

FREQUENCY OF DETERMINATION OF MAIN CLINICAL SYMPTOMS OF IRON DEFICIENCY IN PREGNANT AND WAYS OF PREVENTION

Mamasoliev N. S.
Asrankulova D. B.
Mamadaliyeva M.M.
Mamasoliev Z. N.
Usmanov B. U.

Andijan State Medical Institute and the Andijan
Branch of the Republican Scientific Center for Emergency Medical Care

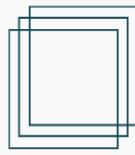
Abstract

The scientific significance of the research results is that the true prevalence of iron deficiency in the modern pregnant population has been determined, the prevalence of latent, latent, and manifest iron deficiency has been determined for the first time in pregnant women, the characteristics of the spread of risk factors for iron deficiency anemia have been determined, the regional clinical aspects of the prevention of iron deficiency anemia have been proven in prospective seroepidemiological monitoring, the disease in pregnant women It was explained that the contribution of risk factors to the formation and progression of iron deficiency, the regional algorithm of screening, prevention, and control of iron deficiency cases in pregnancy allowed for the coordination of early detection of the clinical condition.

Keywords. pregnant iron deficiency anemia, iron deficiency status, world health organization, iron deficiency, risk factor, women of childbearing age.

Introduction

Relevance and necessity of the dissertation topic. All over the world, including in Uzbekistan, the features of iron deficiency in pregnant women and the mechanism of development are not fully studied. Naturally, various forms of iron deficiency anemia (prevalent - PTTK, latent - LTTK, and manifest iron deficiency - MTT) cause functional and organic changes in the mother's organism. These processes hurt the pregnant and fetal complex, the growth and development of the fetus, pregnancy and childbirth, and the postpartum period, as well as the future development of children, not only during the first two years but also in the longer periods of their lives ¹. There is data from investigations about the increased frequency of pregnancy complications and pathologies of the reproductive system in women with latent iron deficiency. In 87% of women, the development of iron deficiency anemia can be prevented only by early ferroprophylaxis ².



In the countries of the world, anemia, especially iron deficiency in pregnancy, and the features of anemia are being studied, according to which the high prevalence of the disease is noted. It was found that in almost all countries, the frequency of detection of iron deficiency anemia increases by 3 - 3.5 times with the increase in the duration of pregnancy. At the end of pregnancy, iron deficiency develops in all pregnant women without exception. According to other sources, up to 90% of iron-deficiency anemia in pregnancy can be diagnosed if serum iron levels are determined. Contrary to this, there are data from the literature, according to which iron deficiency anemia is not the most common anemia in pregnant women, and accordingly, the need to study its clinical and epidemiological characteristics remains relevant.

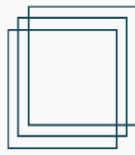
The level of study of the problem. Studies on the topic of the dissertation have been conducted and are continuing in the countries of the world, which means and confirms that the issue of iron deficiency is a modern problem (Belokrinitskaya T.E., 2021; Jablonka A., Wetzke M., Sogkas G., et al. 2018).

According to the results shown by researchers in Russian conditions, TTK ranks first among all anemias (75%). The prevalence of anemia in pregnant women was 33.6%. In different regions of the country, it was noted with different differences: TTC in pregnant women was confirmed with a frequency of 37.3% in the Siberian region, 38.2% and 44.2% and 44.2% respectively in the Privolje and North Caucasus districts (Tarasova I.S., 2011).

The need for timely detection and prevention of TTH before nosology is further explained by the fact that latent iron deficiency is detected in 70-100% of patients with TTH. Clarification of these clinical data in the pregnant population by organizing special epidemiological investigations is of great scientific and practical importance for the development of an effective and necessary preventive measures plan. Therefore, there is a need to optimize the diagnosis and prevention of TTC in pregnant women. At the same time, existing modern clinical studies testify that it is ineffective to direct the medical power from the hospital to the ambulatory-family polyclinic link about TTK in pregnant women. Therefore, the expected success in the prevention of TTH and its complications in pregnant women cannot be achieved. The frequency of detection of TTH and complications in pregnant women continues to "grow" and there is no decreasing trend (Ali AA, Rayis DA, Abdallah TM, Elbashir MI, Adam I., 2011). In addition, severe early toxicosis with increasing frequency (up to 17.8%), threat of miscarriage in the I-trimester of pregnancy (up to 35.7%), thickening of the chorion (6.4%), chin-cervical insufficiency (12, 1%), "obstetric endpoints" such as threats of

² Yokoi K., Konomilron A. Iron deficiency with anemia is a potential cause of fatigue: meta-analyses of randomized controlled trials and cross-sectional studies // Br. J. Nutr. - 2017. - Vol. 117. - no. 10. - R. 1422-1429.

