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Ways To Optimizing Perinatal Care In The Fergana Region Of Uzbekistan

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Abstract: Objective: to assess the main indicators of perinatal service development in the Fergana region for 2010-2024 and to identify ways of its improvement. Material and methods: a clinical and statistical analysis of the annual reports of the Fergana regional (2009-2024) and two interdistrict perinatal centers (2022-2024) was conducted. Results. The number of births at the Medical Regional Center increased by 2,082 from 2010 (5,504) to 2024 (7,586), with the proportion of premature births rising to 22.1%. Pathological births accounted for 64.8% in 2024. The cesarean section rate reached 41.8%. The maternal mortality rate decreased from 100.44 to 13.84, a 7.26-fold decrease. Over the past two years, the Medical Regional Center has succeeded in preventing maternal mortality. The perinatal mortality rate at the regional center remains high—43.7%. Conclusions: The high perinatal mortality rate in the regional center indicates a need to improve the quality of neonatal care (organizational aspects, medical equipment, drug provision, and medical staff training). Interdistrict perinatal centers require further development of their material and technical base, organizational, treatment, diagnostic, and preventive work, strengthening of human resources with young specialists, improvement of surgical techniques, and implementation of modern technologies of perinatal care.

Keywords: Regional and inter-district perinatal centers, perinatal care, indicators.

Introduction: Perinatal care as an independent branch of medicine was formed relatively recently. In 1973, at the VII World Congress of FIGO (International Federation of Gynecology and Obstetrics), the definition of the perinatal period was adopted, according to which it begins at 22 completed weeks (154 days) of pregnancy and ends seven full days after birth. This definition was included in the International Classification of Diseases, 10th Revision (ICD-10). In 1976, the European Association of Perinatal Medicine was established.

Worldwide, perinatal medicine has become the foundation for improving the health of future generations. The main feature of perinatal ideology is the equality of priority between the interests of the mother and those of the fetus, implying a balanced and equivalent consideration of maternal and fetal well-being. In this regard, the primary goal of perinatal obstetrics is to preserve maternal health and help ensure the birth of a healthy child. Perinatal protection of the fetus and newborn represents a system of measures for antenatal and intrapartum fetal care and the organization of medical care for newborns, aimed at reducing perinatal morbidity and mortality and improving neonatal health.

In Uzbekistan, the first steps in the development of perinatology were taken approximately 30 years ago with the establishment of the Tashkent City Perinatal Center in 1996. Significant progress in perinatal care in accordance with international standards was achieved following the opening of the Republican Perinatal Center in Tashkent in 2002. A major contribution to the establishment and organization of the perinatal service

in Uzbekistan over a 20-year period was made by Honored Doctor of the Republic, Adelina Semenovna Lyubchich. Further development was associated with the creation of regional perinatal centers in 2010 and, since 2022, interdistrict perinatal centers. Analysis of scientific documentation has shown that the experience and achievements of perinatal care at the Republican Perinatal Center have been reflected in a number of local publications; however, no comprehensive analysis of the activities of regional perinatal centers of the republic has been conducted.

Objective. To evaluate the main indicators of development of the perinatal service in the Fergana region for 2010–2024 and to identify ways for its improvement.

METHODS

A clinical and statistical analysis was carried out based on annual reports of the Fergana Regional Perinatal Center (since 2022 – the Fergana Regional Branch of the Republican Scientific and Practical Medical Center for Maternal and Child Health Protection) over a 15-year period (2009–2024), as well as two interdistrict perinatal centers (2022–2024). The analyzed indicators included the number of deliveries, preterm births, somatic and obstetric pathology in pregnant women, surgical activity (cesarean section rate and indications for abdominal delivery), maternal mortality, and perinatal mortality.

RESULTS AND DISCUSSION

The structure of the Fergana Regional Center (FRC) includes administration, a clinical and biochemical laboratory, a consultative and diagnostic outpatient department, an obstetric unit (172 beds), a gynecology department (40 beds), and a pediatric unit (47 beds).

The dynamics of deliveries in the Fergana Regional Center are presented in Figure 1. The analysis demonstrated a statistically significant increase of 2,082 deliveries over the period from 2010 (5,504 deliveries) to 2024 (7,586 deliveries).

