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THE KNOWLEDGE, ATTITUDE AND PRACTICES OF PREGNANT WOMEN IN PREVENTING IRON DEFICIENCY ANEMIA IN GEORGIA

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ABSTRACT:

Introduction Anemia in pregnancy is a serious global health challenge, affecting, especially developing countries.

Materials and methods A qualitative research method was used to survey pregnant women with iron deficiency anemia (IDA) and physicians through in-depth interviews. The target sample consisted of 9 gynecologists and 26 pregnant women, selected through purposive sampling from three maternity hospitals in Tbilisi (Georgia).

Rezults The majority of pregnant women (n=22; 84.6%) knew IDA and correctly identified its symptoms. However, despite high awareness, most lacked adequate knowledge about the causes and risk factors of IDA. While pregnant women were aware of healthy eating practices, they did not follow a proper diet. Relevant obstacles to adopting a healthy eating pattern included limited financial access to food as well as cultural and religious barriers. Although the respondents had some knowledge about iron-rich foods, they were generally unaware of the need to take iron supplements for prevention. The majority of pregnant women (n=21; 80.8%) received little information about anemia from their family physicians, indicating the limited role of family doctors in preventing IDA during pregnancy.

Conclusions Although pregnant women have knowledge and positive attitudes regarding the prevention of IDA, the practice is unsatisfactory. The results indicate a weak link between knowledge about IDA prevention and healthy behavior, which is a major contributing factor to the prevalence of anemia. To solve the problem, it is necessary to encourage proper counseling on nutrition for pregnant women during antenatal care, with a key role played by family doctors. Raising awareness of the problem among women of reproductive age and adolescent girls should also be promoted.

Keywords Iron deficiency anemia (IDA), iron supplements, prevention, Georgia.

CUNOȘTINȚELE, ATITUDINILE ȘI PRACTICILE FEMEILOR ÎNSĂRCINATE ÎN PREVENIREA ANEMIEI FERIPRIVE ÎN GEORGIA

Introducere Anemia în timpul sarcinii reprezintă o provocare serioasă pentru sănătatea globală, afectând, în special, țările în curs de dezvoltare.

Materiale și metode A fost utilizată o metodă de cercetare calitativă pentru a chestiona gravidele cu anemie feriprivă (AF) și medicii prin intermediul unor interviuri aprofundate. Lotul țintă l-au constituit nouă ginecologi și 26 gravide, selectați prin eșantionare intenționată din cadrul a trei maternități din Tbilisi (Georgia).

Rezultate Majoritatea gravidelor (84,6%) aveau cunoștințe despre AF și identificau corect simptomele acesteia. Totuși, în pofida nivelului ridicat de conștientizare, majoritatea nu dețineau informații adecvate despre cauzele și factorii de risc ai AF. Deși gravidele erau conștiente de practicile alimentației sănătoase, acestea nu respectau o dietă corespunzătoare. Obstacolele relevante în adoptarea unui mod sănătos de alimentație îl constituiau accesul financiar limitat la alimente sănătoase, precum și barierele de ordin cultural și religios. Deși respondentele dețineau unele cunoștințe despre alimentele bogate în fier, majoritatea nu erau conștiente de necesitatea administrării suplimentelor de fier pentru prevenire. Majoritatea femeilor gravide (80,8%) au primit puține informații despre anemie din partea medicilor de familie, indicând un rol limitat al medicilor de familie în prevenirea AF în timpul sarcinii.

Concluzii Deși gravidele au cunoștințe și atitudini positive vizând prevenirea AF, situația în domeniu nu este satisfăcătoare. Rezultatele indică faptul că există o legătură slabă între cunoștințele despre prevenirea AF vs comportamentul sănătos, ceea ce reprezintă un factor determinant în prevalența anemiei. Pentru rezolvarea acestei probleme, este necesar să fie încurajată consilierea adecvată privind alimentația femeilor gravide în timpul îngrijirii prenatale, în care un rol decisiv îl joacă medicii de familie. Ar trebui, de asemenea, să fie promovată conștientizarea problemei în rândul femeilor de vârstă reproductivă și al fetelor adolescente.

Cuvinte cheie Anemie feriprivă, suplimente de fier, prevenire, Georgia.

INTRODUCTION

Iron deficiency anemia (IDA) in pregnancy is a condition in which the level of hemoglobin in the body of a pregnant woman decreases. The World Health Organization defines anemia as a condition when the hemoglobin level is below 11.0 g/dL during pregnancy and below 10.0 g/dL in the postpartum period (1).

