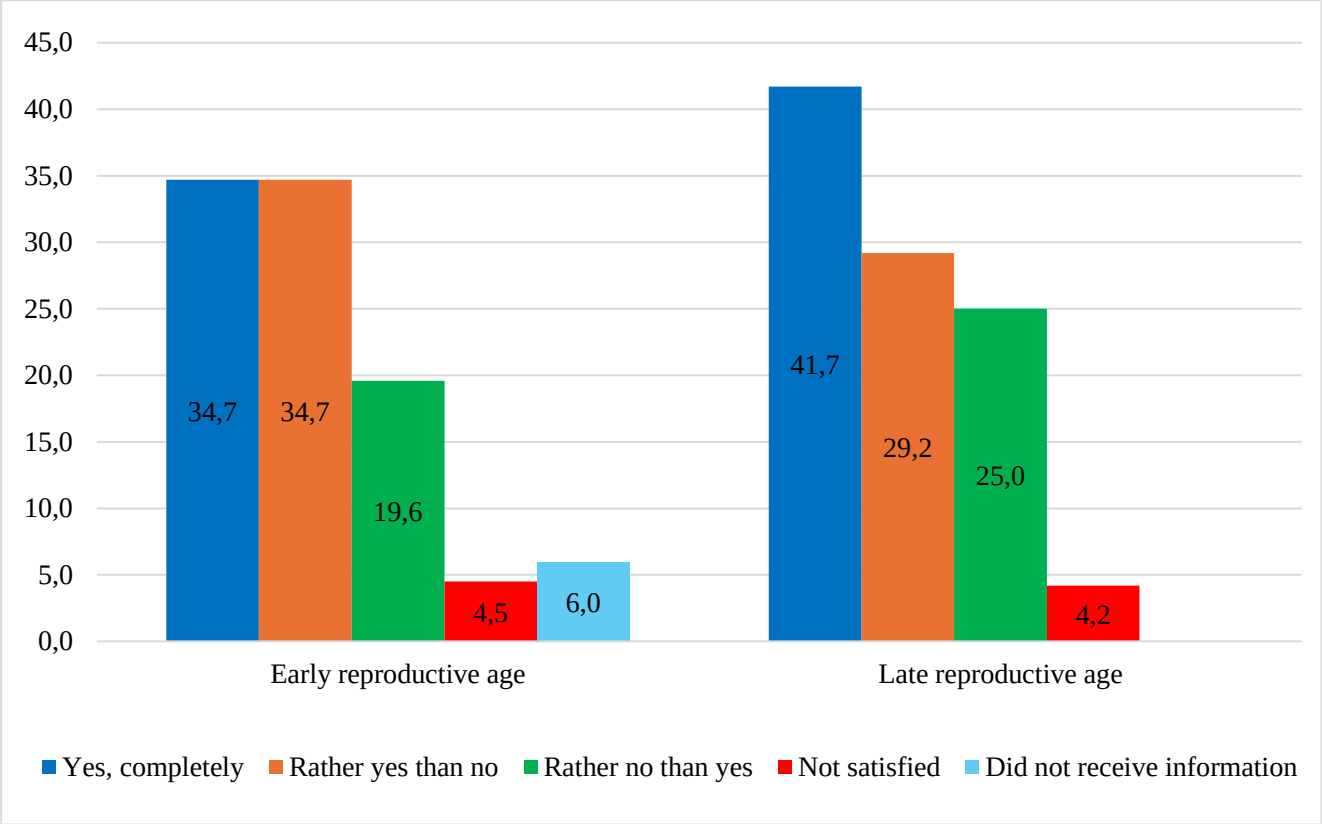

Figure 5.5 - Distribution of pregnant women by satisfaction with information received from an obstetrician-gynecologist (%)

It was found that 70.1% of women were fully or partially satisfied with recommendations on lifestyle during pregnancy and its impact on the health of the unborn child, 15.7% were fully or partially dissatisfied and 14.0% did not receive any recommendations. In the group of women of early reproductive age, the proportion of pregnant women who were rather dissatisfied than satisfied was significantly higher (16.6% vs. 8.3%; $p>0.05$). The distribution of women with differentiation into groups of pregnant women of early and late reproductive age according to the degree of satisfaction with the recommendations received from obstetrician-gynecologists in St. Petersburg women's consultations on individual characteristics is presented in detail in Table 5.7.

Table 5.7 - Distribution of pregnant women by satisfaction with recommendations received from obstetrician-gynecologists (%)

Degree of satisfaction	Women 15-34 years old	Women 35-49 years old	All women
1	2	3	4
Recommendations on lifestyle during pregnancy and its impact on the health of the unborn child			
Yes, completely	39.2	41.7	40.3
Rather yes than no	30.2	29.2	29.8
Rather no than yes	16.6 *	8.3 *	13.1
Not satisfied	1.5	4.2	2.6
No recommendations	12.1	16.7	14.0
Total	100.0	100.0	100.0
Recommendations on the work, sleep and rest regime of a pregnant woman			
Yes, completely	42.3	37.5	40.3
Rather yes than no	24.2 *	41.7 *	31.5
Rather no than yes	9.1	8.3	8.8
Not satisfied	1.5	4.2	2.6
No recommendations	22.6 *	8.3 *	16.6
Total	100.0	100.0	100.0
Recommendations on nutrition for pregnant women			
Yes, completely	40.8 *	54.2 *	46.4
Rather yes than no	25.7	29.2	27.1
Rather no than yes	12.1	8.3	10.5
Not satisfied	9.1 *	4.2 *	7.0
No recommendations	12.1*	4.2 *	8.7
Total	100.0	100.0	100.0
Recommendations on the impact of stress on the health of the unborn child			
Yes, completely	37.7	45.8	41.1
Rather yes than no	16.6 *	29.2 *	21.9
Rather no than yes	12.1	8.3	10.5
Not satisfied	4.5	4.2	4.4
No recommendations	28.7 *	12.5 *	21.9
Total	100.0	100.0	100.0
Recommendations on physical activity during pregnancy			
Yes, completely	36.2 *	54.2 *	43.8
Rather yes than no	34.7 *	25.0 *	30.6
Rather no than yes	10.6	12.5	11.4
Not satisfied	7.5	4.2	6.1
No recommendations	10.6 *	4.2 *	7.8
Total	100.0	100.0	100.0

Continuation of Table 5.7

1	2	3	4
Recommendations on preparation and behavior in childbirth			
Yes, completely	22.6 *	33.3 *	27.1
Rather yes than no	30.2 *	16.7 *	24.5
Rather no than yes	1.5 *	8.3 *	4.4
Not satisfied	12.1	8.3	10.5
No recommendations	33.2	33.3	33.3
Total	100.0	100.0	100.0
Recommendations on breastfeeding: meaning, preparation, lactation, hypogalactia			
Yes, completely	27.2	33.3	29.8
Rather yes than no	15.1 *	8.3 *	12.3
Rather no than yes	9.1	8.3	8.8
Not satisfied	7.5 *	16.7 *	11.4
No recommendations	40.6	33.3	37.6
Total	100.0	100.0	100.0
Recommendations for the care of a newborn at home			
Yes, completely	22.6 *	37.5 *	28.9
Rather yes than no	18.1 *	8.3 *	14.0
Rather no than yes	7.5	12.5	9.6
Not satisfied	6.0	8.3	7.0
No recommendations	45.3 *	33.3 *	40.3
Total	100.0	100.0	100.0
Recommendations for taking vitamins and micronutrients during pregnancy			
Yes, completely	40.8	41.7	41.1
Rather yes than no	43.8	45.8	44.6
Rather no than yes	9.1	-	5.2
Not satisfied	4.5	8.3	6.1
No recommendations	1.5	4.2	2.6
Total	100.0	100.0	100.0

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

Distribution analysis of pregnant women by satisfaction with receiving recommendations on work, sleep and rest during pregnancy showed that the majority (71.8%) of women were fully or partially satisfied, 11.4% were fully or partially dissatisfied and 16.6% of respondents did not receive any recommendations. Assessment of the distribution of pregnant women by satisfaction with the recommendations allowed us to establish that in the group of women of early reproductive age, compared to pregnant women aged 35-49, the share of pregnant women more satisfied than dissatisfied with the

recommendations received (24.2% vs. 41.7%), as well as respondents who did not receive this information (22.6 vs. 8.3%) statistically significantly prevailed.

The results of the questionnaire showed that 73.5% of women were fully or partially satisfied with the nutritional recommendations received during pregnancy, 17.5% were fully or partially satisfied, and 8.7% did not receive these recommendations. The study revealed that in the group of women aged 15-34, compared to respondents of 35-49 years old, there was a statistically higher proportion of not satisfied with the information received (9.1% vs. 4.2%) and pregnant women who did not receive recommendations on nutrition during pregnancy (12.1% vs. 4.2%) and a lower proportion of fully satisfied with counseling (40.8% vs. 54.2%).

The majority of pregnant women were fully or partially satisfied with the recommendations on the impact of stress on the health of the unborn child - 63.0%, 14.9% were fully or partially dissatisfied and 21.9% did not receive these recommendations. In the group of pregnant women of early reproductive age, compared to pregnant women of late reproductive age, there was a significant predominance of those who received recommendations from a doctor (28.7% vs. 12.5%) and a lower proportion of more satisfied respondents than those who were not satisfied with these recommendations (16.6% vs. 29.2%).

Analysis of the distribution of pregnant women by their satisfaction with the recommendations on physical activity during pregnancy received at an obstetrician-gynecologist's appointment showed that the majority of women were fully or partially satisfied with these recommendations (74.4%), 17.5% were not satisfied, and 7.8% of women did not receive them. It was revealed that in the group of pregnant women aged 15-34, in comparison with respondents aged 35-49, the proportion of respondents who indicated that they were more satisfied than dissatisfied (34.7% vs. 25.0%), as well as pregnant women who did not receive a doctor's recommendation (10.6% vs. 4.2%) was significantly higher. At the same time, the proportion of pregnant women who were fully satisfied with the recommendations on physical activity during pregnancy was lower (36.2% vs. 54.2%).

The study showed that 51.6% of women were fully or partially satisfied with the recommendations on preparation and behavior of women in childbirth, 14.9% of them were fully or partially dissatisfied and 33.3% of respondents did not receive this information. It was found that among pregnant women of early reproductive age, in comparison with pregnant women of late reproductive age, the proportion of women who were rather satisfied than not was significantly higher (30.2% vs. 16.7%). There was a lower proportion of respondents who were completely satisfied (22.6% vs. 33.3%), as well as the proportion of pregnant women who were rather dissatisfied than satisfied with these recommendations (1.5% vs. 8.3%).

Evaluation of the results of the study revealed that only 42.1% of women were satisfied with the recommendations received about breastfeeding: its importance, preparation for it, lactation and hypogalactia, and 20.2% were completely or partially dissatisfied. In addition, 37.6% of pregnant women did not receive these recommendations. The questionnaire survey showed that in the group of respondents aged 15-34, compared to pregnant women aged 35-49, there was a statistically significantly higher proportion of women more satisfied than dissatisfied with the recommendations received (15.1% vs. 8.3%) and a lower proportion of women completely dissatisfied with the information received (7.5% vs. 16.7%).

A study of the distribution of women evaluating the recommendations for home care of newborns showed that less than half of pregnant women were fully or partially satisfied with these recommendations (42.9%), fully or partially dissatisfied - 16.6% and did not receive recommendations - 40.3% of pregnant women. It was revealed that among pregnant women of early reproductive age, compared to respondents of late reproductive age, there was a statistically significantly higher proportion of women more satisfied than not (18.1% vs. 8.3%) and not receiving these recommendations (45.3 vs. 33.3%) and a lower proportion of pregnant women fully satisfied with the received recommendations on newborn care (22.6% vs. 37.5%).

