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ОРИГИНАЛЬНЫЕ СТАТЬИ

IMPORTANCE OF THE QUALITY OF DISPENSARY OBSERVATION DURING PREGNANCY FOR REDUCING INFANT MORTALITY

© Dmitry O. Ivanov[1], Karina E. Moiseeva[1], Vadim K. Yuriev[1], Kazbek S. Mezhidov[1], Ksenia G. Shevtsova[1], Anna V. Alekseeva[1], Alexey V. Yakovlev[1], Shalva D. Kharbedia[1], Mikhail G. Karailanov[1, 2], Olga I. Sergienko[1], Anna A. Zastupova[1]

[1] Saint Petersburg State Pediatric Medical University. Lithuania 2, Saint Petersburg, Russian Federation, 194100
[3] City Polyclinic N 19. Prazhskaya 11, Saint Petersburg, Russian Federation, 192238

Contact information: Karina E. Moiseeva — Doctor of Medical Sciences, Professor of the Department of Public Health and Healthcare. E-mail: karina-moiseeva@yandex.ru   ORCID ID: 0000-0002-3476-5971   SPIN: 9105-6669

ABSTRACT. In the Chechen Republic, which has high infant mortality rates, the average rate of decline in indicators over the past five years is fixed 13.3%. In order to assess the impact of dispensary observation of pregnant women in antenatal clinics on the level of infant mortality in the republic, the analysis of official statistics data and information obtained by copying from Form No. 32 "Information on medical care for pregnant women, women in labor and postpartum" for 2018–2022 was carried out. It was established that during the study period in antenatal clinics of the Chechen Republic an increase in early coverage of pregnant women with dispensary observation by 15.6%, examinations by a therapist before 12 weeks of pregnancy — by 13.2%, ultrasound procedure made — by 26.0% and biochemical screening — by 21.0% was achieved, which made it possible by 2022 to improve the level of these indicators to exceed the Russian average values. In the Chechen Republic, the frequency of detection of pre-existing hypertension complicating pregnancy and childbirth (5.2 times), diseases of the circulatory system (2.2 times), venous complications (1.6 times), diabetes mellitus (28.9 times), urinary tract infections (3.7 times) and placenta previa, including bleeding (1.7 times) is lower than the average in Russia. At the same time, the region has a higher incidence of preeclampsia (moderate and severe) and anemia (2.4 times), eclampsia during pregnancy (1.3 times) and premature placental abruption (1.4 times). In the republic, with an improvement in the detection of hypertension by 2.5 times (from 3.60 to 9.00‰), preeclampsia by 1.8 times (from 55.02 to 101.42‰) and anemia by 1.8 times (from 365.42 to 649.81‰) the frequency of eclampsia decreased by 1.4 times (from 0.24 to 0.17‰) and venous complications by 2.3 times (from 33.30‰ to 14.80‰). In addition, over five years in the region, the incidence of placenta previa has increased 1.8 times (from 2.59 to 4.56‰), cases of diabetes mellitus has increased 3.0 times (from 2.59 to 4.56‰) and 2.5 times — cases of urinary tract infections (from 6.20 to 15.30‰). In the Chechen Republic, where there is a lower proportion of children born with a body weight of up to 2500 grams (1.5 times) and a high proportion of normal births (1.4 times), 1.7 times less likely to detect congenital malformations

in the fetus and 3.9 times less in women with pregnancy abnormalities. Thus, improvement of the quality of clinical observation of pregnant women in antenatal clinics of the Chechen Republic had a significant impact on reducing the infant mortality rate in the region.

