Cukurova Medical Journal
ÇUKUROVA ÜNİVERSİTESİ TIP FAKÜLTESİ

Cukurova Med J 2025;50(1):241-249
DOI: 10.17826/cumj.1626746

REVIEW

Nutritional supplements in pregnancy: recommendations based on current evidence

Gebelikte besin destekleri: güncel kanıtlar ışığında öneriler

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Abstract

Among the many factors affecting the outcome of pregnancy, the nutrition of the expectant mother plays an important role. Malnutrition is sometimes manifested by nutrient deficiencies and sometimes by over-nutrition. Another problem is the use of non-nutrient products in the hope of supporting nutrition. While some of these non-nutrients are produced and licensed as medicines, a considerable number of them are marketed as food supplements. The ingredients and preparation methods of food supplements are not as strictly controlled as those of medicines. When recommending a drug or product to patients, the goal should be to achieve a concretely defined benefit. It is not enough to simply assume that there will be no harm and that the ingredients of these substances are already naturally present in the body. The benefit/harm assessment of the substance used in terms of possible side effects, undesirable effects and drug interactions should be taken into consideration. When the group in question is pregnant women, it should be kept in mind that the differences in physiology in each week of pregnancy and the needs of the growing fetus and its resistance to external factors also vary. In our article, we tried to examine the products that are frequently used, recommended, prescribed and expected to positively affect pregnancy outcomes in terms of evidence-based medicine. As a result of our review, we found that the only products that have been shown to be beneficial in routine use are folic acid before pregnancy and in the first trimester and iron throughout pregnancy. For the other products, we concluded that it is valid to provide education about the importance of balanced and regular nutrition throughout life. .

Keywords:. Pregnancy, nutrition, mineral, omega-3 fatty acid, vitamin

Öz

Gebelik sonuçlarını etkileyen pek çok neden arasında anne adayının beslenmesi önemli bir yer tutar. Beslenme bozukluğu bazen besin eksikliği ile kendini gösterirken, bazen de fazla beslenme olarak karşımıza çıkar. Bir diğer sorunsa beslenmeye destek olması umuduyla kullanılan besin dışı maddelerdir. Besin dışı maddelerin bir kısmı ilaç olarak üretilmiş ve ruhsatlanmışken, azımsanmayacak kadarı da gıda takviyesi olarak pazarlanmaktadır. Gıda takviyesi sıfatındaki ürünlerin içerikleri, hazırlanma yöntemleri de ilaçlardaki kadar sıkı denetim altında değildir. Hastalara bir ilaç ya da ürünü önerirken hedef, somut bir şekilde tanımlanmış yararı elde etmek olmalıdır. Sadece zararının olmayacağı, bu maddelerin içeriklerinin zaten vücutta doğal olarak bulunduğu düşüncesi yeterli değildir. Kullanılan maddenin olası yan etki, istenmeyen etki, ilaç etkileşimleri açısından yarar/zarar değerlendirmesi göz önüne alınmalıdır. Söz konusu grup gebeler olunca gebeliğin her haftasındaki fizyolojinin farklılıkları ile büyümekte olan fetusun ihtiyaçlarının değişiklik göstermesi ve dış etmenlere dayanaklılığının da değişiklik gösterdiği akılda tutulmalıdır. Yazımızda sıklıkla kullanılan, tavsiye edilen, reçete edilen, gebelik sonuçlarını olumlu etkilemesi beklenen ürünleri kanıta dayalı tıp açısından irdelemeye çalıştık. İncelememizin sonucunda rutin kullanımında yararı gösterilmiş ürünlerin sadece gebelik öncesi ve ilk üçayda folik asit ile tüm gebelik boyunca demir olduğunu gördük. Diğer ürünler için ise esas olarak besinler yoluyla elde edilmelerinin, tüm yaşam boyunca dengeli ve düzenli beslenmenin öneminin vurgulanmasının, eğitiminin verilmesinin geçerli yol olduğu sonucuna vardık.