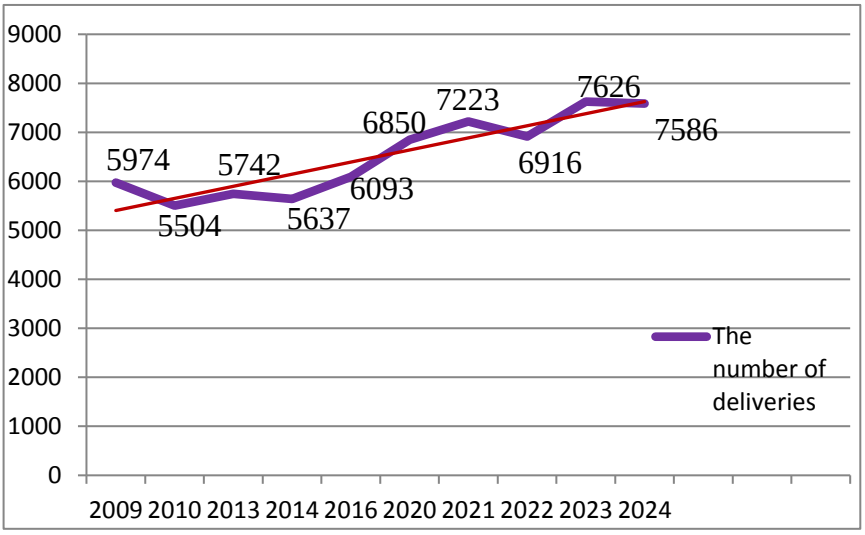

Figure 1. Dynamics of the number of deliveries at the FRC (2009–2024)

A positive trend is also observed in the provision of specialized care for preterm births (Figure 2). According to the data presented in Figure 2, the proportion of preterm births increased by 14.2% from 2009 to 2024.

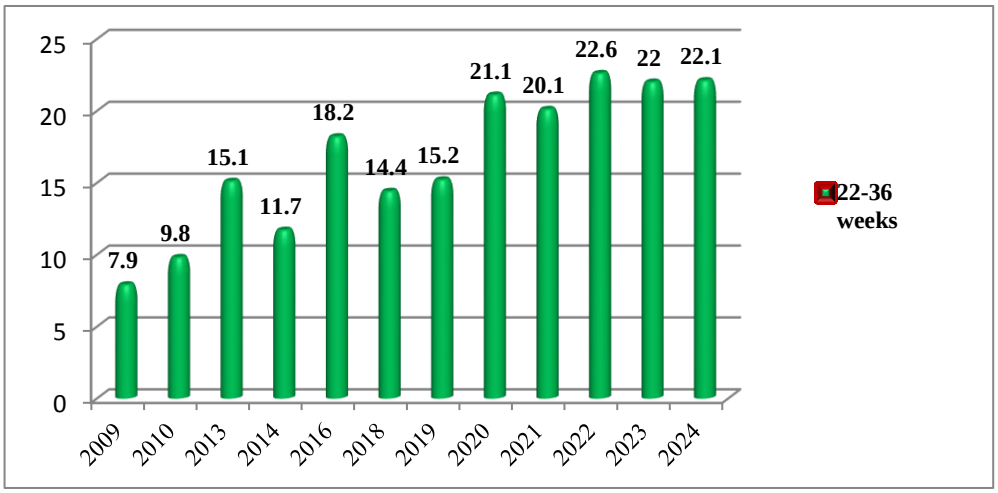

Figure 2. Dynamics of preterm births at the FRC (2009–2024, %)

In 2024, the rate of pathological deliveries reached 64.8%, which was primarily associated with the admission of pregnant women with two or three or more uterine scars after previous cesarean sections, an extremely burdened obstetric and gynecological history, cervical insufficiency, antiphospholipid syndrome, pregnancies achieved through in vitro fertilization, and Rh incompatibility. Over time, there was a 2.14-fold increase in the proportion of pregnant women admitted with severe preeclampsia, rising from 4.1% in 2009 to 8.8% in 2024.

Analysis of the cesarean section rate demonstrated (Figure 3) a steady increase in the frequency of abdominal delivery from 13.2% in 2009 to 41.8% in 2024. This trend is associated with the concentration of pregnant women with a complicated obstetric history, complicated course of gestation (15.4%), and severe somatic pathology (45.4%).

