

Relationship between vitamin D status in the first trimester of the pregnancy and gestational weight gain: A mediation analysis

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Abstract

Objective To evaluate the total, and direct effects of vitamin D, measured by circulating 25-hydroxyvitamin D [25(OH)D] levels, on GWG after adjustment for confounding variables, and then assess the indirect effects by demonstrating the role of gestational age at birth as a mediator in this association. **Design** A secondary analysis of data collected in a screening program in pregnancy. **Setting and population** Data collected in “Khuzestan Vitamin D Deficiency Screening Program in Pregnancy” was used for the present study; it was included the data of 900 pregnant women referred to the health centers of Shushtar (Khuzestan Province, Iran), whose vitamin D status during the third trimester of pregnancy was available. **Methods** A mediation analysis was applied to detect the causal relationship between serum level of 25(OH)D, covariates (maternal age, parity, and baseline maternal weight), mediator (gestational age), and outcome (GWG). **Main outcome measures** The main outcome measure of the study was gestational weight gain. **Results** The adjusted total effect of vitamin D on GWG was estimated 0.0699 (95%CI: 0.0537, 0.0849; P=0.000). Although, an adjusted direct effect of vitamin D on GWG was not statistically significant, the adjusted indirect effect of this micronutrient on GWG by considering gestational age as a mediator was found to be significant [0.059 (95%CI: 0.048, 0.0708; P=0.000)]. Women with severe vitamin D deficiency had the lowest speed as compared to moderate and normal levels. **Conclusion** This study shows that maternal vitamin D status affects the gestational weight gain by reducing the risk of preterm delivery.

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