¹ Baranov I.I. Anemia of pregnancy, obstetric pathology, and perinatal conditions. //Effective pharmacotherapy. - 2021. - Volume 17. - No. 43. - S. 47-50.



preterm labor (from 21.6% to 22.3%), low strength (up to 6.9%) and fetal growth restriction syndrome (up to 75.3%) are most likely to develop.

It can be concluded from the total international studies that the guarantee of the successful course and outcome of pregnancy based on TTH is the "hematological-hemoglobin" health of women.

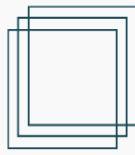
Ferrofactor is a modifiable risk factor in pregnant women, and it is possible to reduce its negative impact on the gestation process by early identification and coordination of screening, and epidemiological measures (by carrying out regular and preventive activities). The first and most reliable obstacle to eliminating "TTC aggression" in pregnant women is the epidemiological diagnosis and prevention of these cases in the stage of formation without clinical symptoms. However clinical and epidemiological approaches aimed at reducing TTH and its complications in the early stages are insufficient in science and practice.

The following have been proven in clinical-experimental studies as risk factors predisposing to the occurrence of TTH in pregnant women: depletion of micronutrient reserves in women before pregnancy, intensification of erythropoiesis and increase in erythrocyte mass, formation of a negative balance in the mother due to the consumption of maternal iron by the fetus. At the same time, a large number of non-epidemiological studies have shown that the frequency of development of TTH in the pregnant population depends on many geographical, environmental, alimentary, regional, and somatic factors (World Health Organization, 2004).

The leading somatic factors are comorbid diseases, insufficient iron support during pregnancy, lack of information about TTS among women, large blood loss (from the stomach-intestinal, uterine, kidney, donor), impaired absorption of dietary iron in intestinal diseases (enteritis, resection of the small intestine and stomach, bariatric surgery), increased need for iron (repeated pregnancies, lactation), insufficient or reduced iron (anorexia, vegetarianism), etc. (Trukhan D.I., Tarasova L.V., 2016; Jain KK, 2019).

In some studies, it is noted that even in women of reproductive age without a clinical picture of anemia, persistent iron deficiency is detected (Kassebaum NJ, Bertoz - Villa A., Coggeshall NS, Shackelford KA 2014; World Health Organization, 2020). But this condition is diagnosed in clinical examinations only at the TTK stage, that is, late.

All studies have come to the following single conclusion: standardized and unified epidemiological screening and three-step early prevention of iron deficiency are of priority for the timely detection of TTH, TTC, and TT in the current situation. Because this practice does not have a leading place, the problem of TTK in pregnant women remains until now. Studying the scientific basis of these cases, and recommending them for practice based on this is a very important and urgent issue that has not been fully resolved in modern science.



The purpose of the study is to study the clinical and screening aspects of the epidemiology of iron deficiency in pregnant women in the conditions of the Fergana Valley.

Tasks of the research:

h- factor population (in the case of the Andijan region of the Fergana Valley);
to study the comparative description of the prevalence of prelate, latent, and manifest iron deficiency in pregnant women;
study and evaluation of the prevalence of risk factors in the population of pregnant women with iron deficiency anemia;
determination and assessment of clinical aspects of prevention of iron deficiency anemia in pregnant women in Andijan conditions;
Study and assessment of the degree of correlation of risk factors with iron deficiency anemia in the pregnant population in the Andijan region of the Fergana Valley;
development of a regional algorithm for screening, prevention, and control of iron deficiency cases in pregnancy.

The object of the study. 1500 pregnant women aged 15-45 who were treated for iron deficiency in the obstetrics department of pregnancy pathology of Andijan region perinatal center were taken as the object of the research.

Medical history, blood, and blood serum of patients were used as **subjects of research.**

Research methods. Epidemiological, clinical, questionnaire, biochemical, instrumental, special hematological, obstetric-gynecological, and statistical methods were used in the dissertation based on a cross-sectional prospective study.