РОЛЬ КАЧЕСТВА ДИСПАНСЕРНОГО НАБЛЮДЕНИЯ В ПЕРИОД БЕРЕМЕННОСТИ В СНИЖЕНИИ МЛАДЕНЧЕСКОЙ СМЕРТНОСТИ

© Дмитрий Олегович Иванов[1], Карина Евгеньевна Моисеева[1],
Вадим Кузьмич Юрьев[1], Казбек Султанович Межидов[1], Ксения Георгиевна Шевцова[1],
Анна Владимировна Алексеева[1], Алексей Владимирович Яковлев[1],
Шалва Демнаевич Харбедия[1], Михаил Георгиевич Карайланов[1, 2],
Ольга Игоревна Сергиенко[1], Анна Алексеевна Заступова[1]

[1] Санкт-Петербургский государственный педиатрический медицинский университет.
194100, Российская Федерация, г. Санкт-Петербург, ул. Литовская, д. 2
[2] Городская поликлиника № 19. 192238, Российская Федерация, Санкт-Петербург, ул. Пражская, д. 11

Контактная информация: Карина Евгеньевна Моисеева — д.м.н., профессор кафедры общественного здоровья и здравоохранения. E-mail: karina-moiseeva@yandex.ru   ORCID ID: 0000-0002-3476-5971   SPIN: 9105-6669

РЕЗЮМЕ. В Чеченской Республике, имеющей высокие значения младенческой смертности, темпы снижения показателей в среднем за последние пять лет составили 13,3%. С целью оценки влияния диспансерного наблюдения беременных в женских консультациях на младенческую смертность в республике был проведен анализ данных официальной статистики и сведений, полученных путем выкопировки из Формы № 32 «Сведения о медицинской помощи беременным, роженицам и родильницам» за 2018–2022 гг. Установлено, что за исследуемый период в женских консультациях Чеченской Республики имел место рост раннего охвата беременных диспансерным наблюдением на 15,6%, осмотрами терапевтом до 12 недель беременности — на 13,2%, УЗИ — на 26,0% и биохимическим скринингом — на 21,0%, что позволило к 2022 г. повысить уровень данных показателей до превышающих среднероссийские значения. В Чеченской Республике была ниже, чем в среднем в России, частота выявляемости существовавшей ранее гипертензии, осложняющей беременность и роды (в 5,2 раза), болезней системы кровообращения (в 2,2 раз), венозных осложнений (в 1,6 раза), сахарного диабета (в 28,9 раза), инфекций мочеполовых путей (в 3,7 раза) и предлежания плаценты, в том числе с кровотечением (в 1,7 раза). В то же время в регионе выше частота преэклампсии (средней тяжести и тяжелой) и анемии (в 2,4 раза), эклампсии во время беременности (в 1,3 раза) и преждевременной отслойки плаценты (в 1,4 раза). В республике с ростом выявляемости гипертензии в 2,5 раза (с 3,60 до 9,00‰), преэклампсии в 1,8 раза (с 55,02 до 101,42‰) и анемии в 1,8 раза (с 365,42 до 649,81‰) снизилась частота эклампсии в 1,4 раза (с 0,24 до 0,17‰) и венозных осложнений в 2,3 раза (с 33,30 до 14,80‰). Кроме того, за пять лет в регионе в 1,8 раза выросла частота предлежания плаценты (с 2,59 до 4,56‰), в 3,0 раза — сахарного диабета (с 2,59 до 4,56‰) и в 2,5 раза — инфекций мочеполовых путей

(с 6,20 до 15,30‰). В Чеченской Республике, где наблюдается более низкий в сравнении со страной, удельный вес детей, родившихся с массой тела до 2500 грамм (в 1,5 раза), и высокий удельный вес нормальных родов (в 1,4 раза), в 1,7 раза реже выявляются врожденные пороки развития у плода и в 3,9 раза — женщины с отклонениями беременности.. Таким образом, повышение качества диспансерного наблюдения беременных в женских консультациях Чеченской Республики оказало существенное влияние на снижение уровня младенческой смертности в регионе.

КЛЮЧЕВЫЕ СЛОВА: младенческая смертность; недоношенность; женские консультации; Чеченская Республика; диспансерное наблюдение в период беременности; заболеваемость беременных; удельный вес нормальных родов.

