Chapter

The Effects of Multivitamin Use In Pregnancy on Mother and Fetus Health

Neda Taner and Gülden Zehra Omurtag

Abstract

Pregnancy and birth method are the key factors to boost healthy new generations. Pregnancy may be a special period during which ladies have lived several process. During this period, for the protection of maternal and fetus health enhanced energy and nutrition demand supply is needed. Sufficient intake of nutrients and correct weight gain has necessary effects on each the mother’s and the developing fetal health. it’s also important to guard against short and long run complications. Nutrition is very important before and once pregnancy yet as throughout pregnancy. During this study, the intake of macro and micro nutrient items moving maternal and ve fetal health issues absolutely during pregnancy is detailed. As macro nutrition items carbohydrate, protein and fat examined. Adequate protein is important during pregnancy. Fats are important nutrients that provide essential fatty acids for the development of the brain and central nervous system of the fetus. Micro nutrition items water soluble and oil soluble as 2 cluster examined. The consequences of minerals during pregnancy were also examined.

Keywords: Maternal and fetus health, nutrition, pregnancy, mineral, vitamin supplementation

1. Introduction

In order for the species to be preserved over time, genetic data must be transferred from generation to generation [1]. Reproduction, which takes place so as to take care of the continuity of the lineage, starts with the fertilization stage at the start and continues with the pregnancy method [2].

The feminine body undergoes several physiological, anatomical and biochemical changes in order to adapt to the pregnancy process [3, 4]. Though the prevalence of those changes throughout pregnancy is taken into account physiological, occurrence outside of pregnancy is considered a pathological condition [4]. Pregnancy covers a period of nine months and ten days or 280 days or forty weeks from the primary day of the last menstrual day of the expectant mother [2, 5].

The main symptoms that occur during this process are as follows: interruption of the menstrual cycle, tenderness within the breasts, nausea-vomiting, frequent urination, augmented vaginal discharge, tiredness, citosis and feeling baby movements [6, 7]. Throughout pregnancy, the bond between mother and fetus is maintained by the placenta shaped in the 1st month of pregnancy. Providing the
development of the fetus by carrying the nutrients taken by the mother to the fetus, and also the passage of the wastes in the fetus to the mother’ circulation happens through placental circulation [6, 8].

The importance of nutrition during pregnancy is extremely necessary in terms of fetus development, and this issue has attracted loads of attention in recent years [8]. So as for kids to turn healthy and for the protection of mothers’ health, among the most necessities are a property healthy fetal development method throughout pregnancy, stimulation of milk production, enlarged would like for nutrients, and accordingly, adequate and balanced nutrition [5]. Inadequate or excessive intakes during nutrition during pregnancy cause several health issues similar to inborn disorders, preterm or miscarriage, mental biological process delays [9]. Variations in social and cultural values, errors in preparation, storage and cooking within the foods that pregnant ladies can consume, failure of addition to the daily diet in response to the increasing would like of the mother, economic inadequacies, alcohol, cigarettes and drug use by the pregnant girl are often counted among the most reasons for organic process issues throughout pregnancy [10]. The mother’ weight at the start of pregnancy is very important in terms of the number of weight she ought to gain during the full pregnancy. Throughout pregnancy, one among the foremost important problems in terms of maintaining maternal and fetal health is body weight gain during pregnancy. Gaining adequate body weight is possible by providing energy at suggested levels and taking macro and micronutrients throughout pregnancy [11].

2. Carbohydrates

Macromolecules: Carbohydrates are organic compounds consisting of carbon (C), element (H) and atomic number 8 (O) [1]. Carbohydrate demand varies bet- ong on the energy requirement for acceptable pregnancy weight [12]. The specified energy would like depends on the individual’ age, gender, physically activeness and, if any, their special condition [13]. 60% of the overall daily energy ought to be met from carbohydrates [12]. 1 g of carbohydrates provides a median of four calories of energy [13]. The daily carbohydrate intake need for pregnant ladies is 170 g/day, and the daily macromolecule intake for non-pregnant ladies is 130 g/day [14].

