

Iron 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 dietary intakes and nutritional status of the UK population ≥ 18 months, including iron, where there are concerns about adequacy of intakes and status⁽¹⁾. Recognising the need for similar information about those younger than 18 months, the Department of Health commissioned a survey of infants and young children aged 4–18 months, which was carried out in 2011. Iron intakes and status are reported here.

The sample was drawn using a multi-stage random probability design from Child Benefit records, in two waves to ensure sufficient numbers at each end of the age range. Background information was collected using home interviews for socio-demographic 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 composition from the Department of Health's Nutrient Databank. Fully productive participants were those completing ≥ 3 days of diary; these were invited to attend a clinic or have a home visit for anthropometry and blood sampling (3.9 ml non-fasting), from February to August 2011. For diet, results were subdivided into: 4–6 months, 7–9 months, 10–11 months, and 12–18 months; for clinic, groupings were 5–11 months and ≥ 12 months. Iron status was assessed through measurements of haemoglobin (Hb), ferritin, and transferrin receptors (sTfR). Ferritin and sTfR were measured on a Siemens Dimension Xp analyser by "sandwich" immunoassay methods. Lower limits were: Hb: 10.5 g/dL (5–6 months), 10.0 g/dL (7–9 months), 11.0 g/dL (≥ 10 months); ferritin: 9 $\mu\text{g/L}$ (5–6 months), 5 $\mu\text{g/L}$ (7–9 months), 12 $\mu\text{g/L}$ (≥ 10 months). The upper limit for sTfR was 11 $\mu\text{g/mL}$ for all ages. Weighting factors ensured representativeness⁽²⁾.

There were 2,683 fully productive children in DNSIYC (response rate 62%), with 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% successfully provided a blood sample. Mean iron intakes were $>$ RNI for children 4–6 months (135% of RNI) and close to the RNI for 7–9 months (94%), 10–11 months (98%) and 12–18 months (93%). Infant formula was the main source of iron for children 4–6 months (56%), 7–9 months (48%) and 10–11 months (42%), while for 12–18 months, it was cereals and cereal products (41%). 7% of children 5–11 months and 11% of 12–18 months were below ferritin reference limits. 6% of those 5–11 months and 15% of 12–18 months were $>$ upper sTfR reference limit. 13% of children 5–11 months and 15% of ≥ 12 months fell below the lower Hb limit. 3% of those 5–11 months and 2% of 12–18 months were $<$ both ferritin and Hb limits, a sign of iron deficiency anaemia.

For most infants, iron status is satisfactory although some infants were outside reference limits. 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/>.