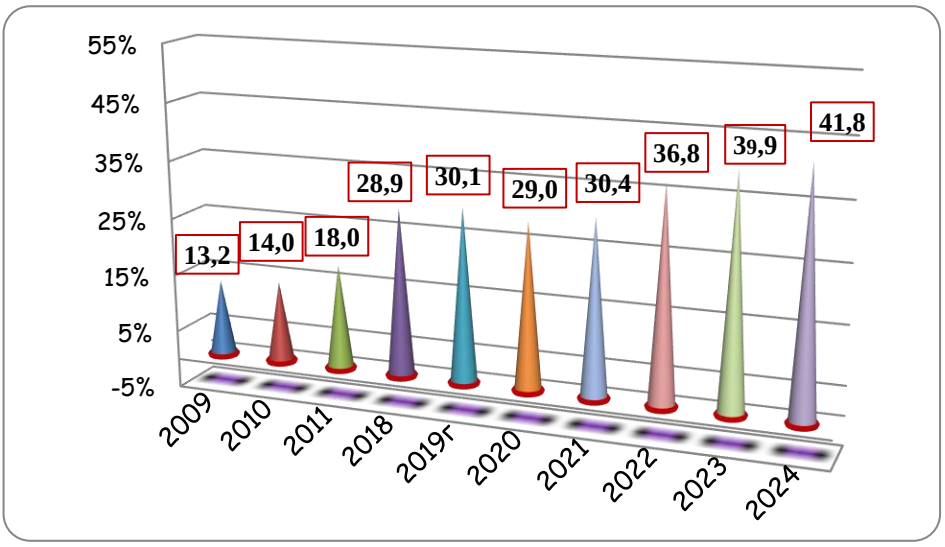

Figure 3. Cesarean section rate over time at the FRC (2009–2024, %)

Over the past 30 years, according to World Health Organization (WHO) data, the global rate of cesarean section has increased worldwide. In the Republic of Uzbekistan, the number of cesarean section procedures has also been rising annually: while 176,152 cesarean sections were performed in 2010–2012, this number increased to 303,629 in 2018–2019, representing a 1.7-fold increase. At the Republican Perinatal Center, the cesarean section rate in 2023 reached 43.7%.

WHO recommendations indicate that cesarean section can be life-saving in complications such as hypertensive disorders, antepartum hemorrhage, fetal distress, and others. Many authors note that the main reasons for the increasing rate of abdominal delivery include primiparous maternal age over 30 years combined with a burdened obstetric and gynecological history; the perinatal aspect (cesarean section performed in the interests of the fetus); and breech presentation. In recent years, the most common indication for cesarean

section has been a uterine scar following a previous abdominal delivery.

Of particular interest are the indications for cesarean section presented in Table 1.

Table 1. Indications for cesarean section at the FRC

Показания	2023 г.		2024 г.	
	n	%	n	%
Cesarean section	2893	38,8	3186	42,0
Planned cesarean section	441	15,2	706	22,2
Emergency cesarean sections	2452	84,8	2480	77,8
Scar on the uterus	1353	46,8	1410	44,3
Breech presentation of the fetus	291	10,1	281	8,8
Preeclampsia/eclampsia	204	7,1	212	6,7
Threatening fetal condition (Fetoplacental insufficiency II "O" blood flow, acute distress)	266	7,8	174	5.5
Antepartum hemorrhage	164	5,6	172	5,4
Multiple pregnancy	111	3,9	171	5,4
Cephalopelvic disproportion	123	4,3	134	4,2

The data in Table 1 demonstrate the predominance of emergency cesarean sections, accounting for 84.8–77.8% of cases. Literature data indicate that the risk of postoperative complications increases significantly when cesarean section is performed as an emergency procedure; this is especially relevant for maternal mortality, which is 3–4 times higher after cesarean section compared with vaginal delivery. Analysis of indications for cesarean section (Table 1) showed that the most frequent indication for abdominal delivery in 2024 was uterine scar insufficiency after a previous cesarean section (44.3%), followed by breech presentation (8.8%) and preeclampsia/eclampsia (6.7%).