Iron is essential for the production of red blood cells, which help carry oxygen throughout the body. If the number of red blood cells decreases, human organs and tissues do not receive as much oxygen as they need. There are two types of iron deficiency:

1) The hidden or latent type is characterized by reduced iron stores in the bone marrow, while the number of red blood cells and hemoglobin level remains normal;

2) IDA which is characterized by a decrease of all metabolic funds, and by a reduction of red blood cells and hemoglobin levels.

It should be emphasized that foods contain both heme and non-heme iron. Heme iron can be found in red meat, poultry, and fish (salmon, tuna, sardine). Non-heme iron can be found in nuts, cereals, spinach, and broccoli. Heme iron is a part of hemoglobin and myoglobin, and non-heme iron is stored in the human body as ferritin and delivered through the body via transferrin (2).

Despite iron's plentifulness on earth, people often experience its deficiency. Iron deficiency is the most widespread nutritional deficiency worldwide. In the developing world, iron deficiency occurs due to blood loss as a result of nutrient deficiencies or colonization with helminths, while in the developed world it occurs due to certain dietary behaviors (e.g., vegetarian diet and rejection of red meat) and pathological conditions (e.g., chronic blood loss or malabsorption) (3-6).

Iron deficiency causes severe consequences in children and pregnant women, as the demand for iron increases especially during pregnancy (7). If a pregnant woman has insufficient iron stores, IDA may develop. IDA in pregnant women can cause complications such as deterioration of perinatal and postpartum maternal health, growth retardation, and impaired cognitive and motor development in the newborn. IDA also increases the risk of maternal mortality and low birth weight (7).

Studies have proven that individual iron supplementation and proper nutrition are the best approaches to solving the problem of IDA (7). According to WHO recommendations, it is necessary to increase the daily dose of iron to 15 mg /day (approximately 30 mg/day). Daily iron and folic acid intake reduces the risk of maternal anemia by 70% and iron deficiency by 57%. Daily iron intake is recommended as part of antenatal care to reduce the risk of IDA, iron deficiency, and low birth weight.

It is worth noting that pregnant women should pay particular attention not to the quantity, but to the quality of their diet. A diet low in fat and carbohydrates and high in protein, calcium, iron, and vitamins is recommended. Iron-rich foods include legumes, green vegetables (especially spinach), bread, dried fruits, eggs, red meat, and fish (7,8).

According to the WHO, 27% of the world's population experience IDA (9). According to 2019 data, IDA occurs in 30-60% of pregnant women and is responsible for 22% of maternal deaths (10). The mortality of mothers and newborns caused by IDA globally amounts to an average of 2.5-3.5 million cases (11).

The World Health Organization adopted a global program to improve maternal and child nutrition, according to which the prevalence of anemia among women of reproductive age should be reduced by 50% by 2030 (12). It became clear that the prevalence of anemia was not declining as quickly as originally thought. A particularly high prevalence of IDA is observed among middle- and low-income pregnant women (13). According to 2023 data, 40.6% of pregnant women in Georgia had anemia at least once during pregnancy (14). The prevalence of anemia in pregnant women in Georgia is high compared to the global rate (37%) (15). In Georgia, the State Maternal and Child Health Program includes eight antenatal visits, and for all pregnant women with IDA, medication for iron deficiency anemia is provided free of charge (16).

Even though there are many methods for preventing IDA in pregnant women, the problem remains relevant and a large number of women experience health problems and complications associated with anemia. The risk factors causing IDA significantly depend on the awareness and attitude of pregnant women towards anemia, which, in turn, depends on the attitudes of primary health care specialist-obstetrician-gynecologist or family doctor (recognition of the importance of consultation). Therefore, it is believed that it is possible to reduce the prevalence of IDA by improving the level of education of pregnant women, as well as by changing the attitude and practical approach of family physicians and obstetricians-gynecologists regarding this problem (17).

To develop effective strategies to reduce the prevalence, it is necessary to assess the current perception and knowledge of pregnant women about variable risk factors for IDA. The first step towards solving this problem is to consider the weakest areas of knowledge and perceptions of pregnant women in the educational program.

This study aimed to explore the knowledge, attitudes, and perceptions of pregnant women regarding the prevention of IDA in Georgia.

MATERIALS AND METHODS

A phenomenological qualitative study was conducted to explore the experiences of pregnant women with IDA through in-depth interviews. The study included nine gynecologists and twenty-six pregnant women from three maternity hospitals in Tbilisi (Table 1).

Table 1: Demographic characteristics of pregnant women.