Anahtar kelimeler: Gebelik, beslenme, mineral, omega-3 yağ asidi, vitamin

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Received: 25.01.2025 Accepted: 13.03.2025

INTRODUCTION

Global fertility has fallen from five children per woman in the 1950s to 2.3 today[1]. Across continents, Africa has the highest fertility, while Europe and North America have the lowest. The situation is reversed in terms of economy, education, social opportunities, and access to health care. 44% of all pregnancies can be classified as unexpected (unplanned, also called unwanted). This rate means that 62 out of 1,000 women aged 15-44 will have an unexpected pregnancy. The difference between continents again reveals the two extremes related to the development of countries. Unplanned pregnancies are 96 per 1,000 women aged 15-44 in Africa and 41 in Europe and North America[2]. In light of these numbers, the first conclusion to be drawn is that the number of births on our planet is decreasing, with the majority of births occurring in economically disadvantaged areas where the risk of malnutrition is high. Moreover, even in countries with the best conditions, a significant proportion of pregnancies occur unexpectedly.

For this reason, nutrition is an issue that should be addressed not only during pregnancy but also for all women of childbearing age. It has been shown that moves that will positively change and improve the living conditions of women will also contribute positively to children. On the other hand, the criteria of the steps to be taken, which correspond to evidence-based medicine practices in terms of positive sciences, should be carefully examined, and the issue should be handled carefully in terms of health economics. The way the International Federation of Obstetrics and Gynecology (FIGO) addresses this issue is to improve not only nutrition but also lifestyle[3]. Proper nutrition is as much about the content of food as the quantity. Today, various food, mineral, and vitamin supplements are recommended for pregnant women accessing health care. There are many scientific studies, reviews, and guidelines from national and international organizations that support and do not support each of these. In these studies, there are many unanswered questions about the purpose of the product to be used, whether it is expected to benefit the health of the mother or the baby, possible side effects, and the results that may occur due to the combination of these products. Most of these products are not included in reimbursement within the scope of social security in our country. The article aims to reflect the current knowledge and opinions on proper and balanced nutrition during pregnancy.

NORMAL ENERGY NEEDS AND NUTRITION IN PREGNANCY

This prescription should be continued if there is no pre-pregnancy malnutrition. The woman should be informed that her energy needs do not increase except at the end of pregnancy and that eating more except at the end of pregnancy will not make her and her baby healthier. The World Health Organization (WHO) and the Food and Agriculture Organization (FAO), two subsidiary organizations of the United Nations (UN), have determined that the increase in energy needs during pregnancy is 85 kcal/day, 285 kcal/day and 475 kcal/day in each trimester, respectively[3]. The daily protein intake of a woman with adequate nutrition before pregnancy is 60 g/day. WHO has formulated this to be increased by an additional 1, 9 and 31 g/day for each trimester, respectively. However, even in the presence of pre-pregnancy malnutrition, a balanced protein/energy intake is defined as a protein intake of no more than 25% of daily energy. Protein intake above this level is not beneficial and may be harmful to the fetus[3]. WHO's healthy dietary recommendations for women of childbearing age are shown in Table 1[3].

Table 1. WHO's healthy eating recommendations for women of childbearing age

Fruits, vegetables, legumes (e.g. lentils, beans).
Nuts and whole grains (e.g. unprocessed maize, millet, oats, wheat, brown rice).
At least 400 g (5 portions) of fruit and vegetables per day (potatoes, sweet potatoes, cassava, and other starchy roots are not classified as fruits or vegetables).
Less than 10% of total energy from free sugars, equivalent to 50 g (or around 12 level teaspoons), but possibly less than 5% of total energy for additional health benefi ts.
Less than 30% of total energy from fat, with preference for unsaturated fats:
Saturated fats less than 10% of total energy
Polyunsaturated fats 6%−10% of total energy
Less than 5 g of salt (equivalent to approximately one teaspoon, which contains 2 g sodium) per day and use of iodized salt.

A woman's fat needs in pregnancy are no higher than in pre-pregnancy and should correspond to 15-30% of her daily energy needs. Within this fat, saturated fats should be limited (e.g. fried foods). Foods containing polyunsaturated fatty acids should be maintained at 1-2 meals a week of oily fish. When choosing fish, it should also be borne in mind that those with a high risk of excess mercury content should be avoided.

Carbohydrates (especially glucose) are the most important source of energy during pregnancy and non-pregnancy. It is important to choose complex carbohydrates, i.e. those with a low glycemic index, and to avoid adding sugar to foods. This choice of carbohydrates will also prevent the possibility of developing diabetes during pregnancy and prevent excess weight gain. Again, in those whose pregnancy is complicated by diabetes, this choice will reduce the need for insulin and prevent macrosomia. It is recommended to increase the non-pregnancy carbohydrate intake from 130 g/day to 175 g/day during pregnancy.