3. Proteins

Proteins, that are the building blocks of cells, are the littlest a part of the body and incorporates amino acids [13]. They’re one among the most nutrients that has got to be taken for growth and development. 10–11% of daily energy would like is met from supermolecules [13]. 1 g of protein offers four kcal of energy. Proteins are the body’ highest energy store once fatty tissue [1]. Throughout pregnancy, proteins are functionally needed for fetal growth, placental development, formation of amnionic fluid, increase of maternal blood volume and growth of maternal tissues. Therefore, the supermolecule demand will increase throughout pregnancy [15]. The order of protein requirement for tissue building and repair is as follows: fetus (42%) followed by female internal reproductive organ (17%), blood (14%), placenta (10%), and breast enlargement (8%). Throughout pregnancy, the uterus and maternal blood are comparatively wealthy in protein instead of fat or macromolecule [15]. Despite the decrease in total protein and albumin during pregnancy, there’s no downside within the protein requirement for the fetus since the protein taken in the diet is employed additional effectively. Studies have shown that the
organic compound concentration is higher in the fetal compartment than within the maternal one. This higher concentration is usually regulated by the placenta. The placenta not solely concentrates amino acids in the fetal circulation, however is additionally liable for supermolecule synthesis, oxidation, and transamination of some non-essential amino acids [15]. Whereas the number of protein that non-pregnant ladies ought to take is 0.8 g/kg/day, this figure is 1.1 g/kg/day throughout pregnancy [14].

4. Lipids

Fats are organic compounds composed of fatty acids and glycerol. Fatty acids are named in step with the amount of carbon atoms in the molecule and also the number of double bonds between carbons. Those while not double bonds are referred to as saturated fatty acids, and those with double bonds are called unsaturated fatty acids [13]. Fats are necessary as a result of the surplus energy within the body is hold on as fat tissue. One gram of fat provides a median of nine calories of energy [13]. Fat demand varies betting on the energy requirement needed for correct weight gain. Roughly 20–30% of daily energy ought to be provided from fats [12]. Additionally to providing energy, fats modify the utilization of fat-soluble vitamins (A, D, E and K) in the body [12]. In addition, the intake of some fatty acids with food, that are enclosed within the composition of fats and do not seem to be created by the body, gains importance for growth and skin health [14]. Fats are necessary nutrients that offer essential fatty acids necessary for the event of the brain and central system of the fetus [12].

5. Vitamins

Vitamins are essential organic substances that are necessary for the traditional prevalence of metabolic events in the body and for maintaining a healthy state. Lack of any creates a selected disorder and damage. Vitamins are taken outwardly with most plant or animal foods. Some vitamins, on the opposite hand, are often partially synthesized within the body, albeit in lean amounts, or they are infatu- ated food [16]. They’re not the fundamental artifact in the human organism; however, they need totally different functions for the regulation and continuity of body functions. Vitamins do not offer energy like different body parts similar to carbohydrates, supermolecule and fat. Their main function is to act as a catalyst in the energy-releasing reactions of carbohydrates, proteins and lipids [17]. In some western countries such as the United States and England, the “recommended daily ration (RDA)” value for every vitamin has been determined as a basis for evaluating food things as nutrients and control the daily diet. This determination was supported a daily food intake of 2000 kilocalories [16]. A diet with foods that contain adequate amounts of main nutrients similar to carbohydrates, supermolecule and fat, and particularly from numerous sources provides enough vitamins for the body’s daily would like, aside from some special cases [16]. Pregnant women, lactating women, children, athletes, smokers, the elderly, those that are underneath stress and who are sick from sickness have a better need for vitamins [17]. Vitamins are divided into two main teams as fat soluble and water soluble. This solubility property determines the pharmacokinetic properties of vitamins and a few of their qualities relating to their use. They’re divided into fat-soluble vitamins (A, D, E, and K) and soluble vitamins (group B and vitamin C) [14]. These are summarized in Table 1:
Since water-soluble vitamins cannot be hold on much within the body, they have to be taken frequently in enough quantities to fulfill the daily demand [1, 16]. They’re additionally straightforward to expel from the body. Since fat-soluble vitamins are generally hold on in the liver, they are doing not cause vitamin deficiency symptoms though they are taken in lean amounts for a while, if they are taken in enlarged amounts later on. Urinary excretion of fat-soluble vitamins is mostly limited. Therefore, high-dose treatments with these vitamins carry a risk of toxicity [18]. One among the foremost common useful properties of soluble vitamins is their incorporation into specific enzymes as cofactors. In contrast, a minimum of 2 of the fat-soluble vitamins (vitamins A and D) act as hormones and act with specific receptors in their target tissues [1]. The necessity for micronutrients throughout pregnancy will increase thanks to physiological changes, and vitamin supplements applied during this era became customary [19]. The expansion and development of the fetus depends on the essential nutrients and vitamins taken by the mother [18]. Since several micronutrients are passed from mother to baby, maternal deficiency causes deficiency in fetus and newborn [20]. In some studies, vitamin deficiency during pregnancy could end in megaloblastia, ectoblast defects, placental and fetal defects, low birth weight, and premature birth [18]. Since several micronutrients are passed from mother to baby, deficiency within the mother causes deficiency in the fetus and newborn. The mechanism of passage through the placenta differs between micronutrients, so some micronutrients are at larger risk of not being transferred to the fetus than others [20].