Analysis of the distribution of pregnant women by satisfaction with the information received on the intake of vitamins and microelements during pregnancy showed that the largest number of satisfied respondents was observed when assessing this characteristic -

85.7% of pregnant women were fully or partially satisfied with the recommendations received from the obstetrician-gynecologist. At the same time, 11.3% were not fully or partially satisfied, and only 2.6% of respondents did not receive recommendations. It was found that there were no statistically significant differences between the estimates in the groups of pregnant women aged 15-34 and 35-49.

Thus, the study showed that the highest level of satisfaction of pregnant women was when assessing information about the intake of vitamins and micronutrients during pregnancy (85.7%), about physical activity during this period (74.4%) and about the mode of labor, sleep and rest (71.8%). The highest level of dissatisfaction among pregnant women was when assessing the recommendations received on breastfeeding: importance, preparation, lactation, hypogalactia (20.2%), on pregnancy nutrition and physical activity during pregnancy (17.5% each), and on care after the newborn at home (16.6%). At the same time, a significant number of women indicated that they didn't receive any recommendations. Pregnant women did not receive recommendations on caring for a newborn at home (40.3%), on feeding (37.6%) and on preparation and behavior during childbirth (33.3%). The proportion of pregnant women who were completely or partially dissatisfied with the recommendations or who didn't receive them from doctors in the antenatal clinic is shown in Figures 5.6 and 5.7.

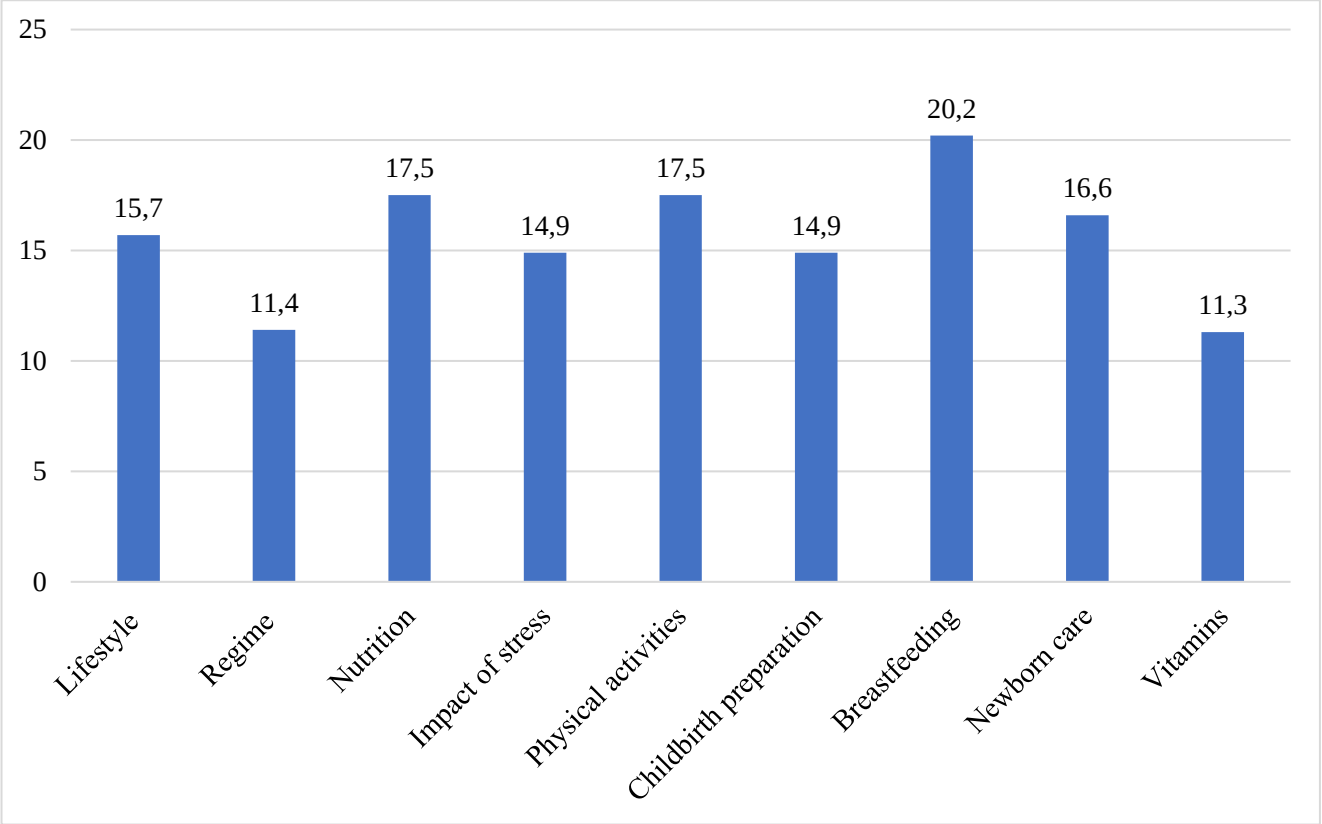

Figure 5.6 - Proportion of pregnant women fully or partially dissatisfied with recommendations received from doctors at the antenatal clinic (%)

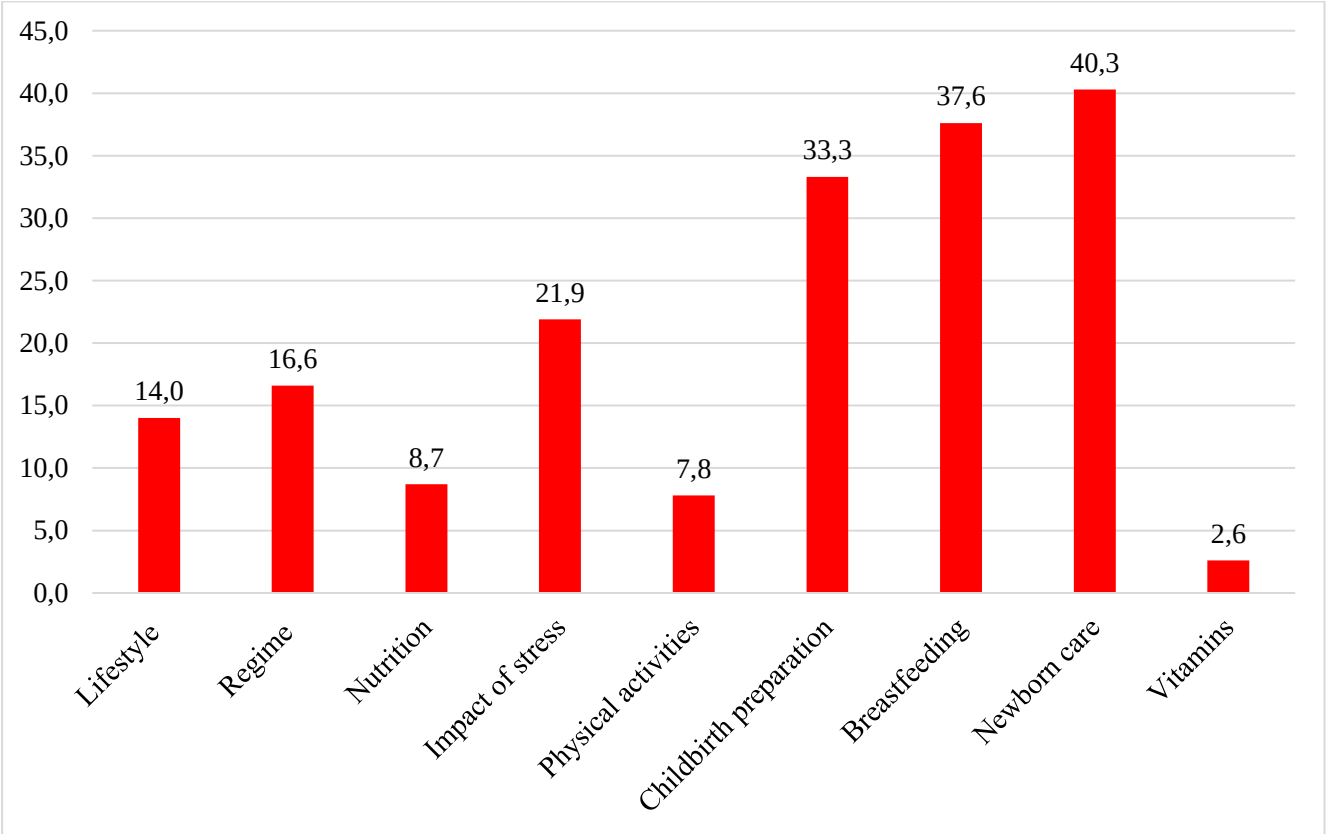

Figure 5.7 - Proportion of pregnant women who did not receive recommendations from doctors in the antenatal clinic (%)

The study showed that in the group of pregnant women of early reproductive age, compared to pregnant women of late reproductive age, there was a lower level of satisfaction with the health education work of obstetrician-gynecologists with pregnant women, recommendations on lifestyle during pregnancy, on nutrition, on the impact of stress on the health of the future child, on breastfeeding and on the care of newborns at home. Only information on work, sleep and rest regimen received from obstetrician-gynecologists was rated higher by women of late reproductive age.

The assessment of the activities of the women's clinic is influenced by many factors, among which a special place can be given to the work of support services, which are structural units of this medical organization (laboratory, ultrasound, physiotherapy room, etc.). In addition, an analysis of the work of medical and secondary medical personnel, including an obstetrician-gynecologist, specialists in women's clinics and secondary medical workers, is important in evaluating the activity.

During the study, an assessment of the activities of the auxiliary services of the antenatal clinic (laboratory, ultrasound, physiotherapy room, etc.) was carried out, which showed that the majority of pregnant women were fully or partially satisfied with the work of the auxiliary services (89.3%), 6.9% of pregnant women were completely or partially dissatisfied and 3.5% of women found it difficult to answer this question. It was found that the proportion of women who were fully satisfied with the work of women's support services was statistically higher in mothers of early reproductive age than among those of late reproductive age (51.3% vs. 41.7%). However, in the group of late reproductive age, there were statistically significantly more women who indicated that they were more satisfied with their work than dissatisfied (50.0% vs. 36.2%). The distribution of pregnant women by satisfaction with the antenatal clinic is presented in Table 5.8.

Table 5.8 - Distribution of pregnant women by satisfaction with the work of the antenatal clinic (%)

Degree of satisfaction	Women 15-34 years old	Women 35-49 years old	All women
Work of support services			
Yes, completely	51.3 *	41.7 *	47.3
Rather yes than no	36.2 *	50.0 *	42.0
Rather no than yes	4.5	4.2	4.3

Continuation of Table 5.8

Not satisfied	4.5	-	2.6
I find it difficult to answer	3.0	4.2	3.5
Total	100.0	100.0	100.0
Work and attitude of the obstetrician-gynecologist at the antenatal clinic			
Yes, completely	57.4 *	70.8 *	63.0
Rather yes than no	15.1	12.5	14.0
Rather no than yes	16.6 *	8.3 *	13.1
Not satisfied	6.0	4.2	5.3
I find it difficult to answer	4.5	4.2	4.3
Total	100.0	100.0	100.0
Work of specialist doctors at the antenatal clinic			
Yes, completely	37.7	33.3	35.9
Rather yes than no	36.2 *	54.2 *	43.8
Rather no than yes	9.1 *	4.2 *	7.0
Not satisfied	6.0	-	3.5
I find it difficult to answer	10.6	8.3	9.6
Total	100.0	100.0	100.0
Work and attitude of nursing personnel at the antenatal clinic			
Yes, completely	57.4 *	75.0 *	64.8
Rather yes than no	33.2	25.0	29.8
Rather no than yes	7.5	-	4.3
Not satisfied	-	-	-
I find it difficult to answer	1.5	-	0.9
Total	100.0	100.0	100.0

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

Distribution study of pregnant women by satisfaction with the work of an obstetrician-gynecologist revealed that most of the respondents were fully or partially satisfied with their work – 77.0%, fully or partially dissatisfied – 18.4% and found it difficult to answer – 4.3%. An assessment of the distribution of women by satisfaction with the work of an obstetrician-gynecologist showed statistically significant differences between the proportion of pregnant women who were fully satisfied in the group of early reproductive and late reproductive age (70.8% vs. 57.4%). In addition, among pregnant women aged 15-34, there was a statistic prevalence of respondents who were more

dissatisfied than satisfied with the work and attitude of the obstetrician-gynecologist at the antenatal clinic, compared to women of late reproductive age (16.6% vs. 8.3%).

