

Both Mother and Infant Require a Vitamin D Supplement to Ensure That Infants' Vitamin D Status Meets Current Guidelines

Fariba Aghajafari, Catherine J. Field, Amy R. Weinberg, Nicole Letourneau and APrON Study Team

Departments of Family Medicine and Community Health Sciences, Cumming School of Medicine, University of Calgary, Calgary, AB T2N 1N4, Canada
Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB T6G 2R3, Canada; cjfield@ualberta.ca (C.J.F.); aweinber@ualberta.ca (A.R.W.)
Faculty of Nursing and Cumming School of Medicine, University of Calgary, Calgary, AB T2N 1N4, Canada; nicole.letourneau@ucalgary.ca
Department of Pediatrics, Cumming School of Medicine, University of Calgary, Calgary, AB T2N 1N4, Canada
Correspondence: fariba.aghajafari@ucalgary.ca; Tel.: +1-403-943-5000

Abstract

We examined the association between maternal vitamin D intake during breastfeeding with their infants' vitamin D status in infants who did or did not receive vitamin D supplements to determine whether infant supplementation was sufficient. Using plasma from a subset of breastfed infants in the APrON (Alberta Pregnant Outcomes and Nutrition) cohort, vitamin D status was measured by liquid chromatography-tandem mass spectrometry. Maternal and infants' dietary data were obtained from APrON's dietary questionnaires. The median maternal vitamin D intake was 665 International Units (IU)/day, while 25% reported intakes below the recommended 400 IU/day. Of the 224

infants in the cohort, 72% were exclusively breastfed, and 90% were receiving vitamin D supplements. Infants' median 25(OH)D was 96.0 nmol/L (interquartile ranges (IQR) 77.6–116.2), and 25% had 25(OH)D < 75 nmol/L. An adjusted linear regression model showed that, with a 100 IU increase in maternal vitamin D intake, infants' 25(OH)D increased by 0.9 nmol/L controlling for race, season, mid-pregnancy maternal 25(OH)D, birthweight, and whether the infant received daily vitamin D supplement ($\beta = 0.008$, 95% confidence interval (CI) 0.002, 0.13). These results suggest that, to ensure infant optimal vitamin D status, not only do infants require a supplement, but women also need to meet current recommended vitamin D intake during breastfeeding.

Keywords: vitamin D, 25(OH)D, breastfeeding, pregnancy, infant