

Vitamin D; Maternal, and Fetal Well-Being

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In order to protect the health of mother and fetus, it is crucial to maximize the nutritional value of foods taken during the preconceptual and pregnancy stage. In addition to calcium, iodine, iron, folic acid, zinc supplementation during pregnancy, Vitamins (A, B, C, D and E) should also be taken into consideration. Recent studies have pointed out importance of the biological and vital functions of vitamin D in pregnancy and its unfavorable effects on maternal-fetal health when it is insufficient. However, its benefits and drawbacks are still debated in the literature in terms of maternal and fetal health outcomes. The main benefits of Vitamin D intake on maternal health, which can be seen in studies, are: it may be beneficial against the risk of pre-eclampsia, preterm delivery, gestational diabetes mellitus [1,2], cesarean section, recurrent pregnancy loss, and postpartum depression in during pregnancy [1]. An intervention review study showed that supplementing pregnant women with vitamin D alone may reduce the risk of severe postpartum haemorrhage [2].

The main benefits of Vitamin D supplementation intake on fetal health, which can be seen in studies, are: its intake during pregnancy reduces the risk of preterm birth, affects foetal growth, dentition, bone density and anthropometry. Some researches also have reported that there is a relationship between vitamin D levels and lung function. Vitamin D has an effect on surfactant production, type II pneumocytes and on lung growth and development. Effects of vitamin D on the immune system have been highlighted in studies conducted more recently. Low vitamin D levels during pregnancy may result in rickets in children [3]. Currently a meta-analysis has been investigating that vitamin D can influence the occurrence of autism spectrum disorders in children [4].

Despite these effects, vitamin D supplementation intake is controversial. Vitamin D supplements are not currently recommended for improving outcomes in maternal and perinatal health [5]. If there is a documented vitamin D deficiency, World Health Organization suggests vitamin D supplements that may be given at the current (RNI) of 200 IU (5 µg) per day for pregnancy [5]. There are studies describing vitamin D deficiency and hypovitaminosis D and determining the normal 25 (OH) D range. It is determined that as level of 25 (OH) D below 20 ng/mL is vitamin D deficiency, hypovitaminosis between 21 - 29 ng/mL, and sufficient vitamin D above 30 ng/mL (preferred range 40 - 60 ng/mL) and vitamin D intoxication above 150 ng/mL [6]. The institute of medicine suggest that Vitamin D normal level is defined as a 20 ng/ml in pregnancy, while the endocrine society 30 ng/ml or more [3].

Evidence from randomized controlled trials have suggested that vitamin D supplements have proven to be safe in 4000 IU/d [3,7]. To ensure vitamin D adequacy with daily intake, the Medical Institute recommends between 400 and 600 IU, the National Institute for Health and Clinical Excellence, United Kingdom recommends 400 IU, the endocrine society recommends 1500 - 2000 IU and the the Canadian society recommends 2000 IU. Most of the studies indicate that on the healthy effect of maternal vitamin D levels on offspring during pregnancy may benefit 800 IU/d [3]. According to the Turkish Ministry of Health's Program on Prevention of Vitamin D Deficiency and Improvement of Bone Health, beginning from the first week, a daily dose of 400 IU (10 µg) of vitamin D is recommended for all infants (whether they are breastfeeding or formula feeding) for the entire first year of life, and preferably through three years. In addition, since 2011, the primary health care doctors have recommended vitamin D supplements for all pregnant women at a dose of 1200 IU (30 µg)/day starting from the 12th gestational week of pregnancy and up to the 6th month of the birth in Turkey [8].

Hypovitaminosis D during pregnancy is a global health problem in some countries that do not receive sufficient sunlight and diet. It is estimated that the highest prevalence is in the Middle East (70% to 90%) [9]. In low- and middle-income countries, women are unable to meet micronutrients due to the increased nutritional requirements of the mother and fetus during pregnancy and poor diet. Nowadays, the increase in lifestyle risk factors such as changing living conditions, undernutrition and inadequate sunlight necessitates further consideration of the effects on maternal and child health, especially in terms of vitamin D deficiency [9]. Although there is not enough evidence, there are studies on at least monitoring vitamin D status of pregnant women and suggesting them when necessary. However, the dose of vitamin D supplementation is unclear [2,10]. Researchers should demonstrate the effect of vitamin D deficiency in maternal and newborns with quality and culturally sensitive studies.

We hope that future research will help clarify the association between vitamin D deficiency and biologic, and lifestyle factors in prenatal care settings. Nurses and midwives in their educative and consultative roles, should instruct mothers on the use of vitamin D to maintain and improve infant health. They can be effective in ensuring the use of vitamin D in high-risk groups and thereby, increase the dissemination of its use throughout society.

Conflict of Interest

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Bibliography

1. Agarwal S., *et al.* "Vitamin D and its impact on maternal-fetal outcomes in pregnancy: A critical review". *Critical Reviews in Food Science and Nutrition* 58.5 (2018): 755-769.
2. Palacios C., *et al.* "Vitamin D supplementation for women during pregnancy". *Cochrane Database of Systematic Reviews* 7 (2019): CD008873.
3. Dkhar SA., *et al.* "Importance of vitamin D supplementation in pregnancy-review". *International Journal of Community Medicine and Public Health* 6.4 (2019): 1820-1825.
4. Wang T., *et al.* "Serum concentration of 25-hydroxyvitamin D in autism spectrum disorder: A systematic review and meta-analysis". *European Child and Adolescent Psychiatry* 25.4 (2015): 341-350.
5. World Health Organization (WHO). "WHO recommendations on antenatal care for a positive pregnancy experience" (2017).
6. Öngen B., *et al.* "Biochemical and laboratory evaluation of vitamin D". *Türk Klinik Biyokimya Dergisi* 6 (2008): 23-31.
7. Hollis BW. "Vitamin D status during pregnancy: The importance of getting it right". *EBioMedicine* 39 (2019): 23-24.
8. Dağhan Ş., *et al.* "Knowledge and practices of mothers regarding use of vitamin D for infant health". *Güncel Pediatri* 17.1 (2019): 58-70.
9. Van der Pligt P., *et al.* "Associations of maternal vitamin D deficiency with pregnancy and neonatal complications in developing countries: a systematic review". *Nutrients* 10.5 (2018): E640.
10. Maugeri A., *et al.* "Effects of vitamin D supplementation during pregnancy on birth size: a systematic review and meta-analysis of randomized controlled trials". *Nutrients* 11.2 (2019): E442.

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