The scientific novelty of the research is as follows:

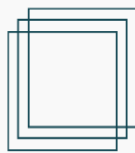
z In the population of pregnant women, a long-term epidemiological complex study was conducted, and the prevalence of iron deficiency cases was determined;

The distribution of prelate, latent, and manifest iron deficiency in pregnant women was determined for the first time in the Andijan region of the Fergana Valley;

distribution characteristics of the risk factors of iron deficiency anemia in the pregnant population were studied, determined, and proved for the first time in the Andijan region;

prospective retro-epidemiological monitoring was carried out for the first time and regional clinical aspects of prevention of iron deficiency anemia in pregnant women were determined and proven in the Andijan region;

based on long-term epidmonitoring, the contribution of risk factors to the formation and course of the disease in pregnant women with iron deficiency anemia was determined and was distinguished for the first time for the Andijan region;



a regional algorithm for screening, prevention, and control of iron deficiency cases during pregnancy was developed.

The practical results of the research are as follows:

Epidemiological conditions and situations representing iron deficiency in pregnant women in the Andijan region have been confirmed and proven, they serve to create and implement preventive programs;

It has been confirmed and proven that the created prevention program leads to a decrease in the continuum of anemia (death, polyorgan somatic pathologies, the frequency of urgent hospitalizations, disability, obstetric and neonatal complications during pregnancy);

it is confirmed that the results of the study will serve as a source for future prospective epidemiological studies;

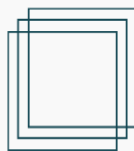
The medico-economical and preventive effectiveness of the "Algorithm for screening, prevention, and control of iron deficiency in pregnancy" created based on the research results has been proven in practical medicine.

Reliability of research results. The approach and complex methods in the dissertation research, the compatibility of the theoretical data with the obtained epidemiological results, the methodological correctness of the conducted screening tests, the adequacy of the population of pregnant patients, the processing using statistical methods, as well as the comparison of the research results with international and local data, the conclusion and the obtained it is explained by the confirmation of the results by the competent structures.

Scientific and practical significance of research results.

The scientific significance of the research results is that the true prevalence of iron deficiency in the population of pregnant women was determined, the prevalence of latent, latent, and manifest iron deficiency was determined for the first time in pregnant women, the distribution characteristics of the risk factors of iron deficiency anemia were determined, the regional clinical aspects of the prevention of iron deficiency anemia were proven in prospective seroepidemiological monitoring, in pregnant women it is explained that the contribution of risk factors to the formation and progression of the disease is distinguished, that the regional algorithm of screening, prevention, and control of iron deficiency cases during pregnancy allows for the coordination of early detection of the do nosological condition;

The practical importance of the research results, the fact that the created prevention program has been proven to reduce the continuum of anemia, the medical-economical and preventive effect of the created algorithm has been confirmed in practical medicine, the implementation of the recommendations formed based on the obtained data, the number of comorbid diseases observed in the case of iron deficiency, pregnancy complications, and the number of fetal diseases it is explained by the fact that it leads to a decrease and improvement of the quality of life.



The frequency of detection of the main clinical symptoms and syndromes of iron deficiency anemia in pregnant women was studied and the aspects of primary/secondary prevention were determined. Obtained data (1 – presented in the table).

HTTK was characterized by 3 syndromes (anemia, circulatory-hypoxic, and sideropenic syndrome) and 21 symptoms. It is they who confirm the ways of primary (prevention) and secondary (treatment) prevention of the disease. The anemic syndrome was expressed by 8 symptoms (malaise, pallor of the skin and mucous membranes, headache, pulsation in the temples, dizziness, fainting, shortness of breath, and palpitations).

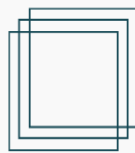
1 – Table Prevalence of anemia and sideropenic syndromes in iron deficiency anemia in pregnant women and dynamics of change in 2015-2020