Evaluation of the results of the anonymous questionnaire made it possible to establish that 79.7% of pregnant women were fully or partially satisfied with the work of specialists at the antenatal clinic (therapist, ophthalmologist, dentist, etc.), 10.5% were fully or partially dissatisfied, and 9.6% of women found it difficult to answer. In the group of pregnant women of early reproductive age, compared to pregnant women of late reproductive age, there was a higher proportion of respondents who were more dissatisfied than satisfied (9.1% and 4.2%) and a lower proportion of women who were more satisfied than dissatisfied (36.3% vs. 54.2%).

The predominant majority of pregnant women were fully or partially satisfied with the work and attitude of nursing personnel (94.6%), fully or partially dissatisfied (4.3%) and 0.9% found it difficult to answer this question. It was found that among pregnant women aged 15-34, the proportion of respondents who were fully satisfied with the work and attitude of nursing personnel was statistically lower compared to pregnant women aged 35-49 (57.4% vs. 75.0%). In addition, there were no women in the group of late reproductive age who were completely or partially dissatisfied.

Assessment of the distribution of pregnant women by satisfaction with the quality of medical care provided at the antenatal clinic revealed that the majority of pregnant women (83.2%) were satisfied; rather no than yes - 10.5%; not satisfied - 2.6% and found it difficult to answer - 3.5% of women (Figure 5.8). The study showed that the proportion of pregnant women who were completely satisfied with the quality of medical care was statistically lower among pregnant women of early reproductive age (33.2% vs. 41.7%).

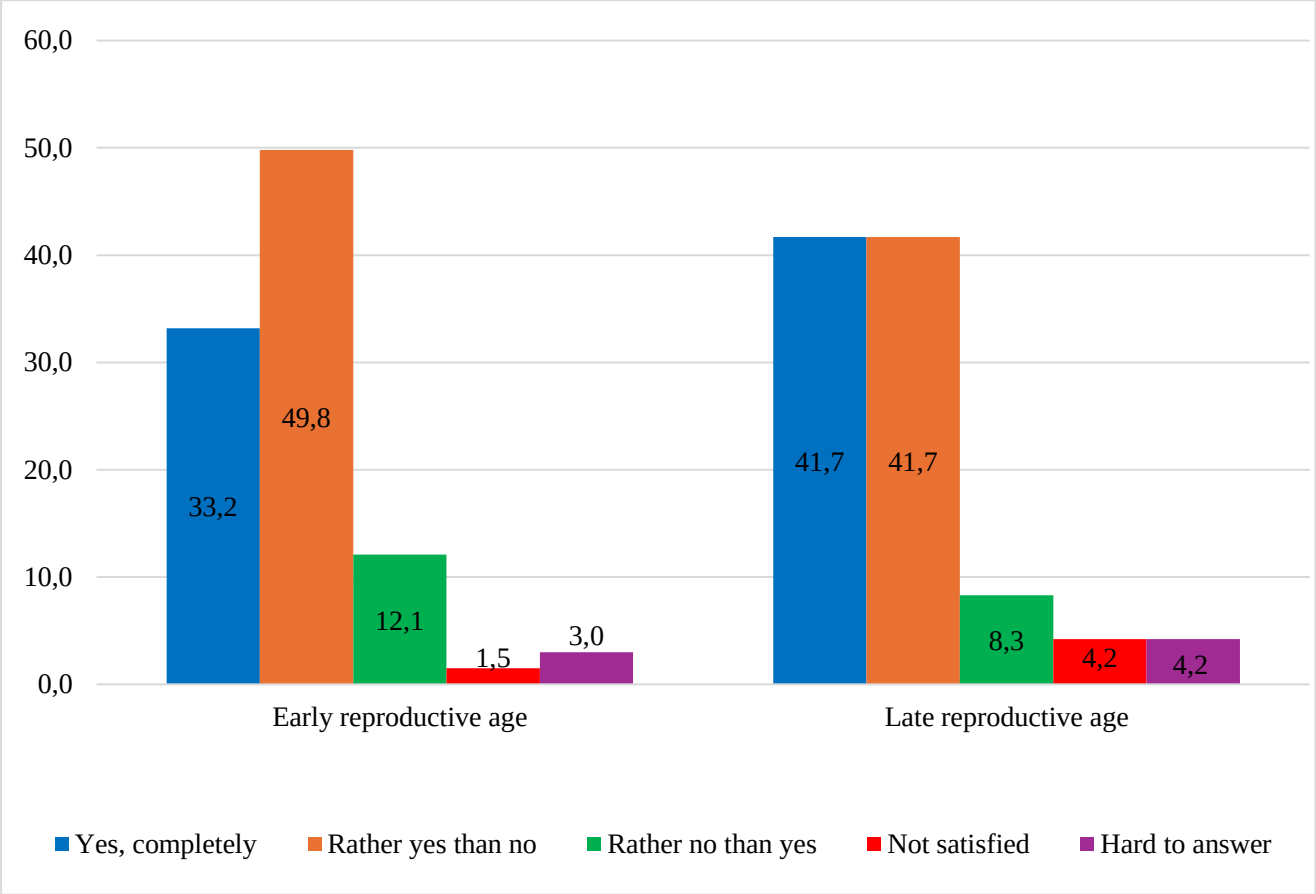

Figure 5.8 - Distribution of pregnant women by satisfaction with the quality of medical care provided to pregnant women in antenatal clinics (%)

The questionnaire showed that 42.9% of pregnant women rated the doctor's work with four points. 38.5% of respondents gave an excellent rating, 14.9% gave a satisfactory rating, and 1.8% of women rated the work of obstetrician-gynecologists with two and one points each. The average score amounted to 4.15±0.40 points. The average score in the group of pregnant women of early reproductive age was 4.10±0.05 and late reproductive age - 4.20±0.06 ($p>0.05$). Thus, women of late reproductive age evaluated the work of an obstetrician-gynecologist higher than early ones, giving statistically more satisfactory evaluations (19.6% vs. 8.3%). The distribution of pregnant women according to the assessment of the work of doctors and nursing personnel of antenatal clinics is presented in detail in Table 5.9.

Table 5.9 - Distribution of pregnant women according to the assessment of the work of doctors and nursing personnel of antenatal clinics (%)

Characteristic	Women 15-34 years old	Women 35-49 years old	All women
Doctors' work			
Five points	36.2	41.7	38.5
Four points	40.8	45.8	42.9
Three points	19.6 *	8.3 *	14.9
Two points	3.0	-	1.8
One point	-	4.2	1.8
Total	100.0	100.0	100.0
Average score	4.10±0.05	4.20±0.06	4.15±0.40
Work of nursing personnel			
Five points	45.3 *	62.5 *	52.5
Four points	42.3 *	25.0 *	35.0
Three points	10.6	12.5	11.4
Two points	1.5	-	0.9
Total	100.0	100.0	100.0
Average score	4.32±0.04	4.50±0.05	4.39±0.03

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

The questionnaire survey revealed that the majority of pregnant women rated the work of nursing personnel as five points (52.5%). However, 35.0% of women rated as four, 11.4% rated as three, and 0.9% rated as two points. On average, the assessment of the nurse's work was 4.39±0.03 points. The average score in the group of pregnant women of early reproductive age was 4.32±0.04 and late reproductive age - 4.50±0.05 ($p<0.05$). The comparative assessment revealed statistically significant differences between the performance ratings of nursing personnel in women of early and late reproductive age who rated their performance as four points and five points ($p<0.05$).

Thus, the study showed that, in general, pregnant women of early reproductive age were more demanding in evaluating the work of the antenatal clinic with pregnant women, both in evaluating individual characteristics of antenatal fetal protection and in evaluating the work of medical personnel.

5.3. Organization of work with pregnant women in Maternity Schools

One of the aspects of the work of antenatal fetal care clinics is the organization and conduct of classes with pregnant women in Maternity Schools [22, 107]. It is carried out in the form of voluntary classes and is recommended by an obstetrician-gynecologist at the time of the appointment. Education in Maternity Schools is especially relevant for first-time and young mothers, since psycho-prophylactic preparation for childbirth is carried out during classes. Classes at the Maternity School are taught by an obstetrician-gynecologist, psychologist, pediatrician and a specialist of the social insurance department. As a rule, a theoretical course of classes is conducted, that includes discussion of anatomical and physiological changes in the mother's body during pregnancy; preparation for admission to the maternity hospital; study of the course of childbirth, behavior during and after it; issuing recommendations on postpartum contraception, etc. In addition, such areas of antenatal protection as nutrition, regimen and hygiene of pregnant women are necessarily studied at the Maternity Schools. Such areas of antenatal fetal protection as nutrition, regimen and hygiene of pregnant women are necessarily studied at the Maternity Schools. Separate classes are devoted to newborn care, preventive vaccinations and social protection measures during pregnancy and after childbirth [173].

The data obtained allowed us to establish that the majority of pregnant women studying at the maternity school belonged to the age group of 20-24 years (31.4%). The group of 15-19 years included 12.8%, 25-29 years - 22.5%, 30-34 years – 11.2%, 35-39 years – 16.3%, 40-44 years – 5.8%. Thus, 77.9% were pregnant women of early reproductive age, and the average age of a pregnant woman studying at a Maternity School was 27.27± 0.44 years.

It was found that 47.3% of the respondents studied at the School at the period of 18-21 weeks, 22.7% - at the period of 11-14 weeks and 30.0% - from the 28th week of pregnancy. The results of the study showed that the majority of women had their first pregnancy - 55.8%, second pregnancy - 30.8%, third pregnancy - 13.4%. 60.7% of women underwent a medical examination on the recommendation of an obstetrician-

gynecologist before pregnancy, while the remaining 39.3% did not. The study showed that 71.7% of pregnant women were offered to study at this School and only 52.3% attended it regularly. 28.3% of women did not receive an offer to undergo it from an obstetrician-gynecologist, 23.3% of them got to school thanks to an announcement at the registry and 5.0% on recommendation. Only 19.9% of husbands participated in childbirth preparation and childcare training, 80.1% did not.

Although the majority of women indicated that they were provided with a sufficient amount of information in Maternity School, a significant proportion of pregnant women did not consider it sufficient and complete. It was indicated that they did not receive information on nutrition during pregnancy (10.7%), on the organization of healthy lifestyle in the family (17.7%), on the prevention of health disorders in parents (13.1%) and on health promotion activities for expectant parents (38.2%) (Figure 5.9).