Consuming fiber in the diet protects against constipation and reduces the risk of diabetes. It is recommended to consume 25 g of fiber per day before and during pregnancy. By consuming fruits, vegetables, and whole grains instead of processed flour and simple sugars, the need for fiber is met.

FISH OIL

A Cochrane review examined the effect of routine provision of fish oil supplements to pregnant women on perinatal outcomes. It used data from nearly 20,000 pregnant women from 70 studies comparing randomly selected cases with controls. Most of these studies were conducted in societies with developed economies. Supplementation with omega-3 fatty acids during pregnancy reduced the risk of delivery < 37 weeks (RR: 0.89 and 95% CI 0.81-0.97) and delivery < 34 weeks (RR: 0.58 and 95% CI 0.44-0.77). The prevalence of delivery > 42 weeks and large fetuses increased, and perinatal death, neonatal intensive care unit admission and low birth weight decreased. There was insufficient evidence to assess maternal outcomes such as need for induction, the need for intensive care, postpartum depression, and pre-eclampsia[4].

In a recent review, its protection against preterm birth was underlined[5]. Accordingly, women of childbearing age should be provided with 250 mg of docosahexaenoic acid and eicosapentaenoic acid daily, either through diet or medication. During pregnancy, ≥ 100-200 mg/day of docosahexaenoic acid should be added. Those with deficient docosahexaenoic acid levels should be given 600-1000 mg/day of docosahexaenoic acid before the 20th week of pregnancy. This support should be continued until the 37th week. To assess the adequacy of docosahexaenoic acid blood levels, a 7-question questionnaire that has been studied for equivalence for pregnancy can be used[6]. However, no evidence has yet been obtained to recommend routine fish oil recommendation to pregnant women. In addition, it has not been proven that it provides neurodevelopmental contribution to the baby or protects the mother from postpartum depression[7].

VITAMINS

Vitamin D

Vitamin D is a fat-soluble vitamin and is synthesized by exposure of human skin to sunlight. It can also be obtained in the diet from oils derived from fish liver, oily fish, mushrooms, eggs, and liver. It plays a role in bone health, mainly through its effects on calcium and phosphorus metabolism, but it is also involved in normal cell function in many tissues. In addition to interpersonal differences in dietary intake, brunettes, people living above latitude 40, winter, old age, sunscreen creams, and closed clothing also have a decreasing effect on vitamin D synthesis. Fetuses meet their needs by storing the vitamin D they receive from their mothers. Vitamin D deficiency is common in pregnant women in Middle Eastern and Asian countries. The aim of vitamin D supplementation during pregnancy is to prevent many problems such as hypertension, diabetes, preterm birth, and low birth weight[8].

Although Committee Opinion 495 of the American College of Obstetricians and Gynecologists (ACOG) emphasizes that severe vitamin D deficiency in pregnancy may have adverse effects on fetal bone development, it also states that there is insufficient evidence to show the benefit of routine vitamin D screening for all pregnant women. Likewise, there is insufficient evidence to recommend checking whether the vitamin D level obtained at the first test

has changed over time (regardless of the previous result)[9].

In the antenatal care guidelines published by WHO in 2016, it was stated that there was insufficient evidence to recommend routine vitamin D supplementation for pregnant women. Following the results of the 2018 Cochrane review, which included studies conducted in the following years, WHO addressed the issue in a new guideline. Accordingly, pregnant women should be informed and encouraged to eat a balanced and proper diet. They should also be educated to benefit from the sun as the most important source of vitamin D[10]. ACOG's Committee Opinion No. 495 of 2011 gave the daily dose as 600 IU based on the FAO and mentioned that the upper limit of the dose could be up to 4,000 IU[9]. However, the more recent WHO guideline suggests that 200 IU per day is sufficient for pregnant women who are thought to have vitamin D deficiency or who are not getting enough sunlight[10]. In other words, even if severe vitamin D deficiency is considered at the end of a period of approximately 10 years, the dose of support to be given has been considerably reduced.