INTRODUCTION

One of the fundamental principles of national health care is high-priority protection of pregnant women and children. In accordance with the Federal Law of 21.11.2011 No. 323-FZ "On the Fundamentals of Health Protection of Citizens in the Russian Federation", children, regardless of their family and social well-being, are subject to special protection, including care for their health and appropriate legal protection in the field of health care. Thus, children have priority rights in medical care provision [18]. Under current legislation, public authorities are obliged to develop and implement programs aimed at prevention, early detection and treatment of diseases in children and their parents in order to preserve the health of the child population and reduce maternal and infant mortality [7]. Infant mortality is an important demographic indicator. Moreover, it most accurately reflects the level of quality and accessibility of medical care for the pediatric population [4, 6]. The mortality rate of children in the first year of life is influenced by many factors. Diseases and pathological conditions associated with preterm delivery and prematurity occupy a special place among them [1].

In 2012, the improvement of perinatal technologies in Russian healthcare led to a change in the regulatory and legal standards regarding the registration of children born at 22 weeks' gestation and weighing 500 grams or more. Starting from 2013, in accordance with international criteria, medical care for this category of newborns must be provided in full. According to the World Health Organization (WHO), about 15 million children are born prematurely every year (more than 10%) [9]. The incidence of prematurity is 5.0–12.5% of all live births in the most developed countries, while the figure can reach 20.0% in the poorest countries of the world. The incidence of prematurity in Russia in the last ten years is 5.0–6.5% [8].

For many years, prematurity was understood as the birth of a child with low birth weight (less than 2500 grams). Currently, anthropometric parameters and the degree of morphofunctional maturity of neonates are not objective criteria for diagnosing prematurity, since they may not correspond to the gestational age due to impaired intrauterine growth (development). In this regard, preterm labor is one of the most urgent problems of modern obstetrics and perinatology. Although the proportion of births with gestational age less than 32 weeks generally does not exceed 1.5–2.0%, they make a very significant contribution to perinatal and infant mortality [17]. A number of studies [2, 5, 17] confirm the direct impact of short gestational period and low parameters of physical development of newborns on the child's ability to survive. At the same time, such medical and social factors as low attendance of pregnant women at antenatal clinics and their under-examination by the time of delivery make an adverse effect.

According to the Passport of the National Project "Health Care" [15], mortality rate of children in the first year of life should not exceed 4.5 cases per 1,000 live births in our country. Over the last five years, the indicator has decreased to 4.44‰ (Fig. 1). However, such an optimistic dynamic of infant mortality is accompanied by a wide variability of indicators in different subjects of the Russian Federation. The Chechen Republic can be singled out among the regions with high mortality rates among infants in the first year of life, where the rate of decline is one of the highest in Russia (13.3% on average over the last five years).

Significant improvement in the child health care system, which is ensured by joint work of neonatologists and pediatricians, has made a considerable contribution to the reduction of infant

Fig. 1. Dynamics of infant mortality in the Russian Federation and the Chechen Republic in 2018–2022 (in ‰)

Рис. 1. Динамика младенческой смертности в Российской Федерации и Чеченской Республике в 2018–2022 гг. (в ‰)

mortality rates. Nevertheless, obstetric factors play a crucial role in the mortality rate, and the level of preterm delivery and prematurity remains quite high in our country. On this basis, assessment of prenatal care follow-ups provided to pregnant women in antenatal clinics on the regional level and its influence on the infant mortality rate is a relevant topic for research.

AIM

To assess the influence of prenatal care follow-ups of pregnant women in antenatal clinics on the regional infant mortality rate.

MATERIALS AND METHODS

Following data were used as basic materials for the research: Rosstat data [3], statistical materials of the Federal State Budgetary Institution "Russian Research Institute of Health" under the Ministry of Health [10–14] and Form No. 32 "Information on medical care for pregnant women, women in labor and postpartum" (annual, form code according to National Index of Administrative Documentation (NIAD) 0609364) for the Russian Federation and the Chechen Republic for 2018–2022.

Extensive and intensive indicators were calculated and analyzed over five years. Indicator values of 2018 were taken as the baseline. The infant mortality rate was defined as an effective feature. The indicators characterizing the performance of antenatal clinics and morbidity of women complicating the course of childbirth

as well as the postpartum period were taken as factorial attributes. The following indicators of the performance of antenatal clinics were examined and analyzed: early coverage of pregnant women with prenatal care follow-ups; the proportion of pregnant women examined by a general practitioner, including up to 12 weeks; and the coverage of pregnant women with screening diagnostic tests (ultrasound and biochemical screening tests). The nonparametric Spearman rank correlation method was used to assess the relationship between the indicators. The statistical significance was assessed using Student's t-criterion. Differences were considered significant at p <0.05. Statistical processing was performed by means of MS Office 2016 and Stat-Soft STATISTICA 10.0 software packages.