Characteristics	n=26	%
Age		
18-20	2	7.7
21-33	18	69.2
≥ 34	6	23.1
Number of children		
0	15	57.7
1	11	42.3
> 2		
Employment		
Housewife	7	26.9
Self-employed	5	19.2
Employed	14	53.8

Characteristics	n=26	%
Education		
Secondary education	9	34.6
Bachelor	13	50
Master	4	15.4
Income status		
250 GEL	3	11.5
250-500 GEL	3	11.5
500-800 GEL	9	34.6
>800 GEL	11	42.3
Gestational age	15	57.7
≤12 weeks	11	42.3
≥12 weeks		

Pregnant women were initially invited to participate by a nurse. With the consent of pregnant women to participate in the survey, a face-to-face meeting was held in the polyclinic departments of maternity homes during working hours from 11 am to 3 pm.

Women interested in participating in the study were fully informed by the researcher about the objectives, process, and ethical issues of the study. After providing written consent, the participants were selected. The inclusion criteria were the pregnant women diagnosed with IDA without any complications. Data were collected through individual in-depth interviews with obstetricians-gynecologists and pregnant patients between March and July 2024. The interviews with each participant lasted approximately 35 to 50 minutes.

The study utilized a semi-structured interview guide to collect qualitative data from participants. The questionnaire consisted of open-ended questions that explored various aspects of pregnant women's experiences with IDA, including their knowledge, perceptions, dietary habits, and adherence to medical recommendations. The interview guide included approximately 10-15 core questions, with additional follow-up questions depending on the participant's responses to allow for a deeper exploration of their experiences. This approach ensured consistency while providing flexibility to capture rich, detailed insights.

During the interviews, a voice recorder was used to capture audio recordings. Afterward, the interviews were transcribed into a written format, and the transcripts were carefully reviewed and verified for accuracy. The transcripts were read multiple times to gain a deeper understanding of each interview.

For data analysis, thematic analysis was applied due to its flexibility, making it particularly suitable for qualitative studies. This process involves six stages: a) Familiarizing with the data by reading and identifying key concepts and patterns, b) Generating initial codes, c) Organizing these codes into themes, d) Reviewing and refining the generated themes, e) Defining and naming the themes, f) Producing a comprehensive data analysis report.

ETHICAL ISSUES

Consent to conduct the research was obtained from the Ethics Council of the Caucasus University (CAU No. 012/23). The respondents were informed in advance about the study's objectives. The questionnaires emphasized the strict protection of research confidentiality. Pregnant women decided to participate in the study voluntarily, without any pressure.

Pregnant women could refuse to participate in the study at any time without providing any reason. All the study data were identified by individual codes. The data were presented without personal identification.

RESEARCH LIMITATIONS

The study was conducted only in randomly selected maternity hospitals. Therefore, it is not appropriate to generalize the results. Additionally, one of the limitations of the study was the lack of statistical data and literature on the prevalence and prevention of IDA in Georgia.

RESULTS

RESULTS OF A SURVEY OF OBSTETRICIAN-GYNECOLOGISTS

Causes of IDA in Pregnancy

The doctors named the worsening socioeconomic situation as one of the reasons for the increase in the prevalence of inadequate nutrition and anemia. Pregnant women cannot afford many expensive foods, which has become one of the causes of IDA.

"This is the most common situation in our reality. About 80% of my pregnant patients are anemic. Cases of anemia have increased significantly in recent years. It should be noted that in the 80s and 90s of the last century, anemia was less common than now. In my opinion, the reason for this is a change in diet. Previously, pregnant women consumed a lot of meat and fat, and meat, as is widely known, helps prevent IDA, but increases the risk of overweight and hypertension. Now the opposite is true, due to socioeconomic problems, pregnant women primarily consume vegetarian foods, which protect against hypertension, but increase the prevalence of anemia".

1st gynecologist.

One of the gynecologists named the short interval between pregnancies and especially multiple pregnancies as the main cause of IDA.

"*During pregnancy, conditions conducive to anemia are created. The mother's body supplies the fetus with the substances it needs, including iron. With repeated pregnancies after a while, iron stores in the mother's body cannot be restored, and this is one of the leading causes of IDA".*

2nd gynecologist.

According to one of the gynecologists, the increased prevalence of IDA is the result of environmental problems (for example, increased levels of radiation), poor food quality, stress, and unstable economic and marital status.

"*Most of the imported products are expired and contain harmful, toxic substances."*

3rd gynecologist.