Main syndromes	Total symptoms (n=7826)		Years of screening						RR	I1		ch 2	P
			2015		R	2020		Max		Min			
			n	%		n	%						
Anemic syndrome :	4922	62.89	779	15.8	0.005	656	13.3	0.48	2.08	1.33	10.5	0.0051	
Fatigue	808	16.42	104	12.9	0.01	182	22.5	0.88	1.33	0.57	21.3	<0.001	
The pallor of the skin and mucous membranes	648	13.17	96	14.8	0.05	23	3.55	1.04	1.21	0.73	44.8	<0.001	
Headache	774	15.73	91	11.8	0.01	170	22	0.95	2.15	1.22	23.9	<0.001	
Pulsation of the temple	550	11.17	113	20.5	0.05	37	6.73	1.31	1.69	1.41	38.5	<0.001	
Dizziness	630	12.8	106	16.8	0.010	96	15.2	0.47	2.20	1.28	0.5	0.7807	
Fainting	465	9.447	92	19.8	0.010	15	3.23	0.55	1.92	1.16	55.4	<0.001	
Panting	474	9.63	84	17.7	0.001	6	1.27	1.64	1.33	0.61	67.6	<0.001	
Chest game	573	11.64	93	16.2	0.001	127	22.2	0.93	2.07	1.16	5.3	0.072	
Visceral symptoms of circulatory-hypoxic syndrome, sideropenia	2904	37.11	476	16.4	0.005	465	16	0.83	1.70	0.84	0.1	0.9377	
OIT damage (glossitis, dysphagia, gastritis, restlessness, constipation, diarrhea)	1358	46.76	209	15.4	0.001	208	15.3	1.55	1.28	0.53	0.0	0.9999	
MAT damage (memory loss)	660	22.73	89	13.5	0.001	186	28.2	1.36	1.11	0.70	34.2	<0.001	
Changes in the cardiovascular system (tachycardia, angioz pains, inversion of the T wave on the ECG, signs of strangulation of heart tones)	449	15.46	86	19.2	0.01	22	4.9	0.61	1.46	1.34	8.4	0.0146	
Damage to the muscle skeleton and sphincters (muscle weakness, urinary incontinence without changes in urine analysis)	437	15.05	92	21.1	0.005	49	11.2	1.08	1.96	1.09	13.1	<0.001	

Circulatory hypoxic syndrome and visceral manifestations of sideropenia were manifested in 13 symptoms (glossitis, dysphagia, gastritis, abdominal rest, constipation, memory loss, tachycardia, anginal pain, T-tooth inversion on ECG, muffled heart sounds, muscle weakness, urinalysis was unchanged in case - urinary incontinence) or these symptoms, different from those of non-pregnant women, took priority (9, p. 255 - 258; 14; 16, p. 3; 22, p. 790 - 791).

The anemic syndrome was confirmed in HTTK with a prevalence of 62.89% and a 6-year change from 15.8% (2015) to 13.3% (2020), i.e. a decrease of 2.5% (RR=0.48; II=2.08 – 1.33; X²=10.5; R=0.0051).

Its manifestations were observed with appropriate differences: weakness - 16.42%, 12.9% and 22.5% (RR=0.88; II=1.33– 0.57; X²=21.31; R<0.001); pallor - 13.17%, 14.8% and 3.55% (RR=1.04; II=1.21– 0.73; X²=44.8; R<0.001); headache – 15.7%, 11.8% and 22.0% (RR=0.95; II=2.15– 1.22; X²=23.9; R<0.001); temporal pulsation – 11.17%, 20.5% and 6.73% (RR=1.31; II=1.69– 1.41; X²=38.5; R<0.001); dizziness – 12.8%,



16.8% and 15.2% (RR=0.47; II=2.20 – 1.28; X²=0.5; R<0.7807); fainting – 9.4%, 19.8% and 3.23% (RR=1.92; II=1.16–1.26; X²=55.4; R<0.001); shortness of breath – 9.63%, 17.7% and 1.27% (RR=1.64; II=1.33 –0.61; X²=67.6; R<0.001); heart valve – 11.64%, 16.2% and 22.2% (RR=0.93; II=2.07–1.16; X²=5.3; R=0.072).

Circulatory-hypoxic and sideropenic syndromes were detected at a significantly lower frequency: in total - 37.11%, in 2015 - 2020 - 16.4% and 16.0%, almost unchanged, confirmed (RR=0.83; II=1.70 - 0.84; X²=0.1; R=0.9377).

Gastrointestinal manifestations (GI) including glossitis, dysphagia, gastritis, abdominal rest, constipation, and diarrhea were found with a prevalence of 46.76% and a change from 15.4% to 13.3% at 6 years (RR =1.55; II=1.28 –0.53; X²=0.0; R=0.9999).

Symptoms of damage to the central nervous system (memory loss) - 22.73%, 13.5% (in 2015), and 28.2% (in 2016, with an increase of 14.7%) were noted in the prevalence (RR=1.36; II=1.11 –0.70; X²=34.2; R<0.001).

Cardiovascular system (CVS) changes (tachycardia, anginal pains, T inversion on ECG, presence of muffled tones) were confirmed with a relatively low prevalence - 15.46%, 19.2%, and 4.9% (RR=0, 61; II=1.46 –1.34; X²=8.4; R=0.0146).

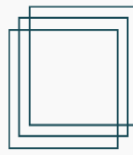
Compared to other symptoms, the prevalence of disorders of the muscle frame and sphincters (muscle weakness, urinary incontinence) in HTTK was confirmed with a reliable difference: 15.05%, 21.1%, and 11.2% (in 2015-2020, with a decrease of 3.8%) were observed with detection frequency (RR=1.08; II=1.96 – 1.09; X²=13.1; R<0.001).

