

## **Vitamin D deficiency during pregnancy and its associated factors among third trimester Malaysian pregnant women**

### **ABSTRACT**

**Background:** Despite perennial sunshine, vitamin D deficiency is prevalent among Malaysians especially pregnant women. This study determines the vitamin D status and its associated factors among third trimester pregnant women attending government health clinics in Selangor and Kuala Lumpur, Malaysia. **Methods:** Information on socio-demographic characteristics, obstetrical history, and sun exposure were obtained through face-to-face interviews. Vitamin D intake was assessed using a semi-quantitative food frequency questionnaire (FFQ). Serum 25-hydroxyvitamin D concentration was measured and classified as deficient (< 30 nmol/L), insufficient (30-50 nmol/L), and sufficient ( $\geq$  50 nmol/L). **Results:** Of the 535 pregnant women recruited, 42.6% were vitamin D deficient. They consumed an average of  $8.7 \pm 6.7$   $\mu$ g of vitamin D daily. A total of 80.4% of the vitamin D were obtained from the food sources, while 19.6% were from dietary supplements. Fish and fish products showed the highest contribution to vitamin D intake (35.8%). The multivariable generalized linear mixed models, with clinic as a random effect, indicates that higher intake of vitamin D is associated with lower odds of vitamin D deficiency among pregnant women (OR = 0.96; 95% CI = 0.93-0.99). The odds of having vitamin D deficiency was reduced by 87% in non-Malays (OR = 0.14; 95% CI = 0.05-0.41) compared to Malays. No associations were found between age, educational level, monthly household income, work status, gravidity, parity, pre-pregnancy body mass index, total hours of sun exposure, total percentage of body surface area, and sun exposure index per day with vitamin D deficiency. **Conclusion:** Vitamin D deficiency is prevalent among Malaysian pregnant women. Considering the possible adverse obstetric and fetal outcomes of vitamin D deficiency during pregnancy, future nutrition education should emphasise on vitamin D-fortified foods consumption among pregnant women by taking into consideration ethnic differences.