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**Association of dietary intake below recommendations and micronutrient deficiencies during pregnancy and low birthweight**

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**Abstract**

Background Pregnancy is associated with biochemical changes leading to increased nutritional demands for the developing fetus that result in altered micronutrient status. The Indian dietary pattern is highly diversified and the data about dietary intake patterns, blood micronutrient profiles and their relation to low birthweight (LBW) is scarce. Methods Healthy pregnant women (HPW) were enrolled and followed-up to their assess dietary intake of nutrients, micronutrient profiles and birthweight using a dietary recall method, serum analysis and infant weight measurements, respectively. Results At enrolment, more than 90% of HPW had a dietary intake below the recommended dietary allowance (RDA). A significant change in the dietary intake pattern of energy, protein, fat, vitamin A and vitamin C (P < 0.001) was seen except for iron (Fe) [chi-squared (χ2) = 3.16, P = 0.177]. Zinc (Zn) deficiency, magnesium deficiency (MgDef) and anemia ranged between 54-67%, 18-43% and 33-93% which was aggravated at each follow-up visit (P ≤ 0.05). MgDef was significantly associated with LBW [odds ratio (OR): 4.21; P = 0.01] and the risk exacerbate with the persistence of deficiency along with gestation (OR: 7.34; P = 0.04). Pre-delivery (OR: 0.57; P = 0.04) and postpartum (OR: 0.37; P = 0.05) anemia, and a vitamin A-deficient diet (OR: 3.78; P = 0.04) were significantly associated with LBW. LBW risk was much higher in women consuming a vitamin A-deficient diet throughout gestation compared to vitamin A-sufficient dietary intake (OR: 10.00; P = 0.05). Conclusion The studied population had a dietary intake well below the RDA. MgDef, anemia and a vitamin A-deficient diet were found to be associated with an increased likelihood of LBW. Nutrient enrichment strategies should be used to combat prevalent micronutrient deficiencies and LBW.

**Keywords:**anemia; dietary intake; micronutrients; nutrition; pregnancy; recommended dietary allowance.