Vitamin A

Since vitamin A is fat-soluble, some of it can be stored in the body. Foods rich in vitamin A include yellow-red-green leafy vegetables (spinach, carrots, potatoes, red pepper), cheese, milk, yogurt, eggs, oily fish, liver, and legumes. It has regulatory and strengthening effects, especially on vision and the immune system. Despite this fundamental role in the metabolism, the excess intake of vitamin A during pregnancy may cause central nervous and cardiovascular system malformation or abortion. If the vitamin A intake exceedes 15.000 IU/day via diet or 10.000 IU/day via supplement drugs may harm the developing fetus. Additionally, a synthetic derivate of vitamin A, the isotretinoin, which is used in the treatment of acne and is prohibited during pregnancy due to its potential of teratogenicity[11].

The goal of vitamin A supplementation in pregnant women is to prevent night blindness, to make the mother and newborn more resistant to infectious diseases thanks to its benefits on the immune system, and to reduce the risk of HIV infection in the mother and its transmission to the fetus. However, none of the reviews and meta-analyses have shown such a benefit. Instead, the common recommendation in all guidelines is to provide education on the adequate intake of vitamin A through a balanced and regular diet throughout life and during pregnancy[12].

Vitamin K

It is a fat-soluble vitamin. It is involved in the structure of many substances involved in the normal clotting functions of the blood. It is found in green leafy vegetables, vegetable oils, and cereals. It is also produced and utilized by bacteria in our intestines.

Those who recommend vitamin K supplementation aim to prevent hemorrhagic disease of the newborn in preterm births. Vitamin K supplementation has also been proposed to prevent the deficiency of clotting factors in patients taking anti-epileptic drugs and those whose pregnancy is complicated by cholestasis. However, reviews and meta-analyses of this claim, which was proposed in the 1960s, have failed to show any benefit of vitamin K supplementation in any pregnant group (whether routine prevention or pregnancies with certain risks)[13].

Vitamin E

It is a fat-soluble vitamin. It regulates skin and eye health. It ensures the correct functioning of the immune system. It is found in vegetable oils, nuts, and cereals.

Those who recommend vitamin E supplementation to pregnant women claim that pathologies associated with oxidative stress can be prevented. These include stillbirth, neonatal death, preterm birth, preeclampsia, premature rupture of membranes, and fetal growth restriction. However, a Cochrane meta-analysis of a total of 22,000 patients from 10 studies that presented data on these topics found no evidence that vitamin E supplementation alone or in combination with other vitamins could prevent these pathologies[14].

Vitamin C

It is a water-soluble vitamin. It is involved in the integrity of cells, wound healing, and the health of bone, vessels and cartilages. Dietary sources include citrus fruits, potatoes, strawberries, and peppers.

Among the claims put forward by those who expect benefits from vitamin C supplementation to pregnant women is that it may have a protective effect against pathologies such as neonatal death, fetal growth restriction, preterm birth, and preeclampsia. The

Cochrane review on the subject included 29 studies with data from 24,000 women. It found no evidence that vitamin C supplementation, either alone or in combination with other vitamins, could prevent this group of pathologies[15].

Vitamin B

The vitamin B family includes many vitamins. These water-soluble vitamins are not stored in large quantities in the body.

Thiamine (vitamin B1)

Thiamine is involved in the healthy functioning of the nervous system and in obtaining energy from food. It is found in bananas, citrus fruits, peas, nuts, and whole-grain bread. Severe deficiency causes Wernicke's encephalopathy and beriberi. It has a role in preventing refeeding syndrome in severe pregnancy-related nausea and vomiting (not all cases, only those with hyperemesis gravidarum)[16].

Riboflavin (vitamin B2)

Riboflavin is involved in the healthy functioning of the skin, eyes, and nervous system. It also plays a role in the release of energy from food. It is found in milk, eggs, and mushrooms.

Niacin (vitamin B3)

Niacin is involved in the healthy functioning of the nervous system and in obtaining energy from food. It is found in meat, fish, and eggs. It is one of the substances that can be used as an alternative to drugs in the treatment of hypertriglyceridemia. In one study, a mild association between niacin deficiency and the frequency of congenital anomalies was shown (OR 1.15, 95% CI 1.03-1.26)[17]. However, further studies are needed to confirm the validity of this weak association.