5.1 Use of vitamin A in pregnancy

Since vitamin A cannot be synthesized in the body while not a precursor, it’s a vitamin that has got to be taken outwardly [21]. It’s a lipid-soluble inhibitor [22]. It’s hold on in the liver [8]. Fat-soluble vitamin is taken into the body in 2 totally different forms, that are necessary for the living body. The foremost common and necessary within the body is antiophthalmic factor [23]. Fat-soluble vitamin plays a basic role in retinoid metabolism and visual functions, cellular differentiation relating to embryonic development, respiratory organ maturation and system development [8]. The most pathological conditions related to vitamin A deficiency throughout pregnancy are declared as preterm birth, low birth weight and low infant liver vitamin A storage cases. Low vitamin A level in newborns seems to be an element that will increase the chance of bronchopulmonary abnormal condition and infection [24]. Fat-soluble vitamin supplementation does not result on the

| Water soluble vitamins                                                                 | Fat soluble vitamins |
|--------------------------------------------------------------------------------------|---------------------|
| • Vitamin B₁ (Thiamin)                                                                | • Vitamin A         |
| • Vitamin B₂ (Riboflavin)                                                             | • Vitamin D         |
| • Vitamin B₃ (Niacin)                                                                 | • Vitamin E         |
| • Vitamin B₅ (Pantothenic acid)                                                       | • Vitamin K         |
| • Vitamin B₆ (Pyridoxin)                                                              |                     |
| • Vitamin B₇ (Biotin)                                                                 |                     |
| • Vitamin B₉ (Folic acid)                                                             |                     |
| • Vitamin B₁₂ (Cyanocobalamin)                                                        |                     |
| • Vitamin C                                                                           |                     |

Table 1. Water and fat soluble vitamins.
The Effects of Multivitamin Use In Pregnancy on Mother and Fetus Health
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chance of maternal mortality, perinatal death, infant death, stillbirth, neonatal anemia, preterm birth and having a low birth weight baby. However, studies on vitamin A supplementation have shown a reduced maternal risk of visual disorder [25]. Associate early and necessary symptom of vitamin A deficiency is night blindness [8]. High-dose vitamin A supplementation includes an agent effect and will increase the risk of abnormalities within the central nervous system, urinary organ system and vessel systems in the newborn [18]. Each lean and excessive intake of vitamin A will cause issues in fetal growth and development, thus vitamin A sources ought to be adequate and reliable throughout pregnancy [24]. Several pregnant ladies will get the specified quantity of vitamin A from their daily diet while not the necessity for extra vitamin supplements [18]. It’s celebrated that vitamin A supplementation will increase the birth weight and growth of the kid born to HIV-infected women, however excessive use should be avoided [11]. Fat-soluble vitamin is believed to cross the placenta by straightforward diffusion [18]. throughout pregnancy, a daily vitamin A intake of 770 mcg is important, and vitamin A intake on top of 3000 mcg is not suggested [14].

