The role of... Key Nutrients on Toddler Growth

An evidence-based guide to toddler nutrition for healthcare professionals

Healthcare professionals play an important part in helping parents of toddlers (1-3 years) understand the importance of good nutrition to support development.

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Key Learnings

1. **Body growth and brain development are faster in the early years of life than during any other period.** Good nutrition is very important to support this growth.

2. **The importance of key nutrients.**
   While an adequate intake of macronutrients (carbohydrate, protein and fat) and micronutrients (vitamins and minerals) is essential, there are certain key nutrients which deserve special attention.

3. **Despite their necessity for growth, intakes of key nutrients are an issue.**
   Areas for concern highlighted in the National Pre-School Nutrition Survey included intakes of iron and Vitamin D.

Iron and Vitamin D are vital for toddlers

**IRON**

Babies and toddler’s are at particular risk of iron deficiency due to high demands for iron during periods of rapid growth. A significant number of Irish toddlers may not be getting enough iron in their diets. Results from the National Pre-School Nutrition Survey showed that 23% of one year olds, 10% of two year olds and 11% of three year olds were not getting enough iron from their diets.
There is a large body of research from over the past number of years, emphasising the importance of protecting the developing brain from iron deficiency. Iron deficiency in toddlers may have long lasting detrimental effects on neurodevelopment and behaviour.

VITAMIN D

Toddlers have very rapid rates of bone growth. Peak bone mass accrual may not be achieved in children and adolescents with sub optimal Vitamin D levels. A large number of Irish toddlers are likely to be at risk of Vitamin D deficiency, particularly in winter. Results from the National Pre-School Nutrition Survey showed that 70 – 84% of 1 – 4 year olds were consuming less than 5 µg Vitamin D per day. The recommended daily allowance (RDA) for toddlers is 10 µg.

As well as being essential for bone health, it is possible that Vitamin D deficiency may be associated with a wide range of medical conditions including autoimmune disorders such as diabetes, multiple sclerosis, cancer and cardiovascular disease. Research is ongoing in this area. Many cells and tissues in the body carry a Vitamin D receptor (VDR) and further research into the health effects of Vitamin D is ongoing.

The national pre-school nutrition survey

The National Pre-School Nutrition Survey investigated the eating habits of 500 young children in Ireland aged between one to four years (i.e. from the age of 12 months up to their fifth birthday). Four-day weighed food diaries were used to collect detailed food and beverage consumption data from these children. Findings from the study showed that for the most part, Irish pre-school children are well nourished, and their diet is adequate and meets dietary recommendations for most nutrients. From the survey 23% of one year olds, 10% of two year olds and 11% of three year olds were not getting enough iron in their diets. The survey also indicated that a significant proportion of children may be at risk of vitamin deficiency, particularly in winter. Overall daily vitamin D intakes were quite low with 70-84% of those aged between one and four consuming less than 5 µg (200 IU) per day. The RDA for toddlers is 10 µg.

Increased risk of iron deficiency in toddlers

Iron is the world’s most common single nutrient deficiency. While the prevalence of iron deficiency anaemia is considered to vary strongly with socio-economic status, a recent study from the Netherlands found no influence of socio-economic status on the prevalence of iron deficiency. 400 healthy children aged between six months and three years were included in the study. Iron deficiency and iron deficiency anaemia were detected in 18.8% and 8.5% of the children, respectively. Relative to their size, toddlers need nearly five times more iron than a grown man.
Iron and… Brain Development

The American Academy of Paediatrics published a clinical report in 2010 stressing the importance of minimising iron deficiency in toddlers given the potential long lasting detrimental effects of iron deficiency on neurodevelopment and behaviour\(^5\).

Results from all the recent research over the past number of years emphasize the importance of protecting the developing brain from iron deficiency. Many developing central nervous system processes are highly dependent on iron containing enzymes and proteins\(^5\). Iron deficiency affects neuronal energy metabolism, the metabolism of neurotransmitters, myelination and memory function\(^6\).

Iron and… Energy Metabolism

Iron plays a major role in the body’s use of oxygen. Toddlers have increased requirements for iron to support their expanding red cell mass and growing body tissues.

Vitamin D and… Bone Health

Vitamin D is an essential nutrient controlling the absorption of calcium and phosphorous from the gut. Calcium and phosphorous are vital for the healthy growth of the skeleton during childhood. Toddlers in particular have very rapid rates of bone growth. Peak bone mass accrual may not be achieved in children and adolescents with sub-optimal Vitamin D levels\(^7\).

QUICK TIP FOR PARENTS 1

Toddlers are at particular risk of iron deficiency, due to the high demands for iron during periods of rapid growth.

QUICK TIP FOR PARENTS 2

Bones are for life! A toddler’s bones are growing quickly, so it’s vital they get enough Vitamin D to support this.

Are children living in Ireland getting enough Vitamin D?

A recent study assessing the Vitamin D status of 252 healthy Irish children found that more than half the children had serum Vitamin D levels below the threshold for sufficiency. A marked seasonal effect was demonstrated in this study with blood samples taken during April–September having significantly
higher Vitamin D levels compared to samples taken during October-March. Just over 20% of the children in the study were taking a form of Vitamin D supplementation, and this significantly improved Vitamin D levels. More than 25% of the children aged between one and four were consuming growing up milk, and this was a significant determinant of Vitamin D sufficiency.

Suitable articles for parents on this topic are available at www.toddlebox.ie/nutrition

References


