

Iodine intakes in Irish children aged 5–12 years

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Iodine is an essential trace mineral with an integral physiological role in the production of thyroid hormones⁽¹⁾. Normal thyroid function is essential for growth and neurodevelopment both in utero, and during childhood⁽²⁾. Thus, pregnant women and young children are considered the most vulnerable or 'at-risk' groups in terms of iodine deficiency⁽³⁾. There is limited information regarding iodine intakes by school-aged children in Ireland. Therefore, the aim of the current study was to estimate dietary iodine intakes from a nationally representative sample of 600 Irish children aged 5–12 years.

The food and beverage consumption data used in this analysis was collected by means of a four-day weighed food diary during the National Children's Food Survey II (NCFSII; 2017–2018) (www.iuna.net). The study was nationally representative of the Irish population apart from social class; thus, a statistical weighting factor was applied to account for differences. Dietary iodine intakes ($\mu\text{g}/\text{d}$) were calculated using updated iodine concentration data obtained from the Irish total diet study⁽⁴⁾ and were expressed as median and interquartile ranges (IQR) using SPSS© V26.0. The percentage contributions of various food groups to overall iodine intake were investigated; in order to assess the influence of milk consumption specifically, participants were categorised into four groups: non-consumers, low, medium, and high consumers of milk.

Median (interquartile range) iodine intakes in the total population were 107.3 $\mu\text{g}/\text{d}$ (69.2, 164.0 $\mu\text{g}/\text{d}$). Significantly greater iodine intakes were observed in boys at 113.7 $\mu\text{g}/\text{d}$ (75.3, 171.4 $\mu\text{g}/\text{d}$), compared to girls whose intakes were 99.4 $\mu\text{g}/\text{d}$ (62.5, 159.3 $\mu\text{g}/\text{d}$) ($p = 0.010$). In the population, 43% of participants did not meet the adequate intake of 90–120 $\mu\text{g}/\text{d}$, recommended for their age group⁽⁵⁾. When split by sex, 38% of boys and 48% of girls did not meet this recommendation. In contrast, 3.8% of the population exceeded the tolerable upper intake level of iodine for their age group⁽⁶⁾. The major source of iodine was milk, contributing to over 50% of iodine intakes. Other sources included breakfast cereals (7%) and yogurts (5%). A significant positive association was observed between milk consumption and dietary iodine intake, with non-consumers and low consumers of milk having significantly lower iodine intakes compared to medium and high milk consumers ($p < 0.001$).

Whilst most Irish children in this study seem to have adequate dietary iodine intakes; the finding that milk is the predominant food source should be highlighted, as any changes in the production or consumption of milk could potentially have major implications for iodine intakes. Future research should consider assessing urinary iodine concentrations, a better indicator of iodine status and a continued review of dairy practices, milk consumption patterns and iodine intakes and status should be a priority going forward.

Acknowledgements

The study was funded by the Irish Department of Agriculture, Food and the Marine (DAFM) under the 2015 Food Institutional Research Measure (FIRM) awards. Many thanks to all the families who agreed to take part, the fieldworkers, and the staff of the National Children's Food Survey II.

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