5.2 Use of vitamin D in pregnancy

Calciferol is taken into account a pre-hormone in steroid structure [1]. It’s 2 sources: D₃ (cholecalciferol), that is synthesized within the skin by daylight, and vitamin D₂ (ergocalciferol), which is taken through diet and dietary supplements [26]. They are often hold on in the liver in the body [27]. It’s the foremost poisonous of the fat-soluble vitamins [28]. Calciferol is provided by dietary intake and also the result of sunlight on the skin. Therefore, vitamin D deficiency develops thanks to inadequate diet, living inside or in unsunny climates, and sporting sun-proof covering [18]. Vitamin D regulates Ca and phosphorus metabolism alongside hormone and thyrocalcitonin [14]. It will increase calcium resorption and decreasing calcium excretion by taking part in a task in maintaining bone balance [24]. It also has results on the nervous system, heart and clotting mechanism [14]. There also are studies showing that it’s necessary for immune operate concerning aldohexose regulation, fetal brain development, and female internal reproductive organ contractions at birth [12]. As a results of clinical studies on the effect of calciferol on pregnancy outcomes, it’s been determined that vitamin D deficiency is also related to preeclampsia, pregnancy diabetes, low birth weight, preterm delivery, cesarean section and enlarged risk of infectious diseases [26]. Calciferol deficiency throughout pregnancy is that the most significant risk issue for vitamin D deficiency in newborns and infancy. Since maternal vitamin D deficiency is common in Turkey, it’s declared that vitamin D deficiency is liable for symptom in early infancy [24].

5.3 Use of vitamin E in pregnancy

Use of vitamin E in pregnancy is important for tissue development, cell membrane structure, and red blood cell integrity. However, its most important physiological result is its being inhibitor [18]. It’s the smallest amount poisonous of the fat-soluble vitamins. Once taken over necessary, it’s excreted in excreta and urine. Terribly high doses can cause nausea and symptom [28]. The necessity for vitamin E will increase throughout pregnancy and particularly within the trimester [12]. The most finding in its deficiency is anemia. However, additionally to this, muscle and system disorders and muscle fatigue also can be seen. Though its use is controversial, premature newborns are ordinarily supplemented with vitamin E to stabilize erythrocytes and haemolytic anemia is prevented [28]. Maternal level of vitamin E increases during pregnancy. It peaks around thirty seven weeks and
returns to pre-pregnancy levels shortly once birth. The rationale for this increase throughout pregnancy are often attributed to the enlarged would like thanks to fetal growth [18]. Pre-eclampsia is a vital pregnancy-related complication and is related to each maternal and fetal problems. It's thought that preeclampsia symptoms can be reduced by inhibitor support in early pregnancy. Vitamin E additionally plays a task in reducing preeclampsia in pregnancy due to its antioxidant properties [24]. The suggested intake for vitamin E during pregnancy is fifteen mg per day, and also the most quantity to be taken is a 1000 mg per day [14].