Over the past five years (2019–2023), modern innovative methods for the diagnosis and management of pregnant women have been implemented at the Fergana Regional Center (FRC), including:

– confidential enquiry into cases of maternal mortality[2];

– audit of critical incidents [3];

– fetal ultrasound screening with identification of congenital malformations requiring surgical correction at the Republican Perinatal Center;

– introduction of new organ-preserving technologies for placenta accreta spectrum and placenta previa [12];

– cervical cerclage and pessary placement for cervical insufficiency;

– management of pregnancy in women with antiphospholipid syndrome;

– organ-preserving surgical interventions for uterine suture insufficiency after cesarean section and postpartum peritonitis [10]..

As a result of the implementation of innovative technologies, the number of maternal deaths decreased from 6 cases in 2009 to 1 case in 2021. The intensive indicator per 100,000 deliveries decreased from 100.44 to 13.84, i.e., by 7.26 times. Over the past two years, maternal mortality has been successfully prevented at the FRC.

The quality of neonatal care can be assessed using indicators such as neonatal survival, perinatal mortality, and neonatal mortality,which are presented in Figures 4-5.

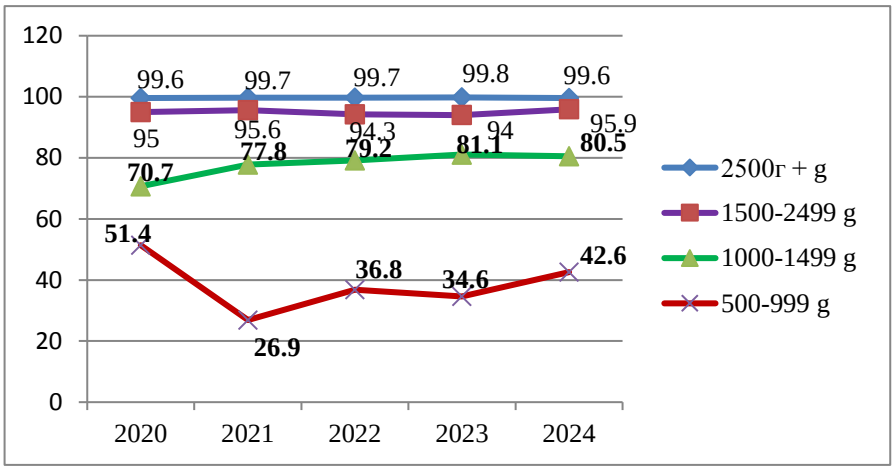

Figure 4. Survival of newborns according to birth weight category at the FRC, % (2020–2024)

Analysis of the obtained data (Figure 4) indicates that in 2024 the survival rate of infants with extremely low birth weight reached 42.6%, which is 16.0% lower than the level reported at the Republican Perinatal Center. The survival rate of infants with low birth weight was 80.5%, which is 5.0% lower than the national indicator, while the survival rate of newborns with normal birth weight was nearly identical in both centers, amounting to 95.9%.

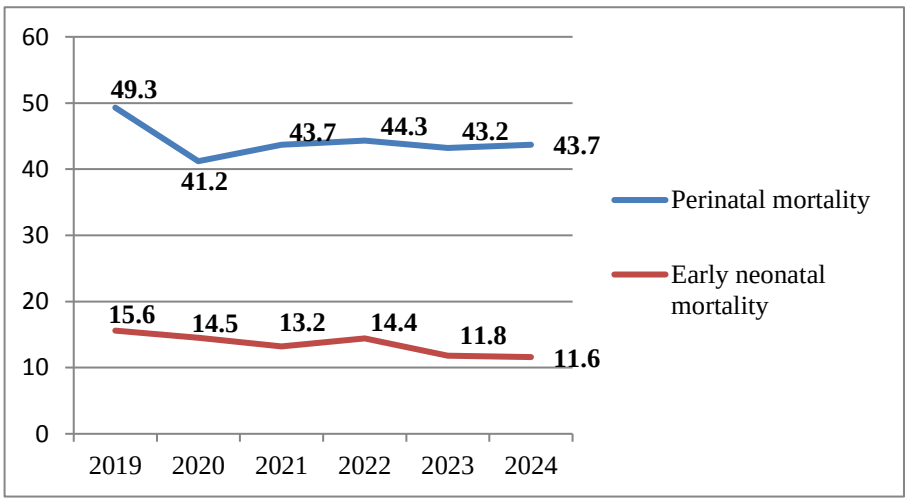

Figure 5. Dynamics of perinatal and early neonatal mortality at the FRC, ‰ (2019–2024)

According to the data presented in Figure 5, over the past five years the level of perinatal mortality at the FRC has remained high, amounting to 49.3‰ in 2019 and 43.7‰ in 2024, although a certain decrease of 5.6‰ was observed over time. This indicator is 27.5‰ higher than the corresponding value at the Republican Perinatal Center, i.e., 2.7 times higher. During the same period, the neonatal mortality rate decreased by only 4.0‰. The main causes of neonatal mortality were respiratory distress syndrome (62.5%), infection (31.2%), and congenital malformations (6.2%). The above data indicate a substantial potential for improving the quality of neonatal care provided at the regional center.