Knowledge of IDA and adherence to its prevention methods

Some doctors expressed satisfaction with the general awareness of pregnant women about proper nutrition. In their opinion, pregnant women usually follow the advice as much as possible. However, most of them are not satisfied with the adherence of pregnant women to medical recommendations, citing socioeconomic difficulties as the main reason.

"Women read a lot and come to my clinic with basic knowledge about healthy eating."

4th gynecologist.

"When I give my pregnant patients advice on proper nutrition, they are silent and just look at me. How can we afford all these products? "

5th gynecologist.

"The state program for pregnant women does not include free iron supplements, this is why most pregnant women do not want to buy iron supplements for financial reasons."

6th gynecologist.

Preventive methods of IDA

Although doctors prescribe iron supplements and a proper diet to pregnant patients to prevent IDA, the problem still exists. According to most doctors, it is advisable to distribute free iron supplements and prenatal vitamins to pregnant women in maternity hospitals and women's outpatient clinics. Doctors believe that preventive iron replacement therapy is ineffective without properly informing pregnant women.

"If a pregnant woman is unaware of the risk of IDA, she doesn't even want to take vitamins. Therefore, in any case, it is necessary to inform patients about the importance of iron supplements."

7th gynecologist

"Sometimes we have a long line of pregnant women waiting for a consultation and we simply don't have time to talk to every pregnant patient about nutritional issues. We have brochures about lactation that we printed for our patients which make things easier for us. Of course, we emphasize the need for breastfeeding when talking to a pregnant woman, but the patient can find more information and answers to questions in this brochure. It would be beneficial to create similar informative brochures on healthy eating during pregnancy, especially in terms of preventing IDA, as the latter is a serious problem in today's reality."

8th gynecologist

Most doctors welcome the opinion that increasing the level of education of pregnant women and changing their attitude toward iron supplements will help fight IDA and find a way out of the situation. However, they noted that improving the socioeconomic situation was necessary to solve the problem.

The role of the family physician in the prevention of IDA.

According to gynecologists, it is necessary to involve a family physician and a gynecologist in the process of managing IDA in pregnant women. In this regard, a family doctor's involvement in the process of preventing IDA in Georgia is one of the main tasks.

"There has been a trend in the country where pregnancy is managed solely by gynecologists, who also address several related issues, including IDA. Family doctors are less involved or, in many cases, do not participate in this process and do not assume this responsibility."

9th gynecologist

RESULTS OF A SURVEY OF PREGNANT WOMEN

Knowledge and perceptions of pregnant women about anemia

Most pregnant women interpreted anemia as a "lack of blood". Only four respondents with higher education knew the medical definition of "anemia". A possible reason for ignorance of medical terminology may be the low level of general education or the infrequent use of medical terminology by healthcare professionals when communicating with patients.

"I don't know exactly what the word "anemia" means. I first heard about it from a gynecologist."

A 21-year-old mother in her first pregnancy, self-employed, Secondary education, 250-500 GEL, ≤12 weeks

Pregnant women identified gynecologists, the internet, television, books, family physicians, mothers, and relatives as sources of information about anemia.

"Yes, I have heard that anemia means a lack of blood in the body, which is very common during pregnancy. The doctor advised me to run a blood test as he told me that the red blood cell count was low and I had reduced hemoglobin levels."

A 22-year-old mother with one child, employed, Bachelor degree, 500-800 GEL, ≥12 weeks

Respondents primarily described anemia for its symptoms, such as general weakness, mild fatigue, decreased appetite, nausea and vomiting, aversion to certain foods, pallor of the skin, and conjunctiva, "black circles under the eyes", "dizziness", "fainting", "white lines on the nails".

Twelve respondents experienced mild to moderate weakness during pregnancy, and some experienced dizziness; However, due to the mild course, none of them consulted a doctor. Anemia is not a serious condition, according to some respondents, as anemia-related weakness and dizziness are "normal during pregnancy."

"Fatigue and weakness are part of pregnancy. It doesn't affect the mother or her baby".

A 23-year-old mother with two children, employed, Master's degree, >800 GEL, ≤12 weeks

"A pregnant woman carries Another life inside her. It's something new for her body, and she may get tired because of it, or she may have dizziness and other symptoms."

A 21-year-old mother with one child, self-employed, Secondary education, 250-500 GEL, ≤12 weeks.

"Feeling nauseous and disgusted with certain foods during pregnancy is natural. Gradually, the pregnant woman adapts to these symptoms."