5.4 Use of vitamin K in pregnancy

Vitamin K exists in nature in two forms, \( K_1 \) and \( K_2 \). Fat-soluble vitamin \( K_1 \) is synthesized within the leaves of inexperienced plants. The well-liked variety of drugs is fat-soluble vitamin \( K_1 \) sort. Vitamin \( K_2 \) is of microbic origin. It’s synthesized by microorganism bacteria settled in the small intestine and colon in humans and by another bacteria. The synthetically derived sort is vitamin \( K_3 \) [16, 28]. Though the foremost important operate of vitamin K is anticoagulant, it additionally has a vital result on bone health [28]. Vitamin K has been shown to repair bone deformation and forestall bone loss caused by corticosteroids [14]. In newborns, the symptom of fat-soluble vitamin deficiency throughout the amount once microorganism is not shaped is manifested as a bent to bleeding. Breast milk is poorer in vitamin K than ready-made formulas. Therefore, the very fact that the baby is fed solely with breast milk could cause low vitamin K levels. If vitamin K is not given to the baby at birth, disorders within the action mechanism may occur. Therefore, for prophylaxis, administration of vitamin K straightaway once delivery is suggested [28]. If high doses of artificial vitamin K (\( K_3 \)) are administered to the newborn for a long time, poisonous effects are seen, leading to anemia and jaundice [28]. High doses of vitamins A and E intake could interfere with the viscus absorption of fat-soluble vitamin [18]. Like all fat-soluble vitamins, overdoses of vitamin K accumulate within the body and are toxic. However, the traditional average diet provides over adequate amounts of vitamin K and does not need routine supplementation throughout pregnancy. However, vitamin K supplementation is suggested for a few sure indications [18]. With a traditional average diet, the necessity for vitamin K is more than met. There’s no need for routine supplementation during pregnancy. The daily dose needed for non-pregnant ladies and pregnant women is that the same and this value is 90 mcg. [14].

5.5 Use of vitamin B₁ in pregnancy

Though vitamin B₁ is not used directly within the body, it takes half in several mechanisms. It’s used as a molecule in the synthesis of acetylcholine, that is concerned in neurotransmission [14]. Vitamin B₁ is required for aldohexose chemical reaction in the body for hormone production from exocrine gland cells and cell growth [18]. It additionally plays a vital role in macromolecule metabolism [29]. Daily supplementation of vitamin B₁ in pregnant women prevents low birth weight, ensures intrauterine growth and will increase aldohexose tolerance [18]. Higher intake of vitamin B₁ than the most needed dose could cause nausea, vomiting, lethargy, and eating disorder [18]. The number of vitamin B₁ that a pregnant girl ought to take daily is 1.4 mg.

5.6 Use of vitamin B₂ in pregnancy

Riboflavin acts as a molecule in chemical reaction and reduction reactions, in tissues that manufacture energy through respiration [18]. Vitamin B₂ is important for
the formation of red blood cells and production of antibodies, that are a vital part of the body’s defense system. It’s also accountable for getting energy from supermolecule associated fats [14]. Whereas the number that an adult girl ought to take daily is 1.1 mg, the daily amount that a pregnant woman should take is 1.4 mg [14].

5.7 Use of vitamin B3 in pregnancy

Vitamin B₃ is a vital element of 2 enzymes in metastasis and tissue respiration [18]. It’s concerned within the structure of hydrogen-carrying coenzymes similar to NAD and NADP. These molecules play a task in chemical reaction and reduction events in the body [14]. It’s focused in the erythrocytes in the blood. It is often found in muscle and kidney tissue, particularly within the liver [28]. In studies, vitamin B₃ deficiency was seldom encountered, and it absolutely was disregarded that vitamin B₃ given to pregnant ladies in low or high amounts had any result [14]. As a result of the rise in estrogen throughout pregnancy, vitamin B₃ is synthesized so as to stay the hormones in restraint [12]. The daily dose that a pregnant girl ought to take is 18 mg. The most dose to be taken during pregnancy is decided as 35 mg [14].

5.8 Use of vitamin B5 in pregnancy

It takes half in carbohydrate, supermolecule and cholesterol metabolism and aerophilous chemical process reactions. Since vitamin B₅ is wide found in nature and synthesized by the viscus flora, its deficiency is not seen in humans. Vitamin B₅ in pregnant ladies has not been determined with certainty [28].