RESULTS AND DISCUSSION

The rate of early coverage of pregnant women with prenatal care follow-ups characterizes the medical activity of women during pregnancy. It is one of the leading indicators of preventive work of the outpatient obstetric service as well. Optimally, the indicator must be close to 100%. An assessment of the early coverage of pregnant women in antenatal clinics in the Chechen Republic revealed that the coverage in the Chechen Republic was significantly lower than the average in the Russian Federation until 2022 (p <0.001) (Fig. 2). In 2022, the proportion of pregnant women registered at antenatal clinics before 12 weeks exceeded the Russian average by 5.9% (p <0.001). It was established that there was a positive trend in early coverage of pregnant women with prenatal care follow-ups in both the Russian Federation and the Chechen Republic in 2018–2022 (+2.3 and +15.6%, respectively; p <0.001).

According to the Order of the Ministry of Health of Russia (MH) from 20.10.2020 No. 1130n "On Approval of the Procedure for the provision of medical care in the specialty «obstetrics and gynecology", examinations of pregnant women are carried out by a general practitioner at least twice during physiological pregnancy (hereinafter Order [16]). The first examination is carried out no later than 7–10 days from the initial visit to an antenatal clinic. 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 characterize the level of prenatal care follow-ups among

Table 1

Indicators of the proportion of pregnant women examined by a therapist in the Russian Federation
and the Chechen Republic in 2018–2022 (per 100 women who completed pregnancy)

Таблица 1

Показатели удельного веса беременных, осмотренных терапевтом, в Российской Федерации
и Чеченской Республике в 2018–2022 гг. (на 100 женщин, закончивших беременность)

Показатель / Index	Терри-тория / Territory	Годы / Years					Динамика (% и p) / Dynamics (% and p)
		2018	2019	2020	2021	2022	
Осмотрены терапевтами, всего / Examined by therapists, total	РФ/ RF	97,82	98,03	96,71	96,73	97,84	+0,02; <0,001
	ЧР / CR	96,50	97,40	96,82	97,81	99,33	+2,8; <0,001
Осмотрены терапевтами до 12 недель беременности / Examined by therapists up to 12 weeks of pregnancy	РФ / RF	87,29	88,01	85,51	88,23	89,41	−2,4; <0,001
	ЧР / CR	84,42	83,49	81,69	87,85	97,31	−13,2; <0,001

Fig. 2. Dynamics of early coverage of pregnant women with dispensary observation in antenatal clinics of the Russian Federation and the Chechen Republic in 2018–2022 (in %)

Рис. 2. Динамика раннего охвата беременных диспансерным наблюдением в женских консультациях Российской Федерации и Чеченской Республики в 2018–2022 гг. (в %)

pregnant women. The research revealed that the proportion of pregnant women examined by a general practitioner before 12 weeks of pregnancy, along with the early coverage of pregnant women with dispensary care, had been lower in the Chechen Republic until 2022 (p <0.05). Starting from 2022, the indicator exceeded the national average by 7.9% (p <0.05) (Table 1). In 2018, the increase of the indicator amounted to 2.4% in Russia and 13.2% in the Chechen Republic.

There was performed an assessment of specific gravity of pregnant women examined by a general practitioner (in total). It demonstrated that the region's indicator began to exceed the

Russian average in 2020, and in 2022 the difference between them amounted to 1.5% (p <0.001). Whereas the indicator remained the same in Russia, it increased by 2.8% in the Chechen Republic compared to the baseline level.