To improve the quality of perinatal care in the region, the following priority areas remain relevant:

Increasing the accessibility and quality of consultative and diagnostic care for women and newborns at the prehospital stage;

- Development and implementation of innovative technologies for the prevention of intraoperative obstetric hemorrhage associated with placental abnormalities;

- Reduction in the rate of abdominal delivery, especially emergency cesarean sections;

- Improvement of the organization of obstetric and neonatal care in interdistrict perinatal centers, taking into account modern clinical protocols, innovative technologies, and the level of medical staff training.

An analysis of the activities of the Kokand and Margilan interdistrict perinatal centers (IPCs) demonstrated a significant workload related to childbirth management, with an average annual number of deliveries of approximately 8,500 and 6,100, respectively. However, it should be noted that the rate of preterm birth during the early stage of IPC establishment remains relatively low (3.0% and 4.8%). Preterm births were predominantly observed at gestational ages of 32–36 weeks (2.43% and 4.0%), which is explained by the referral of pregnant women at 22–31 weeks of gestation to a level III facility — the Fergana Regional Perinatal Center.

Pathological deliveries accounted for 43.3% and 26.5% of the total number of births. Among somatic diseases, kidney disorders (34.3%) and iron-deficiency anemia (33.4%) predominated. Among pregnancy complications, preeclampsia was most frequently observed, occurring in 6.0% and 3.6% of women. These indicators confirm that the centers perform the functions of second-level perinatal facilities, as patients with severe pathology are referred for delivery to the regional perinatal center.

The rate of cesarean section remains at an optimal level (12.4% and 12.8%) and is performed predominantly on an emergency basis, which indicates insufficient quality of antenatal care. The main indication for abdominal delivery is uterine scar insufficiency after a previous cesarean section (47.0% and 54.6%), which corresponds to international and national trends in obstetric practice [15]. Other indications included breech presentation (7.8%), transverse fetal position (7.6%), and premature placental abruption (6.9%).

To ensure high-quality medical care and proper fulfillment of perinatal center functions, the following measures are recommended: organization of a consultative and diagnostic outpatient department within IPCs; introduction of positions for specialized physicians (cardiologist, pulmonologist, ophthalmologist).

CONCLUSIONS

A positive increase in admissions of women with preterm labor and pathological pregnancies to the regional center should be noted. The introduction of new diagnostic, preventive, and therapeutic technologies in the perinatal center contributes to the timely identification of pregnancy-related pathology, improvement of antenatal care for high-risk pregnant women, women in labor, and postpartum women, and reduction of maternal mortality associated with major obstetric complications.

At the same time, the high rate of abdominal delivery, especially emergency cesarean sections, indicates the presence of reserves for their reduction through improved antenatal care and labor management. The high levels of perinatal and neonatal mortality in the regional center also indicate the need to improve the quality of neonatal care, including organizational aspects, medical equipment, drug supply, and training of medical personnel.

The results of the analysis of the formative period of interdistrict perinatal centers confirm the rationality of their organization in conditions of high birth rates in the region, as well as the need for further development of the material and technical base, organizational, diagnostic, therapeutic, and preventive activities, strengthening of human resources through the involvement of young specialists, improvement of surgical techniques, and implementation of modern perinatal care technologies.

ADDITIONAL INFORMATION

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Author contributions. Yu.K. Djabbarova — concept and design research; S.M.Umurzakov— collection and processing of material; S.M. Umurzakov, Yu.K. Djabbarova — analysis of the obtained data, writing text; S.M. Umurzakov— editing.

The article has been read and approved by all authors, all authorship requirements have been met, and all authors are confident that the manuscript really reflects the work done.

Ethics approval. All ethical standards are observed.

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