

VITAMINS IN PREGNANCY**Debosree Ghosh***

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ABSTRACT

A balanced diet is always necessary for maintaining good and sound health. In pregnancy also a balanced diet is recommended.^[1] Vitamins are essential nutrients for our body. Vitamins strengthen our immune system and most vitamins act as coenzymes for various enzymes of our physiological system. Thus deficiency of any particular vitamin may lead to break down of the immune system or may impair functions of some important enzymes. Vitamins do not provide calorie or energy but they are extremely needed to keep us healthy.^[2] In pregnancy, a woman not only needs to take care of her on health but also her nutrient intake and health status largely impacts the health status of the growing fetus in her womb and the future health of the baby as well. Vitamins like folic acid is considered extremely essential for mother's

health in pregnancy and for maintaining a healthy pregnancy. Other vitamins like A,D, B complex etc. are also very important for building and maintaining a good health status of the mother and the baby. Vitamins help to build the immune system of the growing fetus.^[1]

KEYWORDS: Vitamins, Pregnancy, Immune System, Folic Acid, Coenzymes.

INTRODUCTION

Pregnancy is one of the most important conditions in a woman's life when she needs proper and balanced nutrition. Vitamins are one of the most important constituents of a balanced diet. Also, as because the baby draws all its nourishments from the mother's body, proper nutrition for mother is essential.^[1] Poor nutrition of mother before conception and during pregnancy can cause health issues in fetus. It can cause low birth weight of baby, inadequate development and developmental deformities in fetus.^[3] Poor nutritional status and vitamin deficiency in pregnant women can lead to premature birth, stillbirth, poor neudevelopmental

issues in fetus.^[4] Since 1990s, maternal undernutrition has decreased and as a consequence of which, maternal mortality rates, infant mortality and morbidity rates have also gone down around the globe. These all have been possible because of increasing attention to improving the quality of dietary and health status of the antenatal period, improving obstetric care and social change. Still we need more awareness and concern regarding dietary supplements of pregnant mothers specially vitamin supplementation.^[4] Each vitamin has individual importance in maintaining the health status of mother and growing fetus during gestational period. Risk in pregnancy due to deficiency of vitamin is more pronounced in cases of pregnancy in adolescence, consecutive pregnancies with small interval, pregnancy with twins, multiple pregnancies etc., Lower socioeconomic status of mother and existing malnutritional status in women before or during pregnancy can aggravate the health ailments of both mother and fetus due to vitamin deficiencies.

Government has taken measures in different countries including India to address the vitamin deficiency issues in pregnant women. Those public health and nutrition measures and programmes aim to improve pregnancy conditions, especially for those women who belong from lower socioeconomic group and have limited access to good antenatal clinical care. The most commonly used supplementation techniques include blanket supplementation, targeted supplementation, government policies and programmes for fortification and supplementation etc.^[5]

Vitamins are primarily of two different types i.e., fat soluble and water soluble. Water soluble vitamins not stored much in our body. Excess water soluble vitamins are eliminated from the body easily through urine. Whereas, fat soluble vitamins are insoluble in water and excess fat soluble vitamins are stored in the fat tissues in our body. Accumulation of fat soluble vitamin in our body can cause hypervitaminosis. Water soluble vitamins include vitamins B1, B2, B3, B6, B12, vitamin C, biotin and folate. Fat soluble vitamins include vitamins A, D, E and K. In pregnancy, sufficient and proper amount of both water soluble and fat soluble vitamins are recommended. Dietary intake and medicinal supplementation of few essentially important vitamins are enough to maintain health status of both mother and fetus in pregnancy.^[2]