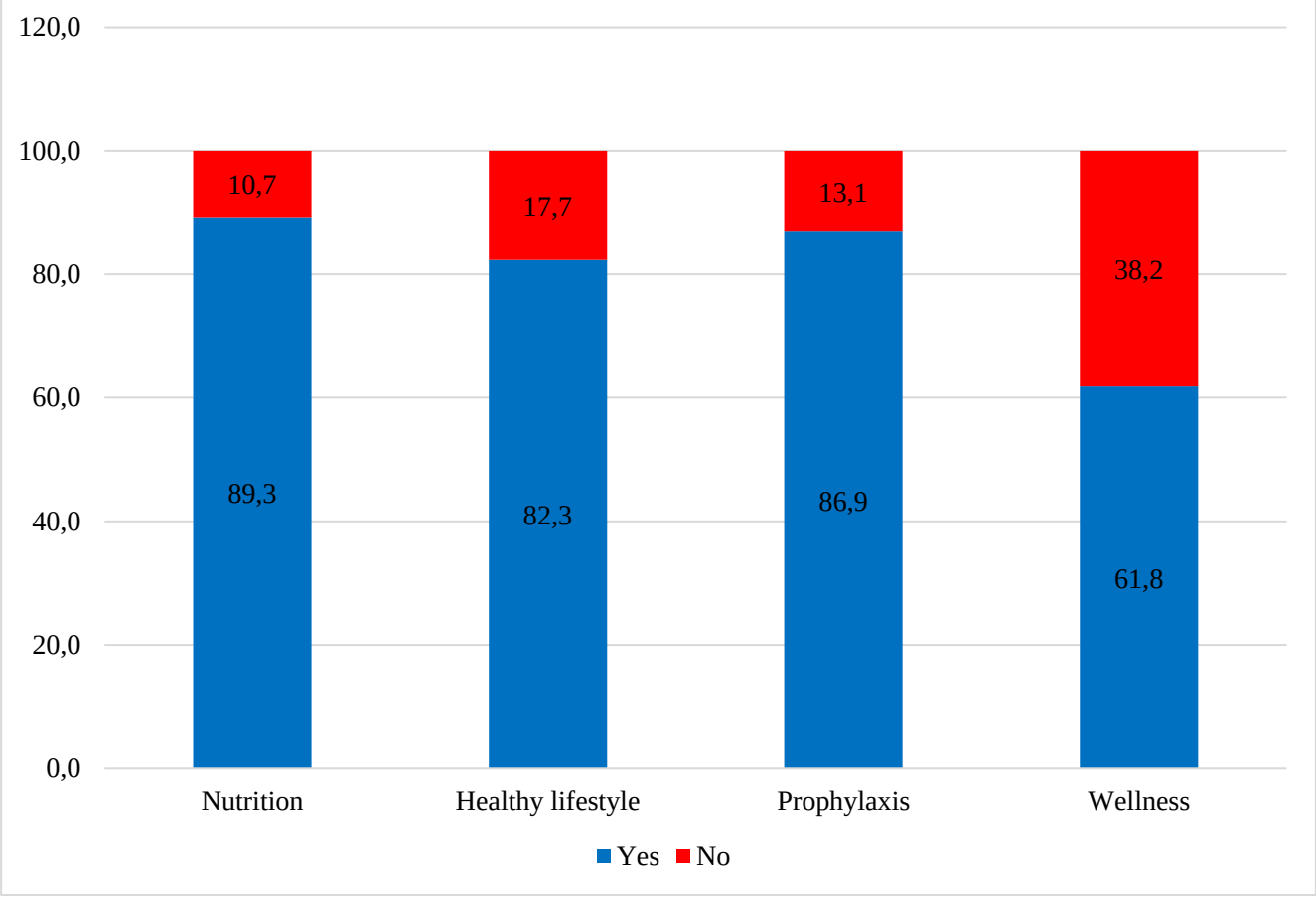

Figure 5.9 - Distribution of pregnant women according to the assessment of the acquisition of knowledge about nutrition, healthy lifestyle, prevention of disorders and health improvement (%).

The evaluation of the study results revealed that 26.6% of pregnant women rated the sessions on psychological preparation for future childbirth as unsatisfactory.

The survey showed that 57.4% of expectant mothers believed that they had not acquired enough knowledge on newborn care skills and, in addition to the materials provided during the courses, they studied this issue on their own. It was found that 24.2% of the women had not received sufficient knowledge about breastfeeding and 28.5% had not received sufficient knowledge about vaccine prophylaxis for the child of the first year of life (Figure 5.10).

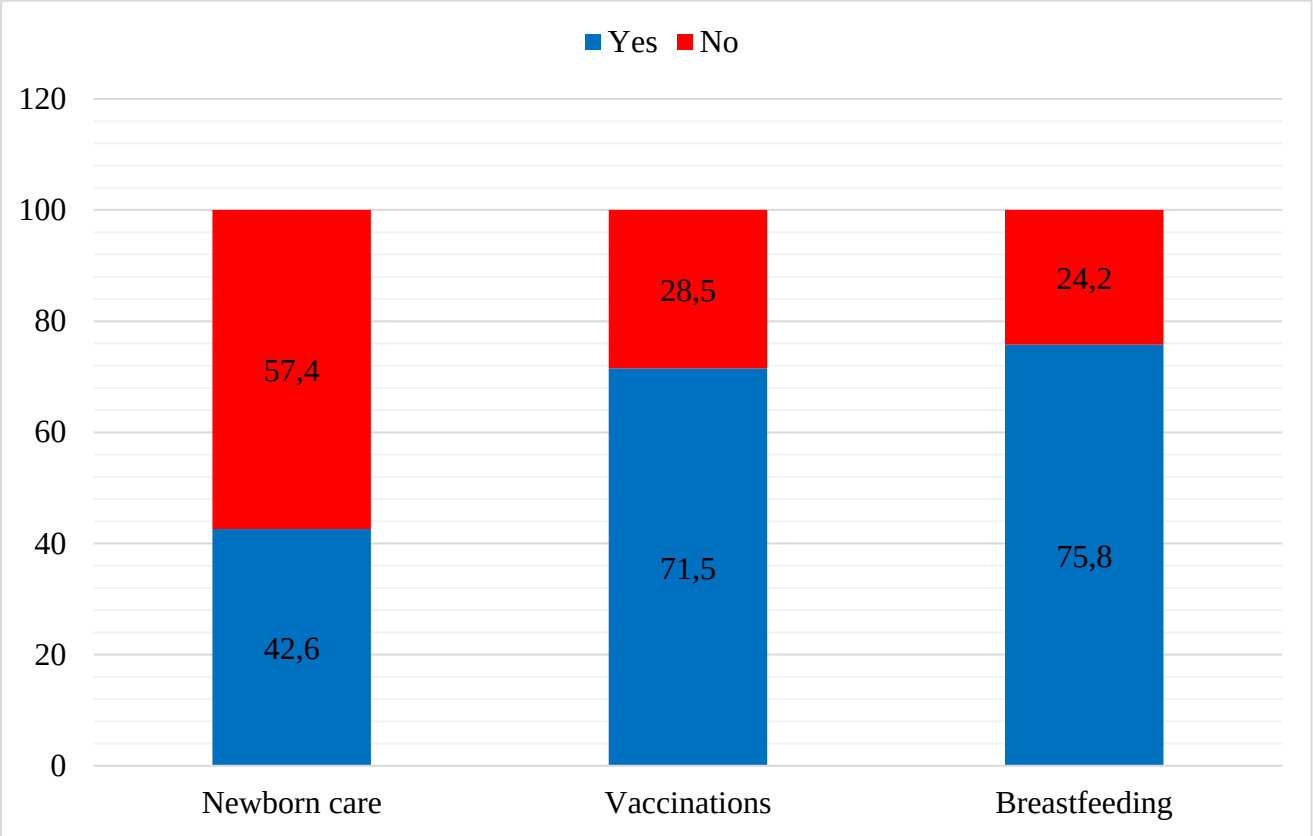

Figure 5.10 - Distribution of pregnant women by assessment of acquisition of newborn care skills, breastfeeding and vaccinations (%)

Analysis of the distribution of pregnant women on mastering the rules of breastfeeding and breast care showed that most of the mothers (69.9%) had a positive attitude towards breastfeeding and knew about breast care during lactation (59.7%). However, 30.1% of women have a negative attitude towards breastfeeding and 40.3% do not know about breast care (Figure 5.11).

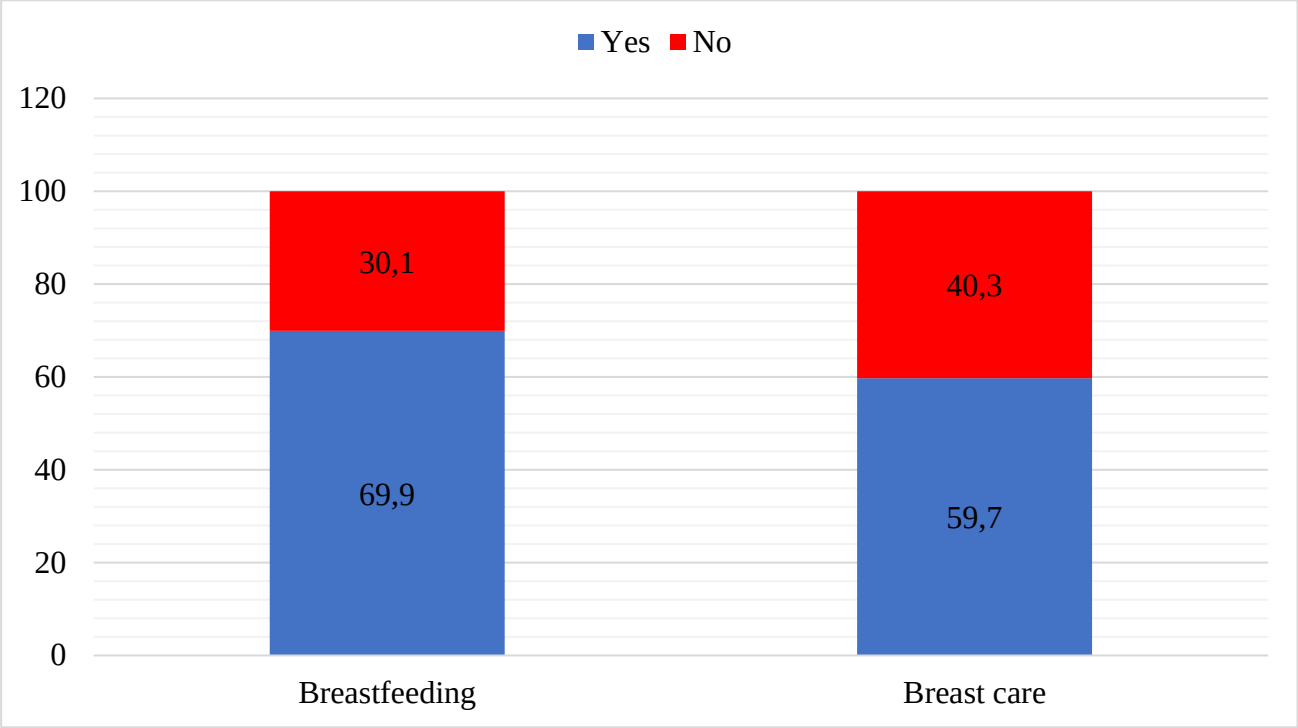

Figure 5.11 - Distribution of pregnant women by assessment of skills acquisition in breastfeeding and breast care (%)

