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Estimated dietary vitamin D intake during pregnancy

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Vitamin D is involved in calcium and phosphate homeostasis and is essential for the maintenance of bone health[1]. Insufficient vitamin D intake has significant consequences for maternal and neonatal health. In Europe, maternal vitamin D intake has been reported to fall below the recommendations[2–3]. Higher BMI is associated with lower status of vitamin D but it is unclear if dietary intakes vary according to BMI, particularly during pregnancy. Some studies have reported higher intakes in obese pregnant women relative to normal weight women[4], whilst others have reported lower vitamin D intakes in obese compared to non-obese women[5].

The aim of this study was to assess and compare maternal dietary vitamin D intake among normal weight, overweight and obese pregnant women.

Data collected from an ongoing double-blinded randomised vitamin D intervention study (MO-VITD) were used for analysis. Pregnant women without pregnancy complications, aged >18 years and having a singleton pregnancy were recruited between January 2016 and December 2016. All participants completed a validated vitamin D food frequency questionnaire (FFQ)[6] at approximately 28 weeks gestation. Data from 80 pregnant women (43 normal weight, 20 overweight, 17 obese) were included in the current analysis.

The mean daily intake of vitamin D from food sources during pregnancy was 4·91 μg/d. Obese pregnant women had a significantly lower dietary vitamin D intake compared to normal weight women (3·19 vs. 5·57 μg/day; $P = 0·037$). There was a significant negative correlation between maternal BMI and dietary vitamin D intake ($r = -0·202$; $P = 0·036$). When analysed at food level, reported vitamin D intake from fish, cereal, eggs and butter was 1·48, 1·33, 0·97 and 0·37 μg/d respectively. Breakfast cereals were the greatest contributor to vitamin D intake (27 %) and only within the 'Fish' consumption group was there a significant difference in intakes across BMI categories, with obese pregnant women having a lower fish intake compared with normal weight women (1·95 vs. 0·66 μg/day; $P = 0·010$).

The findings of this study are in agreement with other European research and demonstrate that maternal dietary vitamin D intakes are low. Maternal obesity is shown to be associated with dietary vitamin D intake. These findings support the guidelines for vitamin D supplementation during pregnancy.

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