Perinatal care follow-ups include not only check-ups by medical specialists, but also a number of special examinations, among which special attention is paid to screening methods: ultrasound and biochemical screening of serum marker levels. According to the current Order, ultrasound is performed twice: at 11–14 weeks and 19–21 weeks of gestation [16]. The study showed that the coverage of pregnant women with ultrasound in antenatal clinics in the Chechen Republic until 2021 was 73.61–86.94%, which was significantly lower (p <0.05) than in Russia in similar years (90.52–97.72%). Starting from 2021, the number of women covered by screening ultrasound in the Republic increased and in 2022 amounted to 99.52%, which was 6.0% higher than the Russian average (p <0.05). The detection rate of congenital malformations (CM) increases each year in Russia. In 2022 it reached 4.91%. However, taking into account multidirectional dynamics, the Chechen Republic showed a 1.7-fold lower rate by 2022, which amounted to 2.86% (p <0.05 (Table 2).

Assessment of biochemical screening coverage showed that the indicators in the Chechen Republic exceeded the national ones starting from 2020. Average screening test coverage of pregnant women in 2020–2022 amounted to 96.72%, which is 5.81% higher than in the

Table 2

Indicators of coverage of pregnant women with diagnostic tests in the Russian Federation
and the Chechen Republic in 2018–2022 (per 100 women who completed pregnancy)

Таблица 2

Показатели охвата беременных диагностическими исследованиями в Российской Федерации
и Чеченской Республике в 2018–2022 гг. (на 100 женщин, закончивших беременность)

Показатель / Index	Терри-тория / Territory	Годы / Years					Динамика (% и p) / Dynamics (% and p)
		2018	2019	2020	2021	2022	
Охват УЗИ плода, всего / Fetal ultrasound coverage, total	РФ / RF	96,80	97,72	90,52	91,44	93,50	–3,4; <0,001
	ЧР / CR	73,61	86,11	86,94	94,42	99,52	+26,0; <0,001
из них выявлено плодов с врожден-ными пороками развития, всего / of these, the of fetuses with congenital malformation identified, total	РФ/ RF	1,50	1,59	3,24	4,22	4,91	+69,5; <0,001
	ЧР / CR	0,87	0,72	4,79	0,44	2,86	+69,6; <0,05
Охват пробами на биохимический скрининг, всего / Sample coverage for biochemical screening, total	РФ/ RF	87,80	88,82	89,83	90,84	92,02	+4,6; <0,001
	ЧР/ CR	75,81	78,12	99,8	95,1	96,0	+21,0; <0,001
из них выявлено женщин с откло-нениями / of these, women with disabilities identified	РФ / RF	3,21	3,28	0,90	0,86	0,89	–72,3; <0,001
	ЧР/ CR	0,66	0,81	0,49	0,09	0,30	–54,5; >0,1

country as a whole (90.91%) (p <0.05). Indicator dynamics was analyzed, it revealed that the indicators have increased both in the Russian Federation and in the examined region by 4.6 and 21.0%, respectively, compared to the baseline level. Despite the higher coverage of this type of research, the detection rate of women with abnormalities, both in the country as a whole and in the republic, has decreased almost annually. Moreover, the detection rate in the Republic, compared to the Russian Federation, was on average 3.9 times lower within the five years studied (0.47 per cent versus 1.83 per cent; p <0.05).

Pregnancy morbidity rates are qualitative indicators of antenatal clinics' performance. On the one hand, low rates of morbidity in pregnant women indicate their good health, on the other hand, they may indicate low detection rates of morbidity [19]. Pregnancy morbidity associated with disorders of the circulatory system is a risk factor, and its delayed detection can lead to a negative outcome in labor. The indicators assessed allowed us to establish (Table 3) that the detection rate of pre-existing hypertension complicating pregnancy, labor and postpartum period in the Chechen Republic was on average 5.2 times lower in 2018–2022 than in Russia (p <0.01), circulatory system di-

seases — 2.2 times lower (p <0.01) and venous complications — 1.6 times lower (p <0.05). Simultaneously, the incidence of pre-eclampsia (moderate to severe) (p <0.01) and anaemia was 2.4 times higher (p <0.01), and eclampsia during pregnancy was 1.3 times higher (p >0.1). At the same time, as the detection of hypertension increased 2.5-fold (from 3.60 to 9.00‰), pre-eclampsia 1.8-fold (from 55.02 to 101.42‰) and anaemia 1.8-fold (from 365.42 to 649.81‰), the incidence of eclampsia decreased 1.4-fold (from 0.24 to 0.17‰) and venous complications 2.3-fold (from 33.30 to 14.80‰).