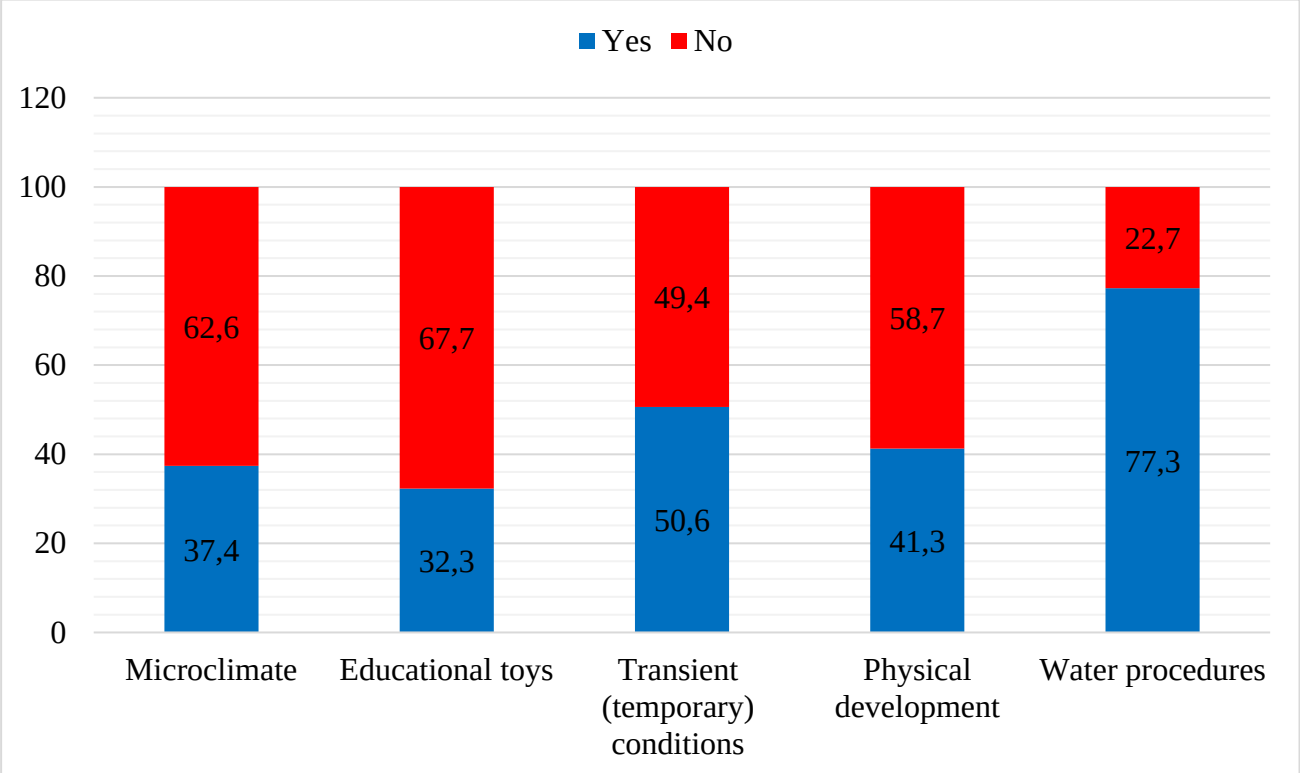

Figure 5.12 - Distribution of pregnant women by awareness of microclimate, educational toys, transitional conditions, physical development and water procedures for the baby (%).

62.6% of women were unaware of the importance of maintaining an appropriate microclimate, and 67.7% of pregnant women were unaware of the need to match

educational toys to a specific age. In addition, 49.4% of respondents had no idea about transient (temporary) conditions in the first weeks of a newborn's life (jaundice, skin redness, weight loss, labor swelling, poor thermoregulation). It was found that 58.7% of women had no idea about the physical development of the infant and 22.2% of pregnant women were unaware of the importance of water procedures for the baby (Figure 5.12).

It was found that 88.0% of pregnant mothers who attended the school considered these courses useful and effective. However, 12.0% of pregnant women indicated that the information provided was not sufficient and complete.

The survey showed that, according to pregnant women who attended the Maternity School, breastfeeding issues were best covered (19.8%), followed by massage and gymnastics (17.4%), which parents can do at home themselves, and immunization of the child (Figure 5.13).

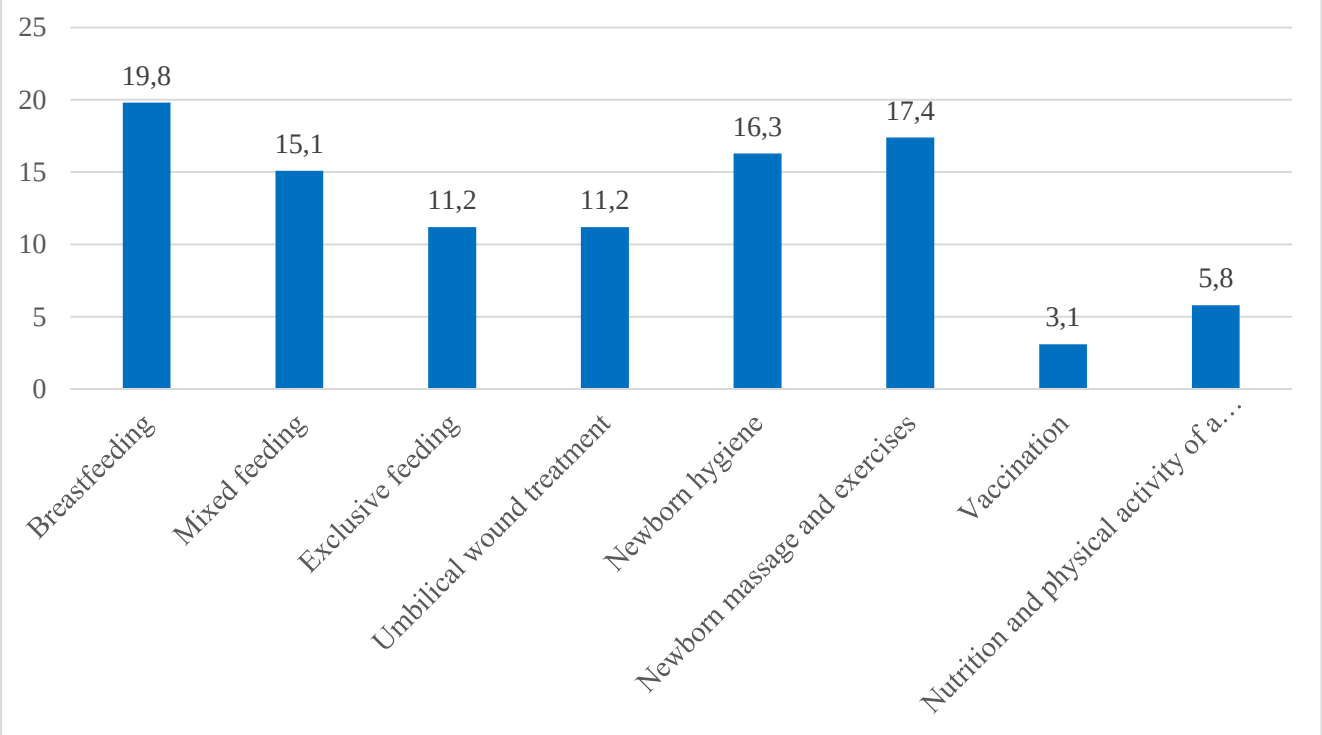

Figure 5.13 - Distribution of pregnant women according to the assessment of the illumination of topics on a 5-point scale (%).

Thus, it was found that among pregnant women who attended the Maternity School, the majority (77.9%) belonged to the early reproductive age (average 27.27±0.44 years), more than half were primigravida (55.8%). The majority of women were trained at 11-21 weeks of pregnancy (70.0%) The study showed that 28.2% of pregnant women

were not offered training at this School by their obstetrician-gynecologist, 10.7% did not receive full information about nutrition during pregnancy, 17.7% - about the organization of healthy lifestyle, about the prevention of health disorders of young parents - 13.1%, about measures to improve the health of future parents - 38.2%, about psychological preparation for future childbirth - 26,6%, on newborn care - 57.4%, on breastfeeding - 24.2%, on vaccine prophylaxis for the child - 28.5%, on breast care during lactation - 40.3%, on the importance of maintaining an appropriate microclimate - 62.6%, the need for age-appropriate educational toys - 67.7%, transient conditions in the first weeks of a newborn's life - 49.4%, physical development - 58.7%, and the importance of water procedures - 22.2%. Despite the fact that 52.3% of pregnant women attended Maternity School regularly, overall, 82.0% of pregnant women indicated that the information provided to them was sufficient and complete.

CONCLUSION

In Russia and its federal districts, a decrease in the birth rate occurs against the background of not only a general decrease in the proportion of women of fertile age in half of the districts, but also with a change in the ratio of women of reproductive age. There is a decrease in the proportion of women of early reproductive age with an annual growth of the proportion of women of late reproductive age. St. Petersburg had the highest rates of decrease in the total fertility (-24.0%) compared to all indicators in the federal districts against the background of the highest rates of increase in the proportion of women of late reproductive age (+11.9%).

The annual decline in the birth rate, which occurs in the vast majority of regions of our country, necessitates not only the preservation, but also the improvement of the health status of women and children. The study showed that the indicators of perinatal mortality (7.26%), stillbirth (6.10%) and antenatal mortality (5.03%) in the megalopolis exceeded the national average and tended to increase. The share of antenatal mortality in the structure of perinatal mortality (79.3%) in St. Petersburg significantly exceeded not only the national figures, but also the figures for all federal districts of Russia, and increased by 8.9% over five years. The proportion of antenatal mortality in the structure of stillbirths exceeded not only the national average, but also in most federal districts, including the Northwestern Federal District (94.4%) and tended to increase (by 2.6%).

The incidence of women of reproductive age in St. Petersburg with the XV class diseases was lower than the national and average values and its decline was higher than in Russia as a whole and in all its federal districts (-25.2%). The study showed that the incidence of arterial hypertension, moderate to severe preeclampsia, Rh-immunization and other forms of isoimmunization in pregnant women in the megalopolis was higher than the national and district averages. At the same time, the incidence of threatened miscarriage was almost at the level of the national average, and the incidence of threat of premature birth, as well as labor complicated by umbilical cord pathology, was less frequent than the national and district averages. At the same time, arterial hypertension (-7.7%), moderate to severe preeclampsia (-50.3%), threatened miscarriage (-17.7%),

threat of premature birth (-11.2%), and the frequency of childbirth complicated by umbilical cord pathology (39.8%) decreased statistically in the megalopolis, and the prevalence of Rh-immunization and other forms of isoimmunization in pregnant women increased (+38.3%). The incidence of neonatal incidence in St. Petersburg during all the years under study was significantly higher than the national and the Northwestern Federal District averages (by 25.3% and 13.2%, respectively), and its increase over five years amounted to 24.0% ($p<0.05$).

Thus, in the megalopolis, against the background of low incidence rates for women of reproductive age, high rates of perinatal mortality and incidence of newborns were observed, with fairly high rates of incidence of pregnant women with certain forms of diseases. Therefore, there is a need for further improvement of the system of medical care for mothers and children, one of the mechanisms of which is to improve the quality of antenatal fetal care in antenatal clinics.