Table 2 shows the analytical results of the spread of the main clinical symptoms of HTTK and the characteristics of prevention methods in rural pregnant women.

Anemic syndrome in the population of rural pregnant women (QHAP) was determined with a prevalence of 62.44%, confirmed by an increase from 0.5% (in 2015) to 27.4% (in 2020) (RR=1.12; II= 2.13 –1.40; X²=557.0; R<0.001). Such an increasing trend was also confirmed in the structural symptoms of this syndrome.

2 – Table Dynamics of prevalence and changes of clinical symptoms of HTTK in a population of rural pregnant women

Risk factors in HAP	Total symptoms (n=3432)		Years of screening						RR	II		ch 2	P
			2015		R	2020		Max		Min			
			n	%		n	%						
Anemic syndrome:	2143	62.44	10	0.5	0.001	587	27.4	1.12	2.13	1.40	557.7	<0.001	
Fatigue	448	20.91	1	0.2	0.01	165	36.8	0.63	1.68	1.49	162.0	<0.001	
The pallor of the skin and mucous membranes	270	12.6	3	1.1	0.004	30	11.1	0.84	1.37	0.69	22.1	<0.001	
Headache	392	18.29	2	0.5	0.005	152	38.8	1.69	0.73	0.54	146.1	<0.001	
Pulsation of the temple	194	9.053	1	0.5	0.01	32	16.5	0.29	1.57	1.43	29.1	<0.001	
Dizziness	258	12.04	1	0.4	0.01	82	31.8	0.97	2.10	1.37	79.0	<0.001	
Fainting	145	6,766	0	0.0	0	11	7.59	0	0	0	0	0	
Panting	171	7,979	1	0.6	0.01	4	2.34	0.44	2.09	1.26	1.8	0.407	
Chest game	265	12.37	1	0.4	0.010	111	41.9	1.38	2.00	1.08	108.0	<0.001	
Visceral symptoms of circulatory-hypoxic syndrome, sideropenia	1289	37.56	3	0.2	0.003	420	32.6	0.48	1.73	1.39	411.1	<0.001	
OIT damage (glossitis, dysphagia, gastritis, restlessness, constipation, diarrhea)	615	47.71	3	0.5	0.003	188	30.6	0.76	1.75	1.49	29.1	<0.001	



MAT damage (memory loss)	351	27,23	0	0.0	0	169	48.1	0	0	0	0	0
Changes in the cardiovascular system (tachycardia, angioz pains, inversion of the T wave on the ECG, signs of strangulation of heart sounds)	166	12.88	0	0.0	0	20	12	0	0	0	0	0
Damage to the muscle frame and sphincters (muscle weakness, urinary incontinence without changes in urine analysis)	157	12.18	0	0.0	0	43	27.4	0	0	0	0	0

For example, in the frequency of headache symptom increase from 0.5% to 38.8% (RR=1.69; II=0.73 -0.34; X² =146.1; R<0.001), pallor 1.1 with an increase from % (2015) to 11.1% (2020) (RR=0.84; II=1.37 -0.69; X² =22.1; R<0.001), weakness - 0, with an increase from 2% to 36.8% (RR=0.63; II=1.68 -1.49; X² =162.0; R<0.001), temporal pulsation - from 0.5% to 16.5 with an increase of % (RR=0.29; II=1.57 - 1.43; X² =29.1; R<0.001), dizziness - increased from 0.4% to 31.8% (RR= 0.97; II=2.10 - 1.37; X² =79.0; R<0.001), fainting - 0.0% and 0.0%; shortness of breath - with an increase from 0.6% to 2.34% (RR=0.44; II=2.09 - 1.26; X² =1.8; R<0.407) and heart palpitations - 0.4% from to 41.95 was determined with increasing frequency (RR=1.38; II=2.00 - 1.08; X² =108; R<0.01).

Circulatory-hypoxic and visceral manifestations of sideropenia were found in HTTK with a prevalence of 37.56% and an increasing trend from 0.2% to 32.6% (RR=0.48; II=1.73 - 1.39; X² = 411.1; R<0.001).

In the population of urban pregnant women (shown in table 3), the anemic syndrome was identified with a prevalence of 63.13%, 27.9% (in 2015), and 3.04% (in 2020) (RR=1.06; II=1,20 - 0,62; X² =552,0; R<0,001).