Pyridoxine (vitamin B6)

Pyridoxine is found in peanuts, poultry such as turkey and chicken, fish, soybeans, bananas, milk, and oats. Like thiamine, it is commonly used in hyperemesis gravidarum and has been shown to reduce symptoms in these patients[18]. Data from 1,600 patients included in 5 studies examining the benefits of pyridoxine supplementation were analyzed in an old Cochrane review. Accordingly, although vitamin B6 supplementation has been shown to reduce tooth loss in pregnant women, serious methodological flaws were noted in these studies: when taken in capsule form (1 study): RR 0.84; 95% CI 0.71-0.98 when taken as a lozenge (1 study): RR 0.68; 95% CI 0.56-0.83. In the same review, no association was shown with preeclampsia, eclampsia, and low APGAR score[19].

Biotin (vitamin B7)

Very small amounts of biotin are sufficient for normal metabolic functions. It is found in many foods and is also produced by bacteria in the intestines and made available to humans. It is also not clear whether it should be taken as a supplement or not.

Folic acid (vitamin B9)

Of the vitamin B family, folic acid is the most frequently mentioned in pregnancy. Its main benefit is protection against neural tube defects in the fetus. It also has a role in hematopoiesis. In terms of evidence-based medicine, it is one of the limited number of substances that have been shown to contribute to maternal and infant health. The effective level can be determined not by measuring the level of folic acid in the blood but by the level of folic acid in erythrocytes[20]. However, this measurement is not possible everywhere. Instead of measuring folic levels in the blood, promoting a diet rich in folic acid (green leafy vegetables) should be the primary strategy. Since many pregnancies occur unexpectedly, women of childbearing age and women with fertility plans should be educated about the importance of folic supplementation, even if they have sought health care for other reasons.

To prevent neural tube defects, folic acid should be supplemented from 2-3 months before pregnancy until 2-3 months of pregnancy is completed. If there is a low-risk pregnancy in terms of neural tube defects, the dose should be 0.4 mg/day and if there is a high-risk pregnancy, the dose should be 4 mg/day. These doses have not been shown to have adverse effects on the mother and fetus. There are also no negative findings regarding the intake of 5 mg folic acid per day. However, there are not enough studies examining this issue[21]. However, it should be kept in mind that the most affordable folic acid preparation is not the one containing low doses, but the one containing 5 mg. There are studies suggesting that folic acid is protective against various anomalies other than neural tube defects such as cleft lip/palate, urinary anomalies, cardiac anomalies, gastrointestinal system anomalies, and abdominal wall defects[21], as well as studies showing that it is not protective[22].

Folic acid is given 1 mg/day throughout pregnancy for anemia prophylaxis in patients (not carriers) with hemoglobinopathies such as sickle cell disease and beta thalassemia[23]. In addition to neural tube defects and anemia, data are showing that folic acid supplementation in early pregnancy is also protective against autism. Although the level of evidence is weak, although it is tried to establish a relationship between folic acid use in pregnancy and issues such as increased frequency of asthma in the child, increased cancer prevention and frequency, and increased frequency of twin pregnancy, there is very low evidence levels[24].

In reality, the concern that folic acid supplementation will mask vitamin B12 deficiency, resulting in pernicious anemia, is quite exceptional. There is no meta-analysis showing that vitamin B12 supplementation is routinely required in addition to folic acid to avoid masking vitamin B12 deficiency. However, there are studies with a level of evidence II-2A recommending the addition of 2.6 µg/day vitamin B12 in addition to folic acid[21].

Cyanocobalamin (vitamin B12)

Cyanocobalamin is the most frequently mentioned vitamin B family member after folic acid in pregnancy. It is involved in erythrocyte production, proper functioning of the nervous system, and obtaining energy from food. Severe deficiency causes pernicious anemia. It is found in meat, milk, fish, and eggs. Those who advocate vitamin B12 supplementation during pregnancy defend the thesis of protection against anemia. It is more common in people with diseases that cause malabsorption in the gastrointestinal tract and in vegans or vegetarians. With these exceptions, routine vitamin B12 supplementation has not been shown to improve pregnancy outcomes[25].