The state of a child's health largely depends on medical and social, hereditary, obstetric and perinatal risk factors. Therefore, the assessment of the conditions and lifestyle of parents, the quality of life and obstetric history of mothers during pregnancy largely determine the health resource of their future children. The survey showed that the majority of pregnant women were observed in an antenatal clinic (95.3%), lived in a registered marriage (85.9%), belonged to the 30-39 age group (59.3%), like their husbands (58.1%), they had their first child (52.3%). They had higher education (71.9%), classified themselves as employees of budgetary organizations or employees (52.7%), estimated their income as average or high enough (82.8%), did not have bad habits before and during pregnancy (78.5% and 91.0%, respectively). A comparative analysis of the medical and social characteristics of pregnant women in the main and control groups showed that pregnant women in the main group had a statistically significant higher proportion of women of older reproductive age (50.0% vs. 30.0%) with a higher average age in the group (33.19±0.51 vs. 31.30±0.46), as did their husbands (36.43±0.58 years vs. 34.35±0.60), a higher proportion of families with a second child (41.3% vs. 23.1%), with a lower average number of children in the family (1.24±0.06 vs. 1.65±0.10), a higher proportion of pregnant women with higher education (79.4% vs. 64.6%), a higher

proportion of commercial and entrepreneurs (42.1% vs. 29.2%), with a higher proportion of high-income women (50.1% vs. 30.8%), and a higher proportion of registered marriages (92.9% vs. 79.2%). In addition, pregnant women in the main group were mostly smokers (10.3% vs. 7.7%) before pregnancy but less alcohol drinkers (6.3% vs. 16.9%), and during pregnancy, both smokers (7.7% vs. 0.8%) and alcoholic drinkers (16.9% vs. 0.0%) were less likely to be smokers.

The assessment showed that in most pregnant women it was the first pregnancy (41%), they had male children (52.7%) and pregnancy occurred naturally (90.6%). Most of the women registered for pregnancy before 12 weeks (88.3%) and 18.0% had a history of surgical abortions. It was revealed that 14.3% of expectant mothers had an abortion before 12 weeks of pregnancy, 12.5% had abortions for medical reasons, and 16.8% of pregnant women had spontaneous miscarriages. In 8.6% of pregnant women, fetal diseases were detected in previous pregnancies, the largest proportion of which related to certain conditions occurring in the perinatal period (4.6%). 38.3% of women had a history of chronic diseases, 3.1% had hereditary diseases, and their husbands - 7.8%, and 84.4% had diseases during pregnancy.

In women carrying a child with health abnormalities, the detection of pathology in most cases was from 15 to 21 weeks of pregnancy (93.7%), and in the structure of fetal pathology, the most common were individual conditions that occur in the perinatal period (90.6%).

Comparative analysis of obstetric history of the main and control groups showed that women who had fetal pathology had a higher proportion of: male fetuses (67.5% vs. 38.5%); first pregnancy (44.6% vs. 37.3%); were pregnant with the second child (27.7% vs. 21.4%); pregnancies with the use of ART (11.9% vs. 6.9%); were subjects to regular medical check-up after 12 weeks of pregnancy (15.1% vs. 8.5%); surgical abortions in the history (23.0% vs. 13.1%); abortions up to 12 weeks (16.2% vs. 11.8%); abortions for medical reasons (14.3% vs. 10.7%); spontaneous abortions (24% vs. 10.0%); miscarriages up to 12 weeks of pregnancy (17.3% vs. 10.0%); spontaneous abortions for unknown reasons (12.3% vs. 4.7%); spontaneous abortions due to missed miscarriage (8.0% vs. 2.3%); history of preterm labor (4.0% vs. 0.8%); preterm labor due to placental

abruption and infection (2.2% vs. 0.0%); detected fetal abnormalities in previous pregnancies (11.1% vs. 6.2%); CM in previous pregnancies (6.5% vs. 1.4%); endocrine diseases, nutritional and metabolic disorders in this pregnancy (16.6% vs. 2.3%); hereditary diseases in woman (3.2% vs. 3.1%); hereditary diseases in her husband (12.7% vs. 3.1%); complications during this pregnancy (88.8% vs. 80.0%); and anemia during pregnancy (49.2% vs. 34.6%).

A comparative study of the quality of life of pregnant women carrying a sick and healthy child showed that women with fetal pathology had lower indicators on all scales of the SF-36 questionnaire, except for the indicator of mental health (70.8 vs. 67.8). Accordingly, they are less prone to depressive, anxious experiences and mental distress. At the same time, statistically significant differences were found only on the PF (62.2 vs. 72.2) and RP (35.6 vs. 55.0) scales, respectively, physical activity of a pregnant woman with fetal pathology is significantly limited by her state of health, and the daily activity of a woman is significantly limited by her physical condition. Thus, the congenital pathology of a child has a negative impact on all areas of a pregnant woman's life.

The quality of life of pregnant women of early reproductive age carrying a child with CM is lower than in the group of pregnant women carrying a child without health abnormalities. The MH indicators of pregnant women in the main and control groups were almost the same (68.2 vs. 68.1). Statistically significant differences in the main and control groups were found between the RP (35.1 vs. 57.4) and RE (57.0 vs. 70.0) indicators.

The analysis of QoL indicators of pregnant women aged 35-49 showed that BP (76.9 vs. 74.8), VI (61.0 vs. 56.4), RE (60.3 vs. 58.9) and MH (73.5 vs. 67.0) were higher in the main group of women. The control group of pregnant women had higher QoL in terms of PF (69.6 vs. 57.7), RP (49.4 vs. 36.1), GH (72.9 vs. 71.8) and SF (75.3 vs. 72.6). However, significant differences were only between the indicators in women of late reproductive age and are statistically significant on the PF (69.6 vs. 57.7) and MH (73.5 vs. 67.0) scales.

Additionally, the quality of life of pregnant women in the main group was analyzed depending on the early and late reproductive age of the woman. The quality of life of the

respondents in the group of pregnant women carrying a child with health abnormalities differs depending on age. The assessment of indicators in the main group of respondents allowed us to establish that women of early reproductive age have lower QoL indicators compared to women 35-49 years old on the scales of RP (35.1 vs. 36.1), BP (71.9 vs. 76.9), VI (52.2 vs. 61.0), SF (67.6 vs. 72.6), MH (68.2 vs. 73.5) and RE (57.0 vs. 60.3). However, women aged 15-35 have higher QoL values on the PF (66.6 vs. 57.7) and GH (72.7 vs. 71.8) scales. Statistically significant differences were found on the PF (69.6 vs. 57.7) and VI (73.5 vs. 67.0) scales. Thus, it can be concluded that women of 35-49 years old who carry a child with CM have a higher QoL.

The study showed that pregnant women with fetal pathology had risk factors of medical and social characteristics, obstetric history and peculiarities of quality of life.

To assess the activity of the outpatient obstetric and gynecological service for antenatal fetal protection, we analyzed the state of staffing of the obstetric and gynecological service in St. Petersburg. In 2018-2021, the obstetrics and gynecology service of the megalopolis with high qualification indicators of medical workers, on the one hand, had a higher (49.1%), compared to Russia and the NWFD, provision of doctors, and on the other hand, a lower provision of nursing personnel (33.6%). However, both in the country as a whole and in the NWFD and the megalopolis, there was an annual decrease in the indicators of provision and qualification of obstetric and gynecological service with medical personnel by 8.7%, 5.6% and 6.1%, respectively. At the same time, in 2018-2022, the contribution of obstetricians and midwives in St. Petersburg to the total number of obstetrician-gynecologists and midwives in the NWFD tended to increase and amounted to 13.6% vs. 13.2% and 12.3%, respectively. Thus, the megalopolis has features of resourcing the obstetric and gynecological service with personnel, which may be largely related to the peculiarities of the organizational structure of its healthcare and the federal significance of the city.

An objective assessment of antenatal fetal protection indicators revealed that the indicators of the proportion of women with early registration of pregnancy and the proportion of pregnant women examined by a general practitioner in St. Petersburg antenatal clinics in the period 2018-2022 were at a consistently high level and did not

differ significantly from the national average, averaging 88.6% and 97.3%, respectively. At the same time, the proportion of pregnant women examined by a general practitioner before 12 weeks in the megalopolis was 2.2% lower than the national average (85.8% vs. 87.7%). Coverage rates of pregnant women with screening ultrasound were on par with the national average and decreased by 2.4% over the five years, while biochemical screening coverage was not only above the national average by 3.6%, but also remained consistently high throughout the entire follow-up period. The proportion of pregnant women who underwent assessment of antenatal fetal development in antenatal clinics in the megalopolis at 11-14 weeks and 19-21 weeks averaged 90.0% and 92.8%, respectively, and in general these indicators increased by 3.3% and 1.6%.

The frequency of CM detection in fetuses during screening ultrasound was 16.2% higher than the national average and in 2022 increased 2.6 times to the level of 2018, and the frequency of detection of pregnant women with abnormalities according to the results of biochemical screening was lower than the national average by 41.2% and decreased by 2.4%. The frequency of CM detected at the first ultrasound (at 11-14 weeks) decreased by 7.1%, the frequency of detection of fetuses at risk of fetal growth retardation – by 18.0% and the proportion of pregnant women at risk of premature birth – by 40.3%, while the proportion of pregnant women who had their pregnancy terminated and pregnant women at risk of preeclampsia increased by 16.7% and 31.9%, respectively.

High rates of early pregnancy registration made it possible to increase the coverage of ultrasound and biochemical screenings at 11-14 weeks of pregnancy, which made it possible to terminate pregnancy for medical reasons and identify the risk of preeclampsia in its early stages. Despite the fact that in the megalopolis, the frequency of CM detection in fetuses with all screening ultrasounds was 16.2% higher than the national average and tended to increase, according to the results of the first ultrasound, there was a decrease in the detection of fetuses with CM, fetal growth retardation and the risk of premature birth in the early stages. Given the high incidence of newborns, this fact points to the need to improve the quality of ultrasound in early pregnancy.

The conducted subjective assessment of antenatal fetal protection revealed that the highest level of satisfaction of pregnant women was when evaluating information about

the intake of vitamins and micronutrients during pregnancy (85.7%), about physical activity during this period (74.4%) and about the work, sleep and rest regime of pregnant women (71.8%). The highest level of dissatisfaction among pregnant women was when assessing the recommendations received on breastfeeding: importance, preparation, lactation, hypogalactia (20.2%), on pregnancy nutrition and physical activity during pregnancy (17.5% each), and on care after the newborn at home (16.6%). At the same time, a significant number of women indicated that they didn't receive any recommendations. Pregnant women did not receive recommendations on caring for a newborn at home (40.3%), on feeding (37.6%) and on preparation and behavior during childbirth (33.3%).

The assessment of the activities of support services, the medical personnel of women's clinics and the quality of medical care provided to pregnant women in them revealed a fairly high level of patient satisfaction (79.7-94.6%). It was found that the largest number of fully or partially dissatisfied pregnant women was when evaluating the work of an obstetrician-gynecologist and specialist doctors of the antenatal clinic (18.4% and 10.5%, respectively). The highest level of satisfaction was in the assessment of the support services and nursing personnel of the antenatal clinic, as 6.9% and 4.3% of pregnant women were completely or partially dissatisfied. In general, pregnant women rated the work of the average personnel staff higher than doctors (4.15±0.40 points vs. 4.39±0.03 points), giving them more excellent and good grades.

The survey of pregnant women revealed that in the group of pregnant women of early reproductive age, compared to pregnant women of late reproductive age, there was a lower level of satisfaction with the health education work of obstetrician-gynecologists with pregnant women, recommendations on lifestyle during pregnancy, on nutrition, on the impact of stress on the health of the future child, on breastfeeding and on the care of newborns at home. Only information on work, sleep and rest regimen received from obstetrician-gynecologists was rated higher by women of late reproductive age.

Despite the fact that in general 22.8% of women were fully or partially dissatisfied with the quality of medical care provided to pregnant women in antenatal clinics, the lowest rating was given by pregnant women of early reproductive age. In addition,

compared to pregnant women aged 35-49, they rated the work of obstetrician-gynecologists and nursing personnel at antenatal clinics significantly lower, but rated the work of auxiliary services and specialist doctors higher. Pregnant women aged 15-34 gave a lower score to the work of both doctors and nursing personnel.