3 – table Dynamics of prevalence and changes of clinical symptoms of HTT in an urban population of pregnant women

Risk factors in HAP	Total symptoms (n=4380)		Years of screening						RR	II		ch 2	P
			2015		R	2020		Max		Min			
			n	%		n	%						
Anemic syndrome:	2765	63.13	771	27.9	0.001	84	3.04	1.06	1.20	0.62	552.0	<0.001	
Fatigue	360	13.02	103	28.6	0.01	17	4.72	0.75	1.54	1.20	61.6	<0.001	
The pallor of the skin and mucous membranes	364	13.16	95	26.1	0.01	8	2.2	0.58	0.85	0.51	73.5	<0.001	
Headache	382	13.82	89	23.3	0.01	18	4.71	0.35	1.03	0.85	47.1	<0.001	
Pulsation of the temple	356	12.88	112	31.5	0.02	5	1.4	1.01	1.26	0.87	97.9	<0.001	
Dizziness	372	13.45	105	28.2	0.01	14	3.76	1.52	1.87	1.19	69.6	<0.001	
Fainting	320	11.57	92	28.8	0.03	4	1.25	0.19	0.94	0.91	80.7	<0.001	
Panting	303	10.96	83	27.4	0.05	2	0.66	0.98	1.72	0.82	77.2	<0.001	
Chest game	308	11.14	92	29.9	0.01	16	5.19	1.34	1.91	0.99	53.5	<0.001	
Visceral symptoms of circulatory-hypoxic syndrome, sideropenia	1615	36.87	473	29.3	0.002	45	2.79	1.27	1.79	1.33	353.6	<0.001	
OIT damage (glossitis, dysphagia, gastritis, restlessness, constipation, diarrhea)	743	46.01	206	27.7	0.005	20	2.69	1.70	1.13	0.84	20.6	<0.001	
MAT damage (memory loss)	309	19,13	89	28.8	0.01	17	5.5	0.81	1.00	0.79	48.9	<0.001	
Changes in the cardiovascular system (tachycardia, angioz pains, inversion of the T wave on the ECG, signs of strangulation of heart sounds)	283	17,52	86	30.4	0.05	2	0.71	1.33	1.03	0.95	28.3	<0.001	
Damage to the muscle skeleton and sphincters (muscle weakness, urinary incontinence without changes in urine analysis)	280	17,34	92	32.9	0.02	6	2.14	0.72	1.41	0.69	75.5	<0.001	

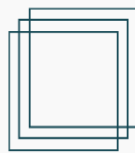


Table 4 shows the distribution and dynamics of symptoms of TTC in pregnant women during the first trimester of pregnancy.

4 – table Dynamics of prevalence and changes of symptoms of iron deficiency anemia in the first trimester of pregnancy

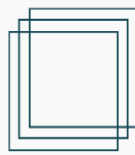
Syndromes and symptoms	Total symptoms (n=3542)		Years of screening						RR	I I		ch 2	P
			2015		R	2020		Max		Min			
			n	%		n	%						
Anemic syndrome:	2213	62.48	206	9.3	0.001	381	17.2	0.65	1.35	0.70	52.2	<0.005	
Fatigue	424	19,16	24	5.7	0.005	128	30.2	1.37	1.42	0.88	71.2	<0.001	
The pallor of the skin and mucous membranes	318	14.37	31	9.7	0.01	29	9,12	1.14	0.88	0.60	0.1	0.9672	
Headache	291	13,15	28	9.6	0.01	18	6.19	0.63	1.49	0.58	2.2	0.33724	
Pulsation of the temple	233	10.53	28	12.0	0.01	26	11.2	1.70	0.74	0.63	0.1	0.9672	
Dizziness	289	13.06	25	8.7	0.005	69	23.9	0.90	1.56	0.60	20.6	<0.001	
Fainting	190	8,586	26	13.7	0.01	14	7.37	1.03	1.57	1.01	3.6	0.1653	
Panting	192	8,676	20	10.4	0.02	6	3.13	1.18	1.95	1.30	7.5	0.0231	
Chest game	276	12.47	24	8.7	0.005	91	33	0.74	1.78	1.12	39.0	<0.001	
Visceral symptoms of circulatory-hypoxic syndrome, sideropenia	1329	37.52	130	9.8	0.001	333	25.1	1.59	2.09	1.20	89.0	<0.001	
OIT damage (glossitis, dysphagia, gastritis, restlessness, constipation, diarrhea)	646	48,61	57	8.8	0.002	150	23.2	1.65	1.74	1.28	6.5	0.0394	
MAT damage (memory loss)	331	24.91	25	7.6	0.005	130	39.3	1.13	1.93	1.39	71.1	<0.005	
Changes in the cardiovascular system (tachycardia, angioz pains, inversion of the T wave on the ECG, signs of strangulation of heart tones)	187	14.07	23	12.3	0.01	20	10.7	0.35	1.60	0.97	0.1	0.946	
Damage to the muscle frame and sphincters (muscle weakness, urinary incontinence without changes in urine analysis)	165	12.42	25	15.2	0.01	33	20	0.81	2.15	1.28	1.1	0.576	