5.9 Use of vitamin B₆ in pregnancy

It’s the beginning material within the biogenesis of the most molecule of supermolecule metabolism. The breakdown of all amino acids in protein metabolism and also the synthesis of non-essential amino acids occur in the presence of coenzymes of vitamin B₆ [28]. Therefore, vitamin B₆ has to be enlarged in parallel with the rise in the amount of supermolecule within the diet throughout pregnancy [16]. At identical time, vitamin B₆ helps the event of the central system [12]. Nausea and innate reflex are one among the foremost common and necessary symptoms in pregnant women, occurring in the early stages of pregnancy [28]. Vitamin B₆ is employed as an alternate treatment to forestall nausea and vomiting during pregnancy [30]. At the same time, vitamin B₆ is of interest as a result of the preservation of the placental tube-shaped structure bed [18]. Clinical manifestations of vitamin B₆ deficiency are epilepsy-like convulsions and dermatitis [28]. An awfully high dose (2–6 g/d) is needed for toxicity in dults. This toxicity happens at mega doses given for the treatment of carpal tunnel syndrome and preeclampsia. No fetal effects are reportable thanks to dose [18]. Whereas the number of vitamin B₆ that an adult girl ought to take daily is 1.3 mg, this amount is 1.9 mg in a pregnant woman [11]. The most dose that a pregnant woman should take is 100 mg [14].

5.10 Use of vitamin B9 in pregnancy

Vitamin B₉ plays a vital role within the construction of latest cells by serving to the assembly of desoxyribonucleic acid (DNA) and ribonucleic acid (RNA), that management cell proliferation within the body [12]. It additionally facilitates biological processes as a compound for enzymes involving polymer and RNA synthesis [31]. In addition, it works in conjunction with cobalamin to create hemoglobin in erythrocytes [12]. It should be infatuated food, and also the totally different forms
it enters to be used in the body are usually referred to as ‘folate’ [28]. All defects that occur throughout pregnancy occur in the 1st 28 days of pregnancy, largely once the expectant mother does not apprehend she is pregnant yet. The foremost common of those is NTD (Neural Tube Defect). It is one among the common and severe malformations among inborn malformations. All of the malformations similar to anencephaly, encephalocele, meningocoele, myelocoele, meningomyelocele and myelosis, which are caused by the neural tube during which the brain and neural structure develop, stay open once it ought to be closed till the tip of the fourth week of intrauterine life, are all serious congenital anomalies and are expressed underneath the name of ‘neural tube defect’ [31]. It’s suggested to begin vitamin B₉ supplementation with four hundred mcg with the design of pregnancy and three months before, and to continue it throughout the primary trimester of pregnancy [32]. So as to be shielded from NTD, 600 mcg vitamin B₉ supplement ought to be taken daily. The most quantity of folic acid that a pregnant girl should take daily is a thousand mcg [14].

5.11 Use of vitamin B₁₂ in pregnancy

In contrast to different soluble vitamins, up to four mg of vitamin B₁₂ is hold on within the body. Therefore, vitamin deficiency is not determined for several years. Those with deficiency are additional doubtless to be strict vegetarians [28]. Vitamin B₁₂ may be a molecule essential for organic process and lipid, protein, and macromolecule metabolism. It is synthesized within the liver and is named extrinsic factor. Though it acts on all cells, it plays a serious role in the bone marrow, gastrointestinal system and central nervous system. It acts as a compound for polymer synthesis in the bone marrow. Though we have got little information on the necessity for vitamin B₁₂ throughout pregnancy, in step with some studies, body fluid vitamin B₁₂ values decrease in the advancing weeks of pregnancy. Tries to interchange this decline in pregnancy are unsuccessful. This fact supports the idea that serum vitamin B₁₂ level is freelance of diet and this decrease will not necessitate a decrease in maternal aliment stores [18]. Vitamin B₁₂ is very important for the continuity of cell division. In its deficiency, methylcobalamin cannot be shaped and polymer synthesis cannot be made of quick growing tissues throughout pregnancy. As a result, megaloblastic anemia, inborn anomalies and issues within the system develop. Low plasmic vitamin B₁₂ concentration was found to be related to high plasmic homocysteine level, pre-eclampsia and preterm birth risk all told age groups. It's been reportable that maternal insufficiencies cause NTD and spina bifida. Vitamin B₁₂ is infatuated foods of animal origin. In humans, viscus bacterium also can synthesize vitamin B₁₂ [28]. The number of vitamin B₁₂ that an adult girl ought to take daily is 2.4 mcg. This dose will increase to 2.6 mcg in an exceedingly pregnant woman [11]. There aren’t any adequate resources for the most daily intake throughout pregnancy [14].