Thus, the study showed that, in general, pregnant women of early reproductive age were more demanding in evaluating the work of the antenatal clinic with pregnant women, both in evaluating individual characteristics of antenatal fetal protection and in evaluating the work of medical personnel.

The study evaluated the activities of the Maternity School in working with pregnant women and it was found that among the pregnant women who attended it, the majority (77.9%) were of early reproductive age (average 27.27±0.44 years), and more than half were primigravida (55.8%). The majority of women were trained at 11-21 weeks of pregnancy (70.0%) The study showed that 28.2% of pregnant women were not offered training at the School by their obstetrician-gynecologist, 10.7% did not receive full information about nutrition during pregnancy, 17.7% - about the organization of healthy lifestyle, about the prevention of health disorders of young parents - 13.1%, about measures to improve the health of future parents - 38.2%, about psychological preparation for future childbirth - 26,6%, on newborn care - 57.4%, on breastfeeding - 24.2%, on vaccine prophylaxis for the child - 28.5%, on breast care during lactation - 40.3%, on the importance of maintaining an appropriate microclimate - 62.6%, the need for age-appropriate educational toys - 67.7%, transient conditions in the first weeks of a newborn's life - 49.4%, physical development - 58.7%, and the importance of water procedures - 22.2%. Despite the fact that 52.3% of pregnant women attended Maternity School regularly, overall, 82.0% of pregnant women indicated that the information provided to them was sufficient and complete.

FINDINGS

1. In St. Petersburg, against the background of high rates of decrease in the coefficient of total fertility (-24.0%) and an increase in the proportion of women of late reproductive age (+11.9%), the indicators of perinatal mortality (7.26%), stillbirth (6.10%) and antenatal mortality (5.03%) significantly exceeded the national average and tended to increase. The proportion of antenatal mortality in the structure of perinatal mortality and stillbirth in the megalopolis significantly exceeded the figures for the country and the federal districts of Russia and increased by 8.9% and 2.6%, respectively, over five years.

2. With a low incidence of women of reproductive age in the megalopolis of the XV class diseases, the incidence of pregnant women with hypertension, moderate and severe preeclampsia, Rh-immunization and other forms of isoimmunization was higher than the average values than in the country and the district. The overall decrease in the incidence of pregnant women, women in labor and new mothers was accompanied by a decrease in the prevalence of most nosological forms of diseases of pregnant women, with the exception of Rh-immunization and other forms of isoimmunization (+38.3%).

3. Pregnant women with fetal pathology were statistically more likely to have medical, social and obstetric risk factors, including the age of parents over 35 years old; higher education of mothers; material well-being; the presence of bad habits before and during pregnancy; male child; pregnancy with the use of ART; registration after 12 weeks of pregnancy; the presence of hereditary and chronic diseases, abortions and premature births in the anamnesis; CM in previous pregnancies; the presence of complications during pregnancy; anemia during pregnancy.

4. The quality of life of pregnant women carrying a child with congenital malformations is lower on the scales of physical functioning (62.2 vs. 72.2); role-based functioning due to physical condition (35.6 vs. 55.0); bodily pain (74.5 vs. 76.4); general health (72.3 vs. 74.0); vitality (56.6 vs. 56.9); social functioning (70.1 vs. 74.7); role-based functioning due to emotional state (58.9 vs. 66.4), and only mental health indicators are higher (70.8 vs. 67.8). A comparative analysis of quality of life revealed that women

of early reproductive age who had fetal pathology had higher physical functioning and general health indicators only, while all others were lower. Accordingly, women of late reproductive age who are carrying a child with CM have a higher quality of life.

5. The obstetric and gynecological service of the megalopolis had a high supply of obstetrician-gynecologists and a low supply of nurses. While the qualification indicators of obstetrician-gynecologists and midwives were higher, these indicators, along with staffing availability, had a clear downward trend.

6. High rates of early registration for pregnancy ensured high coverage of pregnant women with two-time ultrasound and biochemical screening. Despite the fact that in the megalopolis, the frequency of CM detection in fetuses with all screening ultrasounds was 16.2% higher than the national average and tended to increase, according to the results of the first ultrasound, there was a decrease in the detection of fetuses with CM (-7.1%), fetal growth retardation (-18.0%) and the risk of premature birth (-40.3%). Given the high incidence of newborns, this fact points to the need to improve the quality of ultrasound in early pregnancy.

7. More than a quarter of pregnant women (26.3%) were completely or partially dissatisfied with the sanitary and educational work of obstetrician-gynecologists. Subjective assessment of antenatal fetal protection revealed that the highest level of dissatisfaction was when assessing the recommendations received on the nutrition of pregnant women and their physical activity during pregnancy (17.5% each), their lifestyle and its impact on the health of the future child (15.7%). At the same time, a significant number of women indicated that they did not receive any recommendations from obstetrician-gynecologists, among which the most frequent recommendations were those on preparation and behavior in childbirth (33.3%).

8. 28.2% of pregnant women did not receive recommendations from obstetrician-gynecologist for training in the Maternity School. At the same time, only 52.3% of the women who studied at this school attended it regularly. According to the pregnant women who received training, the least informative were consultations on health improvement of future parents - 38.2%, on psychological preparation for future childbirth - 26.6%, on newborn care - 57.4%, on breastfeeding - 24.2%, on vaccine prophylaxis of the child -

28.5%, on breast care during lactation - 40.3%, on the importance of maintaining an appropriate microclimate - 62.6%, on the need for age-appropriate educational toys - 67.7%, on transient conditions in the first weeks of a newborn's life - 49.4%, on a newborn's development - 58.7%.

Thus, despite a fairly high objective and subjective assessment of antenatal fetal protection, there were significant shortcomings in this area of activity in the work of antenatal clinics, which allowed us to develop a set of medical and organizational measures to improve them.

PRACTICAL RECOMMENDATIONS

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

1. In order to reduce perinatal mortality and incidence of children, to provide for increased control over the quality of medical care provided to women during pregnancy and the continuity of the work of the antenatal clinic with other medical organizations in the system of antenatal fetal protection.

2. Carrying out inspections related to the issues of completeness and timeliness of medical care for pregnant women, provided by the order of medical care established by the order of the Ministry of Health of the Russian Federation No.1130n dated 20.10.2020 "Obstetrics and Gynecology".

3. In order to address the shortage of nursing and medical personnel in antenatal clinics, to develop a set of measures to attract young specialists to work;

4. To provide for the introduction of new modern technologies of diagnostics and treatment of pregnant women in the practical activities of doctors;

5. To develop a unified concept defining the methodology of mass prophylaxis for women during pregnancy.

6. To develop a unified program and methodology for training women in Maternity Schools to increase the involvement of pregnant women in the pedagogical process with the use of modern technologies.

7. Regularly monitor the quality of obstetric and gynecological care in outpatient settings through sociological surveys.

Chief physicians of women's clinics:

1. To conduct regular training and advanced training of obstetrician-gynecologists and ultrasound diagnostics doctors on the issues of antenatal prevention of health disorders and development of the unborn child using digital technologies in medicine;

2. To improve the quality and informational appeal of antenatal care training programs for pregnant women in antenatal clinics by improving the accessibility of the

information provided and the widespread use of practical skills using modern imaging techniques.

3. The introduction of a set of medical and preventive measures in the system of antenatal fetal protection, including a program of accompanying pregnant women with relevant information and leaflets for pregnant women, contributes to raising the level of awareness of patients about the impact of their lifestyle on the health of the future child; about the work, sleep and rest regime of the pregnant woman; about the nutrition of the pregnant woman; about the impact of stress on the health of the future child; about physical activity during pregnancy; about preparation and behavior in childbirth; about breastfeeding: the importance, preparation, lactation, hypogalactia; about caring for a newborn at home and taking vitamins and micronutrients during pregnancy.

4. Regularly conduct sociological surveys of pregnant women to assess the level of organization of antenatal care and the activities of the Maternity School.

Doctors of medical organizations:

1. Regularly carry out activities to improve professional skills and communications, including using digital technologies in medicine.

2. Continuously improve preventive and health education work with pregnant women and their partners through their wide involvement in the Maternity School.

3. Use quality of life studies as an additional method of assessing the condition of women during pregnancy.

4. To work on increasing the coverage of women with pregravidarial preparation for timely elimination of risk factors for the development of pregnancy complications,

5. To increase control over the training or provision of necessary information to expectant parents at the Maternity Schools in the following areas: nutrition during pregnancy, organization of healthy lifestyles, prevention of health disorders of young parents, health promotion activities for expectant parents, psychological preparation for future childbirth, care of the newborn, breast care during lactation, the importance of maintaining an appropriate microclimate, the need for age-appropriate educational toys,

transient conditions in the first weeks of a newborn baby's life, its physical development, and the importance of water procedures for it.

6. In order to focus on healthy motherhood, to start preventive and sanitary educational work with young women from the first admission to the women's clinic.

PROSPECTS FOR FURTHER DEVELOPMENT OF THE SUBJECT

The prospect of further development of the thesis topic is to study the organization of outpatient obstetric and gynecological care for pregnant women, both in the constituent entities of the Northwestern Federal District and in regions belonging to other federal districts of the Russian Federation, as well as to conduct a comparative evaluation of the obtained results of the study with the indicators of antenatal fetal protection among the permanent and non-permanent population of the megalopolis and in urban and rural settlements of the Northwestern Federal District.

LIST OF ABBREVIATIONS

BP – bodily pain

WHO – World Health Organization

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

ART - ancillary reproductive technology

FEFD - Far Eastern Federal District

VI - vitality (vital activity)

HL - healthy lifestyle

CDD – consultative diagnostic department

QoL - quality of life

GH - general health

MH - mental health

VFD - Volga Federal District

Rosstat - Federal State Statistics Service

RF – Russian Federation

RP – role-functioning due to physical condition

RE – role-functioning due to emotional condition

NWFD - Northwestern Federal District

NCFD - North Caucasian Federal District

Media - mass media

SPb - St. Petersburg

SF - social functioning

SFD - Siberian Federal District

U/S - ultrasound examination

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

FZ - federal law

PF - physical functioning

RIH (Russian research Institute of Health) - Federal State Budgetary Institution "Central Research Institute of Health Care Organization and Informatization" of the Ministry of Health of the Russian Federation

CFD - Central Federal District

IVF - in vitro fertilization

SFD - Southern Federal District

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APPENDICES

Appendix 1

Администрация Кировского района Санкт-Петербурга

Санкт-Петербургское государственное бюджетное учреждение здравоохранения «Городская поликлиника №23» (СПб ГБУЗ «Городская поликлиника №23»)
ул. Косинова, д. 17, лит. А
г. Санкт-Петербург, 198095,
тел./факс (812) 786-66-66
e-mail: p23@zdrav.spb.ru , http://pol23.spb.ru/
ИНН 7805039564 КПП 780501001
ОКПО 34302793 ОКОПХ 91514 ОКВЭД 86.10
ОГРН 1027802736928

26.12.2023 № 0151/С

В Диссертационный совет

А К Т
о внедрении

НАИМЕНОВАНИЕ РАЗРАБОТКИ.

Рекомендации, медико-организационного характера, направленные на совершенствование организации медицинской помощи беременным на амбулаторном этапе для улучшения антенатальной охраны плода в условиях женской консультации.

КЕМ ВНЕДРЕНО.