The total anemic syndrome was confirmed with a frequency of 62.48% in the I trimester and was noted with an increasing trend from 9.3% to 17.2% in screening observations from 2015 to 2020 (RR=0.65; II=1.35 – 0.70; $X^2 = 52.2$; $R < 0.005$). Its structural symptoms were observed with a corresponding frequency of detection and change.

Circulatory-hypoxic syndrome and visceral manifestations of sideropenia were confirmed in prevalence frequencies of 37,525, 9.8% (2015) and 25.1% (2020) (RR=1.59; II=2.09 – 1.20; $X^2 = 89.0$; $R < 0.001$).

A high incidence of HIV diseases was noted: from 48.61%, 8.8%, and 23.2% (RR=1.65; II=1.74 – 1.28; $X^2 = 6.5$; $R = 0.0394$). Compared to this, the incidence of MAT diseases (7.6% and 39.3% in 2015-2020) with a prevalence of twice as low (24.91%) was observed (RR=1.13; II=1.93-1.39; $X^2 = 71.1$; $R < 0.005$).

The changes of LUQT were confirmed in the 1st trimester – 14.07%, 12.3% and 10.7% prevalence (RR=0.35; II=1.60 – 0.97; $X^2 = 0.1$; $R = 0.946$).



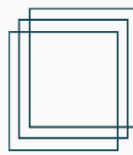
Diseases of muscle cascades and sphincters (muscle weakness, urinary incontinence) were also observed - 12.42%, 15.2% (in 2015), and 20.0% (in 2020), that is, with a frequency increase of 5.0% (RR=0.81; II=2.15 – 1.28; X²=1.1; R= 0.576).

The description of the procedures in the second trimester of pregnancy is given in Table 5.

Table 5 Prevalence and changes of symptoms of iron deficiency anemia in the II trimester

Syndrome and symptoms	Total symptoms (n=2188)		Years of screening						RR	I I		ch 2	P
			2015		R	2020		Max		Min			
			n	%		n	%						
Anemic syndrome:	1327	60.6	201	15.1	0.001	186	14.0	0.57	1.46	0.64	0.6	0.7477	
Fatigue	240	18.09	30	12.5	0.005	54	22.5	0.14	1.22	0.88	6.9	0.0324	
The pallor of the skin and mucous membranes	179	13.49	27	15.1	0.01	9	5.03	0.06	1.97	1.18	9.0	0.0111	
Headache	220	16.58	26	11.8	0.01	48	21.8	0.97	2.14	1.20	6.5	0.0380	
Pulsation of the temple	163	12.28	34	20.9	0.01	11	6.75	0.82	1.38	0.84	11.8	0.0028	
Dizziness	184	13.87	30	16.3	0.01	27	14.7	0.65	1.79	1.02	0.2	0.9241	
Fainting	1	0.075	0	0.0	Unfriendly	1	100	1.14	1.56	0.75	1.0	0.6065	
Panting	159	11.98	21	13.2	Unfriendly	0	0	0.56	1.31	1.03	21.0	<0.001	
Chest game	181	13.64	33	18.2	0.01	36	19.9	0.46	1.20	0.63	0.1	0.9369	
Visceral symptoms of circulatory-hypoxic syndrome, sideropenia	861	39.4	127	14.8	0.002	132	15.3	0.23	1.40	0.99	0.1	0.9529	
OIT damage (glossitis, dysphagia, gastritis, restlessness, constipation, diarrhea)	409	47.5	62	7.2	0.003	58	43.9	0.74	1.51	1.17	26.4	<0.001	
MAT damage (memory loss)	195	22.65	24	2.8	0.001	56	42.4	1.39	0.78	0.77	12.8	0.0017	
Changes in the cardiovascular system (tachycardia, angioz pains, inversion of the T wave on the ECG, signs of strangulation of heart sounds)	126	14.63	19	2.2	0.01	2	1.52	0.53	1.17	1.04	0.1	0.9378	
Damage to the muscle frame and sphincters (muscle weakness, urinary incontinence without changes in urine analysis)	131	15,21	22	2.6	0.01	16	12.1	0.95	1.79	1.29	0.9	0.6227	

It follows from the table that anemic syndrome is observed with a detection frequency of 60.6% in TTC observed in the II trimester of pregnancy, with a frequency of change from 15.1% (2015) to 14.0% (2020) in the years of screening (RR=0.57; II=1.96 – 0.64; X²= 0.6; R= 0.7477). In the case of circulatory hypoxia and sideropenic syndrome, it is recorded from 39.4%, 14.8%, and 15.3% (RR=0.23; II=1.40 – 0.99; X²= 0.1; R= 0.9529).