5.12 Use of calcium in pregnancy

Calcium is an inorganic element that’s the foremost superabundant and essential mineral element within the human body. Ca metabolism is regulated by hormones similar to vitamin D, parathyroid gland hormone, and calcitonin. Oral calcium is absorbed from the intestines by the result of vitamin D. Parathyroid gland hormone, on the opposite hand, will increase viscus Ca absorption and bone calcium mobilization by increasing calciferol synthesis within the kidneys [14]. The fullness of iron stores together with calcium is very important for bone and red blood cell development [33]. Enlarged calcium intake throughout pregnancy is important for
the health of mother and baby. Throughout this period, the utilization of calcium supplements reduces preeclampsia. At identical time, once enough calcium is not taken during pregnancy, the necessity is met by retreating calcium from the bones. Frequent births, lack of movement and lean use of daylight cause bone softening and tooth decay. Adequate vitamin D intake is important to facilitate Ca absorption [33]. It’s wrong to assume that dental caries happens thanks to calcium deficiency throughout pregnancy which each pregnancy causes a tooth loss. Changes within the composition of spittle during pregnancy accelerate the progression of pre-pregnancy caries and also the gums bleed easily. Despite harm gums, teeth ought to be brushed regularly. All types of dental treatment (tooth symptom treatment, tooth extraction) are often done during pregnancy. Long-run treatments (such as passage treatment) can be delayed for once six months [6]. Whereas the number of calcium that girls would like during pregnancy is a 1000 mg, the most quantity to be taken is 2500 mg [14].

5.13 Use of iron in pregnancy

Iron is a component within the structure of heme, that has the power to simply exchange electrons, rework into ferric (Fe+2) and ferrous (Fe+3) forms. It’s additionally needed for the assembly of haemoprotein and plenty of different enzymes. However, as a results of the conversion of peroxide into free ion radicals, it’s the ability to break plasma membrane protein and DNA. Iron-protoporphine (heme) and iron sulfide compounds act as enzyme-cofactors [14]. The fullness of Ca stores together with iron is important for bone and red blood cell development [33].

Iron balance within the body is extremely delicate, and iron deficiency or excess is one among the foremost common diseases in humans [14]. Pregnancy, lactation, adolescence, rapid growth periods, factors that increase iron need, increase iron loss, decrease iron intake, absorption or use are among the most causes of iron deficiency [30]. Anemia, besides being a vital pathological state which will have an effect on the pregnancy method and also the quality of lifetime of the newborn, will increase its importance even additional because it is preventable. Therefore, the general public ought to learn regarding the explanations for mistreatment vitamin and iron medicine throughout pregnancy and nutrition [3, 10]. Iron deficiency ends up in enlarged preterm birth, low birth weight, and mortality within the 1st 2 trimesters of pregnancy. Enlarged plasma volume during pregnancy, increased iron demand of the fetus, quantity of vitamin C taken by the mother orally or with food, antacid use, excessive dietary intake of cereals with phytate content that have an effect on iron absorption, viscus parasites, consumption of tea and coffee, affect iron absorption and cause iron deficiency anemia [14]. However, the necessity for iron during pregnancy will increase particularly during the 3rd trimester [34].

Aspect effects associated with iron use are typically dose-dependent. Aspect effects similar to epigastric discomfort, nausea, vomiting, symptom or constipation could develop. Whereas the incidence of those side effects is reduced in low-dose use, they are seen in roughly 1/3 of cases in high-dose use [35]. Whereas the number of iron to be taken daily is eight mg in associate adult girl, a pregnant woman ought to take twenty seven mg of iron daily [11]. The most amount of iron a pregnant woman should take daily is 45 mg [14].