Folic acid

Physicians suggest to intake 400 micrograms (μg) folic acid tablet every day while trying to conceive and is advised to continue until 12 weeks of pregnancy.^[2] Some experts suggest to continue folic acid supplementation till the second trimester of pregnancy. supplementation

with 400 µg folic acid per day in second and third trimesters of pregnancy has been found to increase folate status in maternal and cord blood and prevent the increase in homocysteine concentration that otherwise occurs in late pregnancy. Now, whether these effects are beneficial for pregnancy requires additional study.^[6] Folic acid not only helps to conceive but also helps to maintain pregnancy. Folic acid helps to prevent miscarriage and prevents birth defects like neural tube defects, spina bifida. Pregnant women should include folic acid rich foods in regular diet. Dietary sources of folic acid are green leafy vegetables, cereals, folic acid fortified margarine etc. It is difficult to get required folic acid during pregnancy only from food sources so supplementation is required. Some women have an increased risk of having a pregnancy affected by a neural tube defect or are under medication for epilepsy are advised to take a higher dose of 5 milligrams (mg) of folic acid each day.^[1]

Vitamin A

Vitamin A & Beta Carotene is a fat soluble vitamin and 770 µg per day, daily max = 1000 µg is required by a pregnant woman.^[1] It helps in formation and growth of bones and teeth. Vitamin A also strengthens the immune system of both mother and fetus, helps in protein synthesis and cell differentiation. Foods like liver, milk, eggs, carrots, spinach, yellow vegetables, broccoli, pumpkin, yellow fruits etc., are rich sources of vitamin A. In normal pregnancy cases dietary intake of vitamin A is adequate to meet the requirements. Still if required, vitamin A supplementation is prescribed and should always be prescribed in the form of beta carotene which is precursor of vitamin A. Beta carotene is converted to vitamin A in body only if the body needs vitamin A and thus it is safe to consume vitamin A supplementation in the form of its precursor than in the form of performed vitamin A.^[7]

Vitamin D

Vitamin D supplementation is also advised in some pregnant women as per the requirement and individual health status of the women. 600 IU per day and daily max = 4000 IU of vitamin D is recommended in pregnant women.^[2] Vitamin D helps in absorption and utilization of minerals like calcium and phosphorus. Vitamin D helps in development and strengthening of strong teeth and bones in growing fetus and also contributes to strengthening of immune system of both mother and baby. Vitamin D being a fat soluble vitamin is found to be present in its precursor form in foods like milk, fish oil, sea fish, red meat, egg etc. Sunlight is essential for synthesis of vitamin in skin from its precursor.^[2]

Deficiency of vitamin D in pregnant women may lead to formation of weak bones in babies.^[8]

Thiamine (Vitamin B1)

Like all other vitamins and other nutrients, thiamine requirement is also markedly increased during pregnancy. The requirement of thiamine is observed to be more in the third trimester. The reason behind is the enhanced use and requirement by the growing fetus.^[9] Studies reveal that concentrations of water-soluble vitamins including thiamine are 2-fold higher in umbilical cord blood than in maternal blood.^[10] Thiamine is a water soluble vitamin and is found adequately in food sources like green leafy vegetables, cereals, egg, pulses etc., Normally thiamine supplementation is not required in pregnant women but in some cases, thiamine may be supplemented along with other nutrients in women who suffer dehydration due to excess vomiting during pregnancy in order to prevent any deficiency ailments.^[11] Thiamine helps mother and baby to convert carbohydrates into energy. It is essential for brain development of the growing baby and also for maintaining good health of pregnant mother, her nervous system, muscles, and heart function.^[12]

CONCLUSION

Vitamins are very important for our health and becomes more important in pregnant women for maintaining health status of mother and fetus and for maintaining proper growth and development of the growing baby in the mother's womb. The amount of a certain vitamin one should consume per day is termed as 'Reference Daily Intake,' or RDI. Recommended Daily Allowance was earlier used to recommend the amount of vitamins and nutrients required by an individual. RDI is an advanced and scientifically evolved replacement for RDA.^[13] A pregnant woman may require certain vitamin supplementation depending on her individual health specificity and pregnancy status. Anyways, any kind of medicinal supplementation of vitamins should not be taken by pregnant women without consulting her physician. Though, dietary supplementation of vitamins are always safe and vitamin rich foods should always be included in a pregnant woman's daily diet.

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