Such information on the III trimester is given in Table 6.

From the data in the table, it is clear that in the III trimester of pregnancy, clinical symptoms of HTTK were determined with significantly high prevalence frequencies (table 6).

6 – table Prevalence and changes of symptoms of iron deficiency anemia in the III trimester of pregnancy

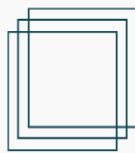
Syndrome and symptoms	Total symptoms (n=3649)		Years of screening						RR	I I		ch 2	P
			2015		R	2020							
			n	%		n	%	Max		Min			
Anemic syndrome:	2321	63.6	205	8.8	0.001	485	20.9	1.25	1.45	0.80	113.6	<0.001	
Fatigue	424	18.27	24	5.7	0.005	128	30.2	1.22	1.30	1.24	71.2	<0.001	
The pallor of the skin and mucous membranes	318	13.7	31	9.7	0.01	29	9.12	1.59	0.86	0.54	0.1	0.967	
Headache	399	17.19	27	6.8	0.005	122	30.6	0.84	2.19	1.29	60.6	<0.001	
Pulsation of the temple	233	10.04	28	12.0	0.01	26	11.2	1.41	2.39	1.49	0.1	0.964	
Dizziness	289	12.45	25	8.7	0.005	69	23.9	0.66	1.62	1.46	20.6	<0.05	
Fainting	190	8.186	26	13.7	0.01	14	7.37	1.02	1.18	0.87	3.6	0.165	
Panting	192	8.272	20	10.4	0.02	6	3.13	0.24	2.39	1.49	7.5	0.023	
Chest game	276	11.89	24	8.7	0.005	91	33	1.08	2.12	1.13	39.0	<0.05	
Visceral symptoms of circulatory-hypoxic syndrome, sideropenia	1328	36.4	130	9.8	0.001	333	25.1	0.46	1.38	1.19	89.0	<0.001	
OIT damage (glossitis, dysphagia, gastritis, restlessness, constipation, diarrhea)	645	48.57	57	8.8	0.002	150	23.3	1.83	1.45	0.98	6.5	0.039	
MAT damage (memory loss)	331	24.92	25	7.6	0.005	130	39.3	0.71	1.34	1.23	71.1	<0.001	
Changes in the cardiovascular system (tachycardia, angioz pains, inversion of the T wave on the ECG, signs of strangulation of heart tones)	187	14.08	23	12.3	0.01	20	10.7	1.51	1.22	0.82	0.1	0.946	
Damage to the muscle frame and sphincters (muscle weakness, urinary incontinence without changes in urine analysis)	165	12.42	25	15.2	0.1	33	20	0.19	1.58	0.99	1.1	0.576	

In particular, the anemic syndrome was recorded with a prevalence of 63.6%, 8.8% (in 2015), and 20.9% (in 2020) (RR=1.25; II=1.45 – 0.80; $X^2 = 113.6$; $R < 0.001$). Circulatory-hypoxic and sideropenic syndrome - confirmed in 36.4%, 9.8%, and 25.1% (with a decrease of 11.3% in 2015 - 2020) (RR=0.46; II=1.38– 1, 19; $X^2 = 89.0$; $R < 0.001$).

In general, statistical analyses show that differentiated ferrotherapy and ferroprophylaxis programs in different trimesters of pregnancy, a system and algorithm based on screening-epidemiological examination materials should be implemented.

CONCLUSIONS

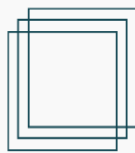
1. It is appropriate to use a prospective type of epidemiological research screening in determining the condition of iron deficiency in pregnant women. In this case, the effectiveness of early detection of iron deficiency anemia in the early (latent) and hidden (latent) stages increases to 100.0%



2. Adopting a scientifically based epidemiological monitoring system and ensuring its consistent use in practice increases the effectiveness of preventing and predicting the origin of iron deficiency anemia in pregnant women from 85% to 90%.
3. Diagnosis and prevention of iron deficiency anemia based on epidemiological scientific results eliminates obstetric-gynecological risks/complications in pregnant women up to 6.4% (chorion separation) and 40% (miscarriage).

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