Заведующая женской консультацией Духвинская И.В.
СПб ГБУЗ «Городская поликлиника №23, Женская консультация № 36»
198152, СПб, ул. Маршала Говорова, дом 4, лит. А
Тел/факс: +7 (812) 784-22-74, Email: p23@zdrav.spb.ru

ИСТОЧНИК ИНФОРМАЦИИ.

Материалы диссертационного исследования Заступовой Анны Алексеевны на тему: «Состояние и научное обоснование улучшения антенатальной охраны плода в условиях женской консультации».

РЕЗУЛЬТАТЫ ВНЕДРЕНИЯ.

Предложенные по результатам работы памятка «Грудное вскармливание: значение, подготовка, лактация, гипогалактия» и плакат «Здоровая беременность = здоровый ребёнок» а также рекомендации, направленные на совершенствование организации медицинской помощи беременным на амбулаторном этапе для улучшения антенатальной охраны плода, были внедрены в практику и позволили улучшить доступность и качество акушерско-гинекологической помощи женскому населению в условиях женской консультации.

СПб ГБУЗ «Городская поликлиника №23,
Женская консультация № 36»
Зав. женской консультацией /И.В. Духвинская/

Appendix 2

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 № 01/Вх от 28.12.2023

В Диссертационный совет

А К Т
о внедрении

НАИМЕНОВАНИЕ РАЗРАБОТКИ.

Рекомендации, направленные на совершенствование специализированной медицинской помощи беременным женщинам в консультативно-диагностическом отделении.

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 Заступовой Анны Алексеевны на тему: «Состояние и научное обоснование улучшения антенатальной охраны плода в условиях женской консультации».

РЕЗУЛЬТАТЫ ВНЕДРЕНИЯ.

Предложенные по результатам работы памятка «Грудное вскармливание: значение, подготовка, лактация, гипогалактия» и плакат «Здоровая беременность = здоровый ребёнок» а также рекомендации, направленные на совершенствование организации медицинской помощи беременным на амбулаторном этапе для улучшения антенатальной охраны плода, были внедрены в практику и позволили улучшить доступность и качество акушерско-гинекологической помощи женскому населению в условиях в консультативно-диагностическом отделении.

Главный врач, д.м.н.

/В.А. Резник/

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
_____ № _____

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

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 № 0242-и от 7.02.2024

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 по совершенствованию медицинской помощи беременным на амбулаторном этапе для улучшения антенатальной охраны плода в условиях женской консультации.

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 А.А. Заступовой на соискание ученой степени кандидата медицинских наук на тему: Состояние и научное обоснование улучшения антенатальной охраны плода в условиях женской консультации».

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 первичной специализированной медицинской помощи беременным женщинам для улучшения антенатальной охраны плода.

6. ПРЕДЛОЖЕНИЯ И РЕКОМЕНДАЦИИ.

Материалы диссертационного исследования Заступовой А.А. 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 антенатальной охраны плода.

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

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 № 0331к от 24.01.2024

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 по совершенствованию медицинской помощи беременным на амбулаторном этапе для улучшения антенатальной охраны плода в условиях женской консультации.
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.
4. Материалы диссертационного исследования А.А. Заступовой на соискание ученой степени кандидата медицинских наук на тему: Состояние и научное обоснование улучшения антенатальной охраны плода в условиях женской консультации».
5. ФОРМА ВНЕДРЕНИЯ.
   Использование фрагментов диссертационного исследования на лекциях и на занятиях в курсе общественное здоровье и здравоохранение (4-5 курсы).
6. РЕЗУЛЬТАТЫ ВНЕДРЕНИЯ.
   Студенты на конкретных примерах знакомятся с особенностями комплексной оценки организации медицинской помощи беременным женщинам в условиях женской консультации.
7. ПРЕДЛОЖЕНИЯ И РЕКОМЕНДАЦИИ.
   Материалы диссертационного исследования Заступовой А.А. 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/

Breast milk is a unique, best food for a baby in the first few months of life, which is why breastfeeding is important, because it has a positive effect on your baby's health.

What are the benefits of breastfeeding?

The benefits of breastfeeding for a baby:

1. fully meets the body's nutrient needs;
2. promotes brain and cognitive development;
3. protects against infections;
4. forms a healthy intestinal microflora;
5. reduces the risk of obesity, diabetes mellitus and gastrointestinal diseases at an older age;
6. reduces the likelihood of developing allergies.

The benefits of breastfeeding for a woman:

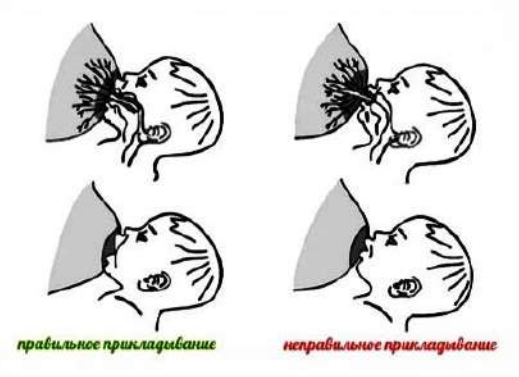
1. reduces the risk of ovarian cancer;
2. the hormone oxytocin, released during feeding, contributes to the contraction of the uterus, which increases during pregnancy and childbirth;
3. reduces the risk of postpartum depression;
4. helps to reduce excess weight and get in shape after pregnancy;
5. it does not require additional costs for mixtures, additives, bottles and nipples.

Contraindications to breastfeeding: HIV, acute mental disorders, particularly dangerous infections (typhoid, cholera, etc.), open tuberculosis, taking medications incompatible with breastfeeding, eclampsia, bleeding and exacerbation of chronic diseases.

Breast care:

1. In the I and III trimester of pregnancy - daily hygienic shower, gentle rubbing of the mammary glands with a towel, and in case of dryness of the nipple and areola - skin treatment with softening and moisturizing nourishing creams.
2. In the second trimester it is desirable to perform a contrast shower, and then produce a stiff towel massage of the mammary glands and nipple for 2-3 minutes twice a day. The movements should be stroking in the direction from the nipple to the base of the breast.
3. With flat and retracted nipples, special gymnastics is recommended (pulling the nipple and imitating sucking movements with fingers), performed 3-4 times a day for 5 minutes.
4. To increase the resistance of the nipple to mechanical damage by the baby's mouth during sucking, rough canvas pads can be worn in the bra.
5. To prevent irritations, cracks, abrasions of the nipple and areola, it is necessary to observe all measures of hygiene, it is possible to use special pads for breasts, which absorb liquid and protect the breast.

Proper breastfeeding of the baby is the key to successful breastfeeding



The basic rules of breastfeeding:

1. Lips at an angle of 120-150 degrees. The muscles of the mouth are relaxed, and the lips are in a tube.
2. The lower lip is turned outwards.
3. If the child is applied correctly, then the baby's lower lip and chin sink into the chest. This can be seen when pushing the breast away.
4. The baby's mouth is wide open. The lower jaw is pointing downwards.
5. Sucking involves all the muscles from the chin to the temple
6. The cheeks are not retracted.
7. The tongue rests on the lower gum, if you pull back the lower lip, you can see the tongue working.
8. There are no sounds of smacking, clicking. You can only hear the sounds of swallowing.

9. After feeding, the nipple is not deformed, there are no bevels, flattening.

10. The main sign is that it doesn't hurt to feed.

LACTATION is a natural physiological process of producing maternal (breast) milk.

Factors that affect lactation

Reinforce: mother's conviction in the necessity of breastfeeding, hungry cry of the baby (auditory stimulation), the sight of a hungry baby (visual stimulation), the smell of the baby (olfactory stimulation), frequent breastfeeding, night breastfeeding, complete emptying of the mammary glands.

Inhibit: physical fatigue, stress, pain, excitement, anxiety, negative emotions, depression, diseases, rare applications to the breast, incomplete emptying of the mammary glands.

HYPOGALACTIA is a complication of the postpartum period in which the level of milk secretion does not meet the nutrient needs of the baby for normal development.

The main causes of hypogalactia are: congenital pathology, neuroendocrine disorders, age over 35 years, somatic and infectious diseases, abnormal pregnancy and childbirth, pathology of mammary glands, violation of feeding rules, child factor.

Prevention of hypogalactia

1. Preparation for conception (healthy lifestyle, proper nutrition with the addition of vitamins and minerals to the diet, sports, active rest, timely detection and treatment of foci of infection);

2.Breast massage before and after childbirth;

3. Early application of the newborn to the breast — within two hours after delivery, preferably in the first 30 minutes;

4. Round-the-clock stay of the mother and newborn in the same room;

5. Compliance with the feeding regime;

6. Sufficient sleep and rest for the mother during the day, mandatory walks in the fresh air, the exclusion of exhausting work;

7. Rejection of breast substitutes (nipple);

8. Use of special medications (nicotinic acid, vitamin E, vitamin complex, etc.) as prescribed by a doctor.

BREASTFEEDING: MEANING, PREPARATION, LACTATION, HYPOGALACTIA

Appendix 7

Poster "The key to a healthy pregnancy"

Basic rules for a healthy lifestyle during pregnancy:

1. Physical activity
2. Visits to an obstetrician-gynecologist
3. Compliance with the drinking regime and nutrition
4. Observance of the daily routine

Basic nutrition recommendations:

Recommended: dairy products (milk, kefir, cottage cheese, etc.); not fatty meat products (rabbit, beef, chicken, etc.); fish products (cod, trout, salmon, etc.); vegetables and fruits (potatoes, bananas, dried fruit, etc.); rye-wheat bread; eggs; fresh juices.

Healthy lifestyle

Physical activity

Nutrition

What classes are recommended for pregnant women:

1. Hiking
2. Yoga
3. Swimming
4. Pilates
5. Gymnastics including (breathing exercises)

HEALTHY PREGNANCY = HEALTHY CHILD

Not recommended:

Unpasteurized milk, pike, duck, goose, camembert and brie cheese, pickled vegetables and fruits, etc.

Stress

Vitamins

1. Folic acid. It should be taken regardless of the quality of the diet.
2. Vitamin B6. It can help relieve symptoms of toxemia, reduce nervousness and prevent cramping in the calf muscles.
3. Vitamin A. It is necessary for normal fetal growth.
4. Iodine. In the first trimester, thyroid hormones are actively consumed, so at this time it is especially necessary to constantly replenish iodine reserves.
5. Vitamin D. It promotes active fetal growth and helps prevent the development of intrauterine rickets.
6. Vitamin E. It is necessary to ensure elasticity and good extensibility of soft tissues.

Work, sleep and rest regime

Recommendations on the work, rest and sleep regime for pregnant women:

1. Avoid physical overstrain.
2. Give up smoking and drinking alcoholic beverages.
3. Follow the rules of hygiene: take a warm shower every day, brush your teeth, change your underwear.
4. Sleep duration is at least 8-9 hours. The optimal time to sleep is from 10 p.m. to 7 a.m.
5. Rest (sleep) during the day (1-2 hours after lunch). Optimally from 2 p.m. to 4 p.m.
6. Ventilate the room several times a day, especially before going to bed.
7. Take daily walks in the fresh air for 2-3 hours.
8. Systematically exercise for 40 minutes 2-3 times a week.

WAYS TO DEAL WITH STRESS:

1. Get positive emotions and focus on pleasant moments throughout the day. For example, engage in creative activities, walk outdoors more often, admire the beautiful (at the theater, botanical garden, park).
2. Find social support with family, friends, and acquaintances.
3. Activate the parasympathetic nervous system. For example, master breathing practices and relaxation techniques.
4. Learn how to treat any unfavorable external factor correctly. Keep your focus on what's more important right now.
5. Pay attention to proper nutrition: foods rich in vitamin B (cereals, nuts), foods with selenium, calcium, magnesium.