A 22-year-old mother with two children, Employed, Bachelor, >800 GEL, ≤12 weeks

Respondents' perception of anemia as a "normal phenomenon of pregnancy" was also supported by the fact that women of reproductive age shared similar experiences in social networks. In their opinion, anemia was a natural part of pregnancy, because at this time changes occurred in the body that did not cause any harm to either the child or the mother.

"If other women, despite these symptoms, can give birth normally and safely, then why take it seriously?"

A 27-year-old-woman with two children, self-employed, Secondary education, 250-500 GEL, ≤12 weeks

According to the respondents, the symptoms of anemia can be eliminated by resting and eating certain foods.

"I often experience fatigue, dizziness, and weakness during pregnancy. My mother tells me that this is natural during pregnancy. I rest at such times. I feel good after resting."

A 25-year-old mother with two children, Employed, Bachelor degree, >500-800 GEL, ≤12 weeks

However, if pregnant women experienced severe weakness, fever, abdominal pain, white vaginal discharge, or bleeding, they understood, that these symptoms could have a severe impact on the baby and usually consulted a doctor.

"Bleeding can harm the baby, because it won't have enough blood supply, and it can interfere with the development of my son. Bleeding can also cause premature birth or miscarriage."

A 27-year-old-woman with two children, self-employed, Secondary education, 250-500 GEL, ≤12 weeks

"Abdominal pain is a dangerous sign because the baby is growing in my belly and everything that affects me will affect my baby; Therefore, in case of abdominal pain, you should immediately consult a doctor."

A 23-year-old mother with two children, Employed, Master degree, >800 GEL, ≤12 weeks

IDA: Causes

The majority of respondents noted that the main causes of anemia during pregnancy are insufficient, unbalanced, and low-quality nutrition, sharing blood with the fetus, increased energy consumption, emotional stress, long exposure to the sun, and physiological factors.

Although the respondents mentioned various causes of anemia, almost none of them had accurate knowledge of its etiology.

"During pregnancy, we need extra nutrition because we are sharing blood with our baby. Therefore, we should eat more vegetables to increase our hemoglobin levels."

A 24-year-old mother with one child, Employed, Bachelor degree, >500-800 GEL, ≤12 weeks

"When a woman does not follow a proper diet and has emotional problems, does not walk outdoors every day – all of this can contribute to the development of anemia."

A 21-year-old mother in her first pregnancy, Self-employed, Secondary education, 250-500 GEL, ≤12 weeks

"Anemia can be caused by the lack of a balanced diet containing essential nutrients that can maintain the necessary volume of blood in the body."

A 20-year-old mother with one child, employed, bachelor's degree, >500-800 GEL, ≥12 weeks

"Anemia is especially common during pregnancy because a new life is developing inside a woman and therefore she needs more energy and strength."

A 27-year-old-woman with two children, Self-employed, Secondary education, 250-500 GEL, ≤12 weeks

"Prolonged exposure to the sun during working hours and tedious work can lead to a decrease in the amount of blood in the body."

A 21-year-old mother with two children, self-employed, Secondary education, 250-500 GEL, ≥12 weeks

"Pregnancy can cause anemia because the fetus receives blood from the mother, meaning the blood volume of the fetus depends on the mother's blood. This is how the mother passes on some of her blood to the fetus".

A 19-year-old mother with one child, self-employed, Secondary education, 250-500 GEL, ≥12 weeks

The role of food in the prevention of IDA

Respondents unanimously stated that the most effective way to prevent anemia in pregnant women was to maintain a healthy diet, with medications playing a secondary, supportive role. By their definition, a healthy diet is "nutrient-rich"; "High-calorie", "consisting mainly of dairy products, vegetables and fruits", and "vitamin-rich nutrition."

Most of the study participants said pregnant women should eat foods such as fruits, vegetables, meat, milk, dairy products, and natural juices since healthy food "gives energy and strength to a pregnant woman", which "increases the amount of blood in the body."

"In my opinion, eating properly during pregnancy is more important than ever. We need more fruit and vegetables, we need to eat meat, drink milk, and eat more dairy products and natural juices, because healthy food "gives energy and strength to a pregnant woman", and "increases the amount of blood in the body. It is necessary to eat only healthy food every day, which will give the child all the important nutrients. Also, a healthy diet will contribute to the birth of a child with a normal weight."

A 27-year-old mother with two children, Employed, Master degree, 500-800 GEL, ≤12 weeks

"We should eat foods that can increase blood volume and raise hemoglobin levels, such as red meat, beans, honey, walnuts, pomegranate juice, and more. Doctors teach us to eat properly. We must follow their instructions to improve."