MINERALS

Iron

The expected benefit of providing iron supplementation to pregnant women is the prevention of anemia and elimination of anemia, if any. In case of anemia, the pregnant women will be more vulnerable to possible postpartum hemorrhage. In addition, they will have difficulty in doing their daily work as the effort capacity will decrease. It has been shown that babies born to anemic mothers are prone to weighing less and being born at very early weeks (<32 weeks)[26]. Iron deficiency beginning before pregnancy is one of the most common public health problems in societies. Iron deficiency is estimated to have a prevalence of 40% among pregnant women worldwide. The regions with the highest prevalence of iron deficiency anemia are Southeast Asia (49%), sub-Saharan Africa (46%), and the Eastern Mediterranean (41%). The lowest prevalence worldwide is in the Americas (26%) and Europe (27%). According to WHO, if the prevalence of iron deficiency is >40%, 60 mg/day supplementation should be provided, and 30 mg/day if it is less. In pregnant women with anemia, a hemoglobin level of ≥ 11 g/dL should be achieved with 120 mg elemental iron supplementation daily. After anemia resolves, lower doses can be resumed.

The frequent undesirable side effects of iron, especially on the gastrointestinal system, may sometimes make it difficult for the patient to comply with the drug. In such cases, anemia prophylaxis can be provided with 120 mg of iron once a week. However, before using this method, it is necessary to make sure that the patient is not anemic and that the prevalence of iron deficiency in the region where the patient lives is <20%. It should be kept in mind that absorption will be more efficient if the iron to be provided is +2 valence.

Calcium

It is involved in bone and tooth health, contraction of all muscles, nerve conduction, and blood clotting. Milk and dairy products, green leafy vegetables, and bread are foods rich in calcium. The goal of providing calcium support to pregnant women is to reduce the risk of preeclampsia. A 2014 Cochrane review concluded that the risk of pre-eclampsia can be reduced with calcium supplementation > 1 g/day, especially in women with a low-calcium diet[27].

First of all, adequate calcium intake through food should be supported. If it is to be taken as a tablet, it is recommended to take the daily dose of 1.5-2 g with meals, divided into three. It should be kept in mind that if taken together with iron, the two may bind and disrupt the absorption of each other. Therefore, there should be a difference of at least a few hours between them. There is no definite information on the period of pregnancy in which it should be started to be used. Aspirin, another product used for prophylaxis of pre-eclampsia, is recommended at the beginning of pregnancy, but the side effects of calcium on the

gastrointestinal system limit its use in such an early week.

Zinc

Zinc is a trace element and is not stored in the body, so it is needed daily. Zinc in meat is poorly absorbed, whereas that in cereals is highly absorbed. It is accepted that the need increases twofold in the last trimester of pregnancy and threefold during breastfeeding. Although it has been associated with prolonged labor, postpartum hemorrhage, pre-eclampsia, preterm delivery, and overdue delivery in previous studies, since this relationship has not been proven, the WHO's 2021 guideline maintained the recommendation in the 2016 antenatal care guideline. Routine zinc supplementation is not recommended for pregnant women until studies have shown a positive effect on maternal and newborn health. Instead, it is recommended that pregnant women get enough zinc through a balanced, proper, and regular diet. Educating and encouraging pregnant women about proper nutrition and lifestyle has been emphasized[28].

Iodine

It is involved in thyroid hormone synthesis. Thyroid hormone begins to be produced in fetal life at the end of the first trimester, but even near birth, 30% of circulating thyroxine comes from the mother. Thyroid hormone plays an important role in fetal somatic growth and central nervous system development. Cow's milk, eggs, sea fish, and shellfish are rich in iodine. In our country, the iodization of table salt prevents iodine deficiency to a significant extent. If there is no access to sufficient iodine through salt, the daily requirement is 250 μg. Although some countries supplement salt with iodine, it is still recommended that pregnant women should receive 150 μg of iodine daily[3]. The WHO "Recommendations on antenatal care for a positive pregnancy experience" states that there are no recommendations to support routine iodine supplementation[8].

Magnesium

It is involved in obtaining energy from food and in the proper functioning of the parathyroid gland. It is found in spinach, whole wheat bread, and thick-shelled fruits such as hazelnuts, walnuts, and almonds. In pregnant women, oral administration of magnesium in tablet form is desirable to prevent leg cramps. A recent Cochrane review on the topic included 8 studies to collect data on 576 women. The results of these studies were described in different ways and explored different endpoints. At the end of the review, the authors explained that it was not possible to provide evidence that magnesium is effective in relieving leg cramps[29].

