

Vitamin D intake and status in the Diet and Nutrition Survey of Infants and Young Children 2011 (DNSIYC)

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The National Diet and Nutrition Survey assesses the dietary intakes and nutritional status of the UK population ≥ 18 months, including vitamin D, where there are concerns about adequacy of intakes, exposure to sunlight and status⁽¹⁾. Recognising the need for information about those < 18 months, the Department of Health commissioned a survey of infants and young children aged 4–18 months, which was carried out in 2011. Intakes and status of vitamin D are reported here.

The sample was drawn using a multi-stage random probability design from Child Benefit records, drawn in two waves to ensure sufficient numbers at each end of the age range. Background information was collected using home interviews for socio-demographic status and health information, and dietary data collected using an estimated food diary of four consecutive days. Diaries were coded using DINO (Diet In Nutrients Out), HNR's dietary recording and analysis system, with food and supplement composition from the Department of Health's Nutrient Databank. Vitamin D in breast milk was not included as estimates vary widely; breastfed and non-breastfed are reported separately. Fully productive participants were those who completed ≥ 3 days of diary; these were asked to attend a clinic or have a home visit for anthropometry and blood sampling, from February to August 2011. For diet, results were subdivided into 4 groups: 4–6 months, 7–9 months, 10–11 months, and 12–18 months; for clinic, groupings were 5–11 months and ≥ 12 months. Vitamin D status was measured using the DiaSorin Liaison method for 25-hydroxyvitamin D (25-OHD), a direct, competitive chemiluminescence immunoassay. Weighting factors ensured representativeness. The lower threshold for vitamin D adequacy is 25 nmol/L of 25-OHD⁽²⁾.

There were 2,683 fully productive children in DNSIYC (response rate 62%), the achieved sample close to the UK population in terms of age, sex, ethnicity and region. 44% ($n = 973$) of eligible fully productive children attended a clinic visit, of whom 55% provided a blood sample. For non-breastfed, mean intakes of vitamin D from all sources were $> \text{RNI}$ for 4–11 months (7.7–10.0 $\mu\text{g/d}$, 111–125% of RNI) but $< \text{RNI}$ for 12–18 months (3.9 $\mu\text{g/d}$) (55% of RNI). Infant formula provided 85% of intake for 4–6 months, 80% for 7–9 months, 72% for 10–11 months, but only 29% for 12–18 months. Mean intake of vitamin D (excluding breast milk) of breastfed children were $< \text{RNI}$, ranging from 37% to 54% of RNI (2.6–3.8 $\mu\text{g/d}$). Supplement use was low. Mean 25-OHD for 5–11 months was 68.6 nmol/L and 64.3 nmol/L for 12–18 months. 6% of 5–11 months were $< \text{lower threshold of vitamin D adequacy}$, 2% of those 12–18 months.

For most infants, vitamin D status is satisfactory and for non-breastfed, infant formula provides the major intake source.

1. Department of Health. National Diet and Nutrition Survey <http://transparency.dh.gov.uk/2012/07/25/ndns-3-years-report/>

2. Department of Health. Diet and Nutrition Survey of Infants and Young Children <http://transparency.dh.gov.uk/2013/03/13/dnsiyc-2011/>