

The 13th European Nutrition Conference, FENS 2019, was held at the Dublin Convention Centre, 15–18 October 2019

Developing food-based dietary guidelines for 1–5 year old children: a protocol for use in population health globally

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Abstract

Early childhood is a well-established critical period for growth and development, potentially impacting on life-long health. Healthy dietary habits formed during the transition from a predominantly milk-based to a food-based diet track into later life. Globally, there is no established process for developing food-based dietary guidelines (FBDG) for 1–5 year old children. This study aims to establish a protocol for developing FBDG for 1–5 year old children for use in population health globally.

Foods consumed by > 10% of consumers aged 1–5 years (at each eating occasion) were identified by secondary analysis of the Irish National Pre-School Nutrition Survey (NPNS; 2012). Consultations were held with registered dietitians to update the NPNS data and reflect current dietary habits. Dietary modelling, based on healthy eating principles, was conducted on boys (*n*30) and girls (*n*30) at five percentiles on the World Health Organisation (WHO) growth charts (0.4th; 25th; 50th; 75th; 99.6th) and at six age time-points (1y; 1.5y; 2y; 3y; 4y and 5y). Intake targets were identified for energy, macronutrients and 6 key micronutrients. For those with inadequate nutrient intakes, key contributing foods were identified and used in the modelling.

Dietary modelling yielded 640 four-day food intake patterns. For 1–3 year olds, especially those < 25th growth percentile, iron was identified as an at-risk nutrient as the intake target was not achieved. For all 1–5 year olds, vitamin D was identified as an at-risk nutrient. Red meat and iron-fortified cereal (> 12mg/100g) were identified as key contributors to iron intake. A combination of red meat (30 g, 3 days/week) and iron-fortified cereal (30 g, 5 days/week) resolved inadequate iron intakes for 1–3 year olds, except those < 25th growth percentile. For those children, the additional inclusion of 4 mg iron from use of iron-fortified milk (1.2mg/100mL) or a low-dose iron supplement (7 mg, 4 days/week) resulted in adequate iron intakes. For all children aged 1–5 years, vitamin D intakes improved by including a daily 5µg vitamin D supplement, but still did not reach the intake target.

Worldwide, significant resources are invested in assessing growth and development of 1–5 year olds. This study provides a protocol for developing FBDG to meet nutritional needs of 1–5 year olds at various growth parameters (age and percentiles), using WHO charts. This enables the provision of practical food-based interventions to nutritionally vulnerable children. Using national dietary data, this approach can be applied for developing FBDG specific to a country's needs.

Conflict of Interest

There is no conflict of interest