Other minerals

In addition to the above, the United Nations International Multiple Micronutrient Antenatal Preparation (UNIMMAP) states that there is no data to support the routine use of any of the following minerals during pregnancy[8].

Selenium

Found in fish, meat and eggs. It is responsible for the regular functioning of the immune system.

Copper

It is involved in leukocyte and erythrocyte synthesis. It is found in thick-shelled fruits such as hazelnuts, walnuts, almonds, offal and shellfish.

Manganese

Acts as a co-factor of some enzymes. It is found in bread, nuts, walnuts, almonds, thick-shelled fruits and green vegetables.

Molybdenum:

Acts as a co-factor of some enzymes. It is found in many foods.

Phosphorus

Found in red meat, fish, poultry, bread, brown rice and oats. It is involved in both energy metabolism and bone and tooth health.

Potassium

It is involved in intracellular water retention and regular functioning of muscles. It is abundant in fruits, vegetables, seeds, nuts, meat, fish and poultry.

Sodium chloride (salt)

Found in prepared foods, meat, cheese and bread. It has an important role in the body's fluid-electrolyte

balance.

DISCUSSION

Pregnancy is a limited period in the life of a mostly healthy woman. Nevertheless, it is not possible to say that pregnancy is free from all dangers. With the right steps to be taken during pregnancy, it is possible to take measures that will positively affect both maternal and infant health. On the other hand, it should not be ignored that the steps to be taken must be proven beneficial, cost-effective and harmless in terms of maternal and infant health. Considering these principles, the phrase "Think nutrition first" in the title of FIGO's 2015 guidelines best summarizes the issue. Balanced and regular nutrition is one of the most effective steps not only for a healthy pregnancy but also for protection against many common chronic diseases such as hypertension, diabetes, obesity and atherosclerosis.

According to open sources on the Internet, the global market for vitamins and minerals has reached 31 billion USD in 2024. Expectations are that the market will grow at an average annual rate of 6.5-7 percent until 2030. One of the important customers of this market or, from the point of view of marketers, one of the targets is pregnant women. Some of the drugs in this group have been included in the reimbursement list by the Social Security Institution (SSI), the official social security organization in Türkiye. However, most of them are not included in this list and are purchased by expectant mothers by paying the full price.

Attempting to determine the daily intake of foods based on the content of only one ingredient may unnecessarily increase the total energy intake. For example, approximately 500-700 mL of milk or 400-500 mg of molasses provides 1.5-2 g/day calcium recommended by WHO for prophylaxis of pre-eclampsia. When this amount of milk or molasses is consumed, the energy, other vitamins and minerals to be taken should also be taken into consideration in the daily needs list of the person.

Excessive use of elements can be harmful. Some examples of this relationship are iodine and autoimmune thyroiditis, calcium and nephrolithiasis, vitamin A, and congenital malformations. On the other hand, taking them with food can prevent these complications.

CONCLUSION

It is in the best interest of patients that those of us who provide health care services to pregnant women, namely gynecologists and obstetricians, family physicians, midwives, and nurses, follow a clear path without ignoring the principles of evidence-based medicine while providing advice to patients. In light of the information we have discussed at length above, folic acid at the beginning of pregnancy and iron are the only ones that should be recommended to patients. A balanced and proper diet is the source of many other minerals and vitamins.

Some of these supplements are possible candidates for preventing pregnancy complications. One of these is the calcium supplementation. There is some evidence that it may be useful in preventing preeclampsia. The second possible candidate is the omega-3 fatty acids for preterm labor. However, the dosage and appropriate pregnancy interval are the subject of future research. It is of great benefit to use social media, today's most important communication power, more effectively to educate patients on balanced and proper nutrition.

Author Contributions: Concept/Design : SB, İCE; Data acquisition: SB; Data analysis and interpretation: SB, İCE; Drafting manuscript: SB, İCE; Critical revision of manuscript: SB, İCE; Final approval and accountability: SB, İCE; Technical or material support: SB; Supervision: SB; Securing funding (if available): n/a.
Ethical Approval: This is a review article and does not need to be approved by an Ethics Committee or require informed consent.
Peer-review: Externally peer-reviewed.
Conflict of Interest: The authors have no conflicts of interest to declare.
Financial Disclosure: The authors declared that this study has received no financial support.

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