A 22-year-old mother with two children, Employed, Bachelor degree, >800 GEL, ≤12 weeks

"I try to make my diet as diverse as possible. A pregnant woman's diet is unimaginable without dairy products as a source of protein and calcium. Also, taking 1-2 tablespoons of red wine a day improves the hemoglobin index."

A 23-year-old mother with two children, Employed, Master degree, >800 GEL, ≤12 weeks

When asked if the diet of pregnant women should be different from that of non-pregnant women, the majority of pregnant women answered positively, but the answers to what should be the diet of a pregnant woman varied.

"One of the peculiarities of pregnancy is that a pregnant woman may want to eat something different, even strange. Therefore, she must satisfy her desire and eat what she wants. The happier the expectant mother is, the more likely she is to give birth to a healthy child. For example, I have a strong desire to eat pickles and Staphylea, although I know it is not recommended to eat these foods during pregnancy."

A 21-year-old mother in her first pregnancy, self-employed, Secondary education, 250-500 GEL, ≤12 weeks

"It's important to me to eat the foods I want during pregnancy, even though my doctor recommends other foods to prevent anemia."

A 19-year-old mother in her first pregnancy, employed, bachelor's degree, 500-800 GEL, ≥12 weeks

Most pregnant women were more or less satisfied with their diet. They reported that they increased the amount of meat, dairy, fruit, and vegetables in their diet during pregnancy.

"I am satisfied with my diet. I believe that I have an optimal diet for my condition."

A 22-year-old mother with one child, Employed, Bachelor degree, 500-800 GEL, ≥12 weeks

Although pregnant women had adequate knowledge about healthy eating, they did not follow the necessary, correct diet. Their daily intake of necessary food was unstable. According to several pregnant women (7 out of 26), their diet would be more diverse if they had a better financial situation. One of the obstacles to a healthy diet is the high price of food products and less financial access:

"We have to eat a lot of vegetables and fruit during pregnancy, but with food prices rising, it's impossible to eat good food every day."

A 22-year-old woman pregnant with a second child, Employed, Bachelor degree, >800 GEL, ≤12 weeks

"If I don't have the money, how can I eat good and healthy food?"

A 29-year-old mother of two children, self-employed, Secondary education, 250-500 GEL, ≥12 weeks

However, cultural barriers also affect the nutrition of pregnant women. Some women (7 out of 26) relied on a vegetarian diet because of their religious orientation. They also noted that the responsibilities of caring for other family members made it difficult to maintain a healthy diet during pregnancy.

"Being responsible for family members makes it difficult to look after yourself. It's very different when you're in your mother's house, where you can spend more time on yourself and do whatever you want."

A 21-year-old mother in her first pregnancy, self-employed, Secondary education, 250-500 GEL, ≤12 weeks

"I have a mother-in-law and another child at home and I have to look after them, cook for them, and do other things. I get very tired. Sometimes I can't eat on time."

A 24-year-old mother with one child, Employed, Bachelor degree, 500-800 GEL, ≤12 weeks

According to pregnant women, it is necessary to get more information about "diet and food composition".

"*We would like to know more about the foods that are recommended during pregnancy."*

A 21-year-old mother in her first pregnancy, self-employed, Secondary education, 250-500 GEL, ≤12 weeks

Knowledge of pregnant women about foods containing iron and folic acid

Almost every woman has heard the terms "iron" and "folic acid". They had some idea about foods containing iron, but most of the respondents did not know that the cause of anemia is iron deficiency in their bodies. Also, none of the pregnant women knew about foods containing folate.

"Iron is found in fruits, green vegetables, eggs, meat, and fish."

A 21-year-old mother in her first pregnancy, self-employed, Secondary education, 250-500 GEL, ≤12 weeks

"Foods like fruits and vegetables, especially green vegetables, contain iron."

A 26-year-old mother with one child, Employed, Bachelor, >800 GEL, ≥12 weeks

"I don't know any food that is high in folate, it can only be taken as a medicine."

A 22 -year-old-mother in her first pregnancy, employed, Secondary education, 250-500 GEL, ≤12 weeks

Knowledge and attitudes of pregnant women toward iron-folic acid supplementation

Almost all respondents had some idea about iron and folic acid supplements. However, only five women identified iron deficiency as a cause of anemia.

The respondents reacted positively to iron preparations for the prevention of IDA. Taking iron and folic acid drugs has a positive effect on women and chil-

dren's health, "empowers" and is useful for "preventing frailty in women", especially during pregnancy, they said.