The following nosological forms of morbidity among pregnant women, including placenta previa and premature detachment, diabetes mellitus and genitourinary tract infections, also significantly differed from the national average. On average over five years, diabetes mellitus was 28.9 times less frequent (p <0.001), genitourinary tract infections 3.7 times less frequent (p <0.001) and placenta previa, including haemorrhage, was 1.7 times less frequent (p >0.1) among pregnant women in the Chechen Republic (Table 4). Such complication as premature placental abruption was 1.4 times more frequent (p >0.1). Analyzing the morbidity dynamics of pregnant women with certain nosological forms in the Chechen

Morbidity in pregnant women associated with disorders of the cardiovascular system complicating
the course of childbirth in the Russian Federation and the Chechen Republic in 2018–2022 (per 1000 births)

Заболеваемость беременных, связанная с нарушением кровеносной системы и осложнившая течение родов,
в Российской Федерации и Чеченской Республике в 2018–2022 гг. (на 1000 родов)

Класс болезней / Class of diseases	Терри-тория / Territory	Годы / Years					Динамика (% и p) / Dynamics (% and p)
		2018	2019	2020	2021	2022	
Существовавшая ранее гипертензия, осложняющая беременность, роды и послеродовый период / Pre-existing hypertension complicating pregnancy, childbirth and the puerperium	РФ / RF	46,90	47,88	46,42	46,33	48,01	+2,3; >0,1
	ЧР / CR	3,60	10,38	14,12	7,92	9,00	+60,0; >0,1
Преэклампсия средней тяжести и тяжелая / Moderate to severe preeclampsia	РФ / RF	35,80	39,91	37,72	38,74	37,00	+3,2; >0,1
	ЧР / CR	55,02	150,42	84,34	64,21	101,42	+45,8; <0,01
Эклампсия во время беременности / Eclampsia during pregnancy	РФ / RF	0,12	0,13	0,13	0,13	0,16	+25,0; >0,1
	ЧР / CR	0,24	0,14	0,31	0,17	0,17	−29,2; >0,1
Венозные осложнения / Venous complications	РФ / RF	22,60	23,6	24,3	26,3	25,21	+10,3; <0,05
	ЧР / CR	33,30	13,02	7,79	7,13	14,80	−55,6; <0,05
Анемия / Anemia	РФ / RF	255,72	263,27	261,72	258,14	248,91	−2,7; <0,01
	ЧР / CR	365,42	709,46	712,68	673,82	649,81	+43,8; <0,001
Болезни системы кровообращения / Diseases of the circulatory system	РФ / RF	53,01	52,73	48,10	47,37	46,39	−12,5; <0,01
	ЧР / CR	15,11	59,02	19,53	8,44	12,20	−19,2; >0,1

The incidence of certain nosological forms in pregnant women, which complicated the course of childbirth,
in the Russian Federation and the Chechen Republic in 2018–2022 (per 1000 births)

Заболеваемость беременных отдельными нозологическими формами, осложнившая течение родов,
в Российской Федерации и Чеченской Республике в 2018–2022 гг. (на 1000 родов)

Класс болезней / Class of diseases	Терри-тория / Territory	Годы / Years					Динамика (% и p) / Dynamics (% and p)
		2018	2019	2020	2021	2022	
Предлежание плаценты, в том числе с кровотечением / Placenta previa, including bleeding	РФ / RF	5,64	6,16	5,99	6,13	6,77	+16,7; >0,05
	ЧР/ CR	2,59	3,27	2,88	4,3	4,56	+43,2; >0,1
Преждевременная отслойка плаценты / Premature placental abruption	РФ / RF	9,40	9,30	9,14	9,12	9,20	−2,1; >0,1
	ЧР / CR	12,40	11,81	13,79	12,52	12,20	−1,6; >0,1
Сахарный диабет / Diabetes	РФ / RF	60,64	76,23	86,18	101,8	113,91	+46,8; <0,01
	ЧР / CR	1,52	3,20	3,23	2,66	4,56	+66,7; >0,1
Инфекции мочеполовых путей / Urinary tract infections	РФ / RF	49,30	49,27	47,31	48,69	50,20	+1,8; >0,05
	ЧР/ CR	6,20	17,12	17,32	10,51	15,30	+59,5; >0,05

