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The prevalence of Vitamin D Deficiency among Pregnant Women in mainland China: a meta-analysis and systemic-analysis

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Background: Vitamin D(VitD) deficiency during pregnancy is associated with a variety of adverse maternal and newborn outcomes, such as pregnancy loss, gestational diabetes mellitus, preeclampsia, small for gestational age infants, and preterm delivery, etc. However, the large-sample epidemiological data and national surveys of VitD deficiency among a large group of pregnant women in mainland China is limited. A meta-analysis and systematic review were conducted to identify a reliable estimate of VitD deficiency during pregnancy prevalence and to reveal its epidemiological characteristics.

Methods: Thorough electronic databases included China National Knowledge Infrastructure, Wanfang, Weipu, PubMed, Cochrane and Embase, relevant studies were searched from inception until August 2021.

Results: Overall, 54 studies were included (n=235, 347 cases) in this systemic-analysis, which showed that the pooled prevalence of VitD deficiency during pregnancy was 60.0% (95%CI: 54.1%–66.0%) with high heterogeneity ($I^2=99.9\%$, $P=0.000$). Point prevalence of VitD deficiency in West China (38.5%) was the lowest, and the prevalence in central region of China (64.1%) was the highest. A random-effects model meta-analysis that was performed to calculate the first, second and third trimester of pregnancy prevalence calculated prevalences of 67.1%, 48.2%, and 71.6% respectively. Percentages of VitD deficiency before 2015 was 63.8%, since then, it has slightly decreased over the past 5 years (54.9%). The prevalence of 30–35 and > 35 years old groups were 0.586 and 0.585 respectively. The prevalence was inconsistent due to different measurement methods, the incidence rate of HPLC-MS/MS, CLIA, ECLIA and ELISA groups were 46.2%, 58.7%, 66.6%, and 71.5% respectively. Meta-regression indicated that geographic region ($P=0.036$), age groups ($P=0.000$), screening year ($P=0.026$), sample size ($P=0.014$), method for VitD measurement ($P=0.002$), sample source ($P=0.000$), maternal health status ($P=0.002$), and literature quality score ($P=0.002$) may be the factors influencing the prevalence estimates for VitD deficiency. The overall prevalence of VitD deficiency in pregnant women using a meta-sensitivity analysis did not change significantly.

Conclusions: Over the past one decades, the prevalence of VitD deficiency among pregnant women in mainland China has slightly decreased. Maternal VitD deficiency in economically developed areas still need to be taken seriously and VitD deficiency during the third trimester of pregnancy ought to be equally paid special attention. The clinically significant minimum threshold of VitD levels among pregnant women in mainland China remains to be established and a uniform reference standard should be incorporated into future guidelines.

Biography

Xianrui chen has his expertise in evaluation and passion in improving the postpartum period health of women and Neonatal Health Management. He has years of experience in research, evaluation, teaching and administration both in hospital. He has deep attainment in the direction of child health care, especially in neonatal nutrition and care with rich clinical experience.

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