"Yes, I know that women should take these supplements during pregnancy – because after taking them, the body feels better, and they help a mother and a growing child to be strong and healthy."

A 21-year-old woman in her first pregnancy, employed, Bachelor degree, 500-800 GEL, ≥12 weeks

"Women should take iron and folic acid supplements during pregnancy to stay healthy and strong. It helps you to have a healthy baby."

A 20-year-old woman in her first pregnancy, employed, Bachelor degree, >800 GEL, ≥12 weeks

"I know that iron and folic acid supplements have a positive effect on women's health, especially during pregnancy. It promotes blood production and prevents anemia during pregnancy."

A 20-year-old woman with one child, employed, Bachelor degree, >800 GEL, ≤12 weeks

Some of the interviewed pregnant women (12 out of 26) regularly took iron and folic acid supplements. Respondents explained their regular use of these supplements by the fact that health professionals convinced them of their positive impact on the physical and mental development of the child.

They also believed that supplements should be good for the baby because "doctors know best what is best for pregnant women":

"*The doctor explained that these supplements will help my child's mental development. I trust my doctor. By taking these supplements, my child will be born healthy."*

A 26-year-old mother with one child, Employed, Bachelor, >800 GEL, ≥12 weeks

"*My dream is to have a healthy child. For my child to be born healthy, I must take supplements regularly. However, you cannot rely on medication alone. There should be a balance between healthy eating and medication."*

A 21-year-old woman in her first pregnancy, employed, Bachelor degree, 500-800 GEL, ≥12 weeks

A small part of the surveyed pregnant women (6 out of 26) did not want to take any medication during pregnancy at all. According to them, if the diet is rich and varied, there is no need to take additional iron preparations to prevent IDA.

"*Eating healthy food is more important than taking medicines because nutrition is the body's natural way of development."*

A 22-year-old woman with one child, employed, Bachelor degree, 500-800 GEL, ≥12 weeks

"It is quite possible that iron tablets are more harmful. I can fight anemia with proper nutrition - by taking iron-containing products."

A 21-year-old mother in her first pregnancy, self-employed, Secondary education, 250-500 GEL, ≤12 weeks

"I prefer to avoid taking any medication during pregnancy as much as possible and iron supplements are no exception."

A 22-year-old woman in her first pregnancy, employed, Bachelor degree, 500-800 GEL, ≥12 weeks

"Now my son needs good nutrition. So, I will only take the medicine if it has a good effect on my child's growth."

A 24-year-old mother with one child, employed, Bachelor degree, >500-800 GEL, ≤12 weeks

These women were unaware of the health problems that could occur if they did not take iron and folic acid supplements before and during pregnancy. However, some pregnant women have reported that if they do not take these supplements, the growing child may have physical or mental health problems.

"If women don't take these supplements during pregnancy, they will be physically weak. Not taking supplements harms a child's health, especially their physical or mental health."

A 22-year-old mother in her first pregnancy, employed, Bachelor degree, 500-800 GEL, ≥12 weeks

Most pregnant women were not aware of the recommended dose of iron and folic acid preparations, which might be due to their low education levels.

Adherence of pregnant women to iron and folic acid supplementation

Some of the pregnant women in the study reported not knowing when women should start taking these supplements. This shows that some health professionals do not provide their pregnant patients with adequate information about iron and folic acid supplements.

"I don't know exactly when pregnant women should start taking iron and folic acid supplements, but I know women should start taking them when they get pregnant."

A 19-year-old woman in her first pregnancy, employed, bachelor's degree, 500-800 GEL, ≥12 weeks

Only a few pregnant women knew about the need to start taking these supplements before pregnancy.

"*Women should start taking iron and folic acid preparations early in pregnancy, preferably months before pregnancy."*

A 20-year-old women in her first pregnancy, employed, bachelor's degree, >800 GEL, ≤12 weeks

Most participants did not know why pregnant women should take iron and folic acid supplements before pregnancy.

"I know why women should start taking these supplements before pregnancy. If women do not take preventive measures before pregnancy, the baby may be born weak mentally and physically."

A 22-year-old mother with two children, employed, Bachelor degree, >800 GEL, ≤12 weeks

DISCUSSION

According to doctors, the main causes of IDA are inadequate nutrition, poor quality food, environmental problems (for example, increased radiation levels), stress and unstable economic conditions. According to doctors, although pregnant women are more or less informed about proper nutrition, they do not follow medical recommendations, which is caused by socio-economic difficulties. According to gynecologists, the family doctor is less involved in the management of IDA in pregnant women and does not take responsibility. This is because primary health care is poorly developed in Georgia (18).