Republic it was revealed that the incidence of placenta previa increased 1.8 times (from 2.59 to 4.56‰), diabetes mellitus — 3. times (from 0.50 to 1.53‰) and genitourinary tract infections — 2.5 times (from 6.20 to 15.30‰), with a slight (−1.6%) decrease in premature placental abruption (from 12.40 to 12.20‰).

The proportion of normal births in the Chechen Republic, with the exception of 2019, was significantly higher (Fig. 3) than the Russian average (p <0.01). The exceedance amounted to 1.4 times on average over the five analyzed years. Analyzing the dynamics it was revealed that the proportion of normal births in the country as a whole decreased by 2.9% (from 37.28 to 36.19%; p <0.05), and in the Republic — by 1.2% (from 56.57 to 55.90%; p >0.1).

In 2018–2022, the specific gravity of neonates with a birth weight less than 2,500 grams in the Chechen Republic (Fig. 4) was, on average, 1.5 times lower than in the Russian Federation (p <0.01). Similarly to the dynamics of specific gravity of normal births, the proportion of children born with low birth weight decreased compared to the baseline level. However, the decrease amounted to 7.7% in the whole country (from 6.20 to 5.72%; p <0.01), and only 1.0% — in the Chechen Republic (from 3.83 to 3.89%; p >0.1).

The research revealed (Table 4) that there is a moderate inverse correlation between the infant mortality rate and the rate of prenatal care follow-ups in the Chechen Republic (r_{xy} −0.36 to −0.51 inclusive). Thus, increasing early coverage of prenatal care follow-ups, medical check-ups

by a general practitioner, including visits before 12 weeks of pregnancy, and screening examinations is a factor that has a positive impact on reducing infant mortality in the Republic.

A moderate to strong inverse correlation (r_{xy} from −0.58 to −0.89 inclusive) was found (Table 5, 6) between infant mortality rates and the predominant majority of indicators of detectable diseases in pregnant women complicating the course of labor. Thus, increased detection of hypertension, preeclampsia, anemia, circulatory diseases, diabetes mellitus, and genitourinary tract infections results in reduced infant mortality.

CONCLUSION

1. A significant increase in the early coverage prenatal care follow-ups (+15.6%), check-ups by a general practitioner before 12 weeks of pregnancy (+13.2%), ultrasound (+26.0%) and biochemical screening (+21.0%) in the Chechen Republic's antenatal clinics has made it possible to raise these indicators above the national average by 2022.

2. The incidence of hypertension complicating pregnancy and childbirth (5.2-fold), circulatory diseases (2.2-fold), venous complications (1.6-fold), diabetes mellitus (28.9-fold), genitourinary tract infections (3.7-fold) and placenta previa, including hemorrhage (1.7-fold), was lower in the Chechen Republic compared to the Russian Federation. At the same time, there was a higher incidence of pre-eclampsia (moderate and severe) and anemia (2.4

Fig. 3. Dynamics of the share of normal births in the Russian Federation and the Chechen Republic in 2018–2022 (per 1000 births)

Рис. 3. Динамика удельного веса нормальных родов в Российской Федерации и Чеченской Республике в 2018–2022 гг. (на 1000 родов)

Fig. 4. Proportion of children born weighing less than 2500 grams in the Russian Federation and the Chechen Republic in 2018–2022 (in %)

Рис. 4. Удельный вес детей, родившихся с массой тела менее 2500 грамм, в Российской Федерации и Чеченской Республике в 2018–2022 гг. (в %)

Table 5

Assessment of the correlation between infant mortality rates and indicators of dispensary monitoring
of pregnant women in the Chechen Republic in 2018–2022

Таблица 5

Оценка корреляционной связи между показателями младенческой смертности и показателями
диспансерного наблюдения за беременными в Чеченской Республике в 2018–2022 гг.