5.14 Use of iodine in pregnancy

Iodine, that is concerned within the production of thyroid hormones, is an element necessary for traditional growth and development, and brain and body functions. In relevance the iodine content of the soil and water, the number of
iodine we have a tendency to take with food varies. Iodine infatuated food and water is excreted within the body waste once it's employed in the assembly of thyroid hormone. Since iodine is not hold on in the body, a sufficient amount of iodine should be taken into the body a day [36]. Pregnant and lactating women are in the risk group for iodine deficiency. Among the most cases seen in iodine deficiency throughout pregnancy are miscarriage, stillbirths, inborn anomalies, increase in perinatal deaths and infant mortality rate, psychological feature dysfunction, infertility, deafness, abnormal condition (diplopia), psychomotor disorders, and hypothyroidism disorder [11]. Iodine deficiency within the fetus throughout pregnancy adversely affects particularly cerebral development. The foremost essential period of time is between the trimester and also the age of three, once cerebral development is basically completed. The foremost important reason behind correctable backwardness is iodine deficiency [14]. The typical daily iodine intake of fertile women is between 10 and 20 mcg. Daily iodine intake during pregnancy and nursing mothers ought to be 220 mcg. With breastfeeding, 100 mcg/day of iodine is transferred to baby. Body waste iodine concentration should be 10–20 mcg/day or 100–200 mcg/L throughout pregnancy. If daily iodine intake falls below 100 mcg during pregnancy, iodine deficiency is mentioned [37]. The most quantity of iodine that ought to be taken daily during pregnancy is 1100 mcg [14].

5.15 Use of magnesium in pregnancy

Since it cannot be made by the body, it must be obtained through food. Magnesium is found in soil and sea water. There are magnesium reserves in our body that has got to be perpetually replenished, that is, it must be taken unendingly so as to satisfy its functions. The most reservoir of metal is bones, 60% of that is found here alongside Ca and phosphate. However, the most operate of magnesium is not within the bones, however in the blood and muscle systems, wherever 40% is found. It plays a vital role in strengthening muscles, supermolecule synthesis and protein system activity, growth and regeneration of cells. Magnesium is that the fourth ion among the cations found in the body, whereas it's the second cation once atomic number 19 in the cell. In things similar to stress, pregnancy and breastfeeding, the body would like for magnesium will increase [17]. Once fetal characteristics such as birth weight associated height were examined, magnesium supplementation was found to possess positive results [14]. At identical time, magnesium additionally has the effect of preventing vital sign rise in pregnancy [12]. Whereas the number of magnesium that an adult girl ought to take daily is 320 mg, the amount that a pregnant woman should take is 350 mg [14].

6. Conclusion

Nutrition is important before and after pregnancy as well as during pregnancy. The intake of macro and micro nutrient items affecting maternal and fetal health problems positively during pregnancy. Vitamin A plays a fundamental role in retinoid metabolism and visual functions, cellular differentiation related to embryonic development, lung maturation and immune system development of fetus. Vitamin D regulates calcium and phosphorus metabolism together with parathyroid hormone and calcitonin. It increases calcium reabsorption and decreasing calcium excretion by playing a role in maintaining bone balance. It also has effects on the nervous system, heart and blood clotting mechanism. Vitamin E is important and the main finding of Vitamin E deficiency, is hemolytic anemia. However, in addition, muscle and nervous system disorders and muscle fatigue can also be seen with
its deficiency. The most important function of vitamin K is anticoagulation; if vitamin K is not given to the baby at birth, disorders in the coagulation mechanism may occur. Therefore, for prophylaxis, intramuscular administration of vitamin K immediately after delivery is recommended. Vitamin K has also an important effect on bone health. Vitamin B₆ is used as an alternative treatment to prevent nausea and vomiting during pregnancy. At the same time, vitamin B₆ is of interest because of the preservation of the placental vascular bed. Folic acid works in conjunction with vitamin B12 to form hemoglobin in erythrocytes. Deficiency leads to NTD in newborn. Vitamin B12 deficiency result with megaloblastic anemia, congenital anomalies and problems in the nervous system of the fetus. Increased calcium intake during pregnancy is important for the health of mother and baby. During this period, the use of calcium supplements reduces preeclampsia. Ca is necessary for dental health. On the other hand, Iron deficiency or excess is one of the most common diseases in humans. Pregnant and lactating women are in the risk group for iodine deficiency. The most important cause of correctable mental retardation of newborn is iodine deficiency.

Conflict of interest

The authors have not any conflict of interest to declare.

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