Involvement of the family doctor is seen as one of the key tasks for the prevention of IDA. Doctors believe that it is necessary to distribute iron supplements and prenatal vitamins to pregnant women free of charge in maternity hospitals and women's outpatient clinics. In addition, it is necessary to raise the level of education of pregnant women and change their attitude towards iron supplements, however, to solve the problem, it is necessary to improve the socio-economic situation.

Gynecologists play a critical role in preventing IDA as they see pregnant women eight times during pregnancy. They can improve prevention by:

- Early Screening & Monitoring – Regular hemoglobin and ferritin level checks.
- Patient Education – Reinforcing dietary guidance and addressing misconceptions about iron supplements.
- Ensuring Compliance – Monitoring adherence to supplementation and addressing barriers.
- Collaboration with Family Doctors – Enhancing primary care involvement for continuous support.
- Advocating for Free Supplements – Supporting policies for free iron and prenatal vitamin distribution.
- Prevention Programs – Implementing educational initiatives in hospitals and communities.

A total of 84.6% of pregnant women correctly identified the symptoms of IDA. The relatively high awareness of anemia among them may be attributed to the socio-economic characteristics of the study participants. Our study was conducted among urban pregnant women who might have adequate knowledge about anemia. Similar results were obtained from other studies (19,20). However, despite such high awareness, a total of 82.3% of the respondents did not know the clinical term of anemia, the causes, and the risk factors of IDA. Respondents defined anemia as a "lack of blood supply" in the body, which is a "normal, natural" condition during pregnancy, does not cause any harm to the child or the mother, and does not require medical attention. These perceptions of anemia indicate that, despite information and educational efforts by governmental and non-governmental organizations, pregnant women's understanding of anemia has changed little in recent decades (21). The high prevalence of anemia in pregnant women further reinforces the perception that "anemia during pregnancy is normal".

The respondents unanimously stated that the best preventive method for anemia is a healthy diet. Despite this knowledge, the respondents did not follow proper nutrition guidelines. Their daily intake of essential food was unstable. They had some idea of iron-containing foods, but most of those surveyed were unaware that iron deficiency was the cause of the anemia. Also, none of the pregnant women knew about products containing folic acid, which is related to the fact that folic acid is usually considered medicine by pregnant women. Similar results have been observed in other studies (22,23).

In our study, 78.3% of pregnant women demonstrated good awareness of anemia prevention strategies. Despite awareness of healthy eating, respondents did not adhere to the correct dietary pattern. Their daily intake of necessary food was unstable. One of the obstacles to a healthy diet was the rising cost of food making it less affordable. Cultural barriers also affect the nutrition of pregnant women. Due to religious or cultural values, some pregnant women followed a vegetarian diet that reduced iron intake through meat products. They also noted that the responsibility of caring for other family members made it difficult to maintain a healthy diet during pregnancy, suggesting the need to involve family members in efforts to reduce anemia.

In our study, 76.3% of pregnant women held misconceptions about anemia prevention methods. They believed that it is possible to correct and control IDA only with proper nutrition, with no need for iron supplements. According to them, if the diet is rich and varied, there is no need to take additional iron preparations to prevent IDA. They were also concerned that iron preparations, like other medications, could negatively affect the fetus. Many of them knew little about the potential health problems that could arise if they did not take iron-containing supplements, which may be attributed to their lower educational levels.

Studies have shown that doctors spend less time counseling pregnant women about IDA. A total of 81.2% of pregnant women find information mainly through the Internet, television, or literature, the rest receive information mainly from gynecologists. It is worth noting that only one of the interviewed pregnant women received counseling about IDA from a family physician, which indicates the limited role of a family physician in the prevention of IDA.

CONCLUSIONS

Despite some knowledge about the causes and prevention of IDA, its prevalence remains high in Georgia. This suggests that there is no link between the awareness of anemia and the adoption of healthy behaviors required to reduce its incidence. This highlights the complexity of perceptions regarding the causes of anemia and the need for an integrated approach to address the issue. Such an approach would involve improving prevention methods, ensuring more active involvement of family physicians, and enhancing government recommendations and nutrition programs for pregnant women. It is recommended to distribute iron supplements to pregnant women free of charge in maternity hospitals and women's outpatient clinics.

Although knowledge is essential, it is not sufficient to change the behaviors needed to improve health outcomes. In this context, greater public engagement and effective policy intervention can play a crucial role in overcoming existing challenges.

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