Показатель / Index	Чеченская Республика / Chechen Republic	
	Коэффициент корреляции / Correlation coefficient (r_{xy})	Направление и сила корреляционной связи / Direction and strength of correlation
Ранний охват беременных диспансерным наблюдением / Early coverage of pregnant women with dispensary observation	−0,45	Обратная, умеренная / Reverse, moderate
Удельный вес беременных, осмотренных терапевтом до 12 недель / Proportion of pregnant women examined by a therapist before 12 weeks	−0,37	Обратная, умеренная / Reverse, moderate
Удельный вес беременных, осмотренных терапевтом / Proportion of pregnant women examined by a therapist	−0,49	Обратная, умеренная / Reverse, moderate
Охват ультразвуковыми исследованиями / Ultrasound coverage	−0,50	Обратная, умеренная / Reverse, moderate
Частота выявляемости плодов с врожденными пороками развития / Frequency of detection of fetuses with congenital malformation	−0,39	Обратная, умеренная / Reverse, moderate
Охват пробами на биохимический скрининг / Sample coverage for biochemical screening	−0,51	Обратная, умеренная / Reverse, moderate
Частота выявляемости женщин с отклонениями / Frequency of detection of women with abnormalities	−0,36	Обратная, умеренная / Reverse, moderate

times), eclampsia during pregnancy (1.3 times) and premature placental abruption (1.4 times).

3. More frequent detection of hypertension (2.5-fold), pre-eclampsia (1.8-fold) and anemia (1.8-fold) in the Republic lead to reduction of eclampsia (1.4-fold) and venous complications (2.3-fold). In addition, over five years, the Region demonstrated a 1.8-fold increase in the detection rate of placenta previa, a 3.0-fold increase in the detection rate of diabetes mellitus, and a 2.5-fold increase in the detection rate of genitourinary infections.

4. The lower incidence of fetal congenital malformations (1.7 times) and women with pregnancy abnormalities (3.9 times) observed in the Chechen Republic is a precondition for a consistently lower proportion of children born with a birth weight under 2,500 grams (1.5 times) and a high proportion of normal births (1.4 times) compared to the country.

5. The Chechen Republic, which has a high infant mortality rate, has shown an average decrease of 13.3% over the last five years. The research demonstrated that the increased coverage of specialized medical follow-ups and screening examinations lead to higher detection of diseases in pregnant women, enabling their timely correction.

Thus, improving the quality of prenatal follow-ups had a significant impact on reducing the infant mortality rate in the Region.

ADDITIONAL INFORMATION

Table 6

Assessment of the correlation between infant mortality rates and morbidity rates among pregnant women
in the Chechen Republic in 2018–2022

Таблица 6

Оценка корреляционной связи между показателями младенческой смертности
и показателями заболеваемости беременных в Чеченской Республике в 2018–2022 гг.

Показатель / Index	Чеченская Республика / Chechen Republic	
	Коэффициент корреляции (r_{xy}) / Correlation coefficient (r_{xy})	Направление и сила корреляционной связи / Direction and strength of correlation
Существовавшая ранее гипертензия / Pre-existing hypertension	−0,68	Обратная, умеренная / Reverse, moderate
Преэклампсия средней тяжести и тяжелая / Moderate to severe preeclampsia	−0,89	Обратная, сильная / Straight, moderate
Эклампсия во время беременности / Eclampsia during pregnancy	−0,12	Обратная, слабая / Reverse, weak
Венозные осложнения / Venous complications	0,48	Прямая, умеренная / Straight, moderate
Анемия / Anemia	−0,71	Обратная, сильная / Reverse, strong
Болезни системы кровообращения / Diseases of the circulatory system	−0,59	Обратная, умеренная / Reverse, moderate
Предлежание плаценты, в том числе с кровотечением / Placenta previa, including bleeding	−0,26	Обратная, слабая / Reverse, weak
Преждевременная отслойка плаценты / Premature placental abruption	0,16	Прямая, слабая / Straight, weak
Сахарный диабет / Diabetes	−0,83	Обратная, сильная / Reverse, strong
Инфекции мочеполовых путей / Urinary tract infections	−0,58	Обратная, умеренная / Reverse, moderate

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