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.