

## Toddlers to preschool

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DIETARY FAT PLAYS MANY VITAL ROLES for the young child, but, most importantly, its energy density is a bonus for toddlers (1–2-year-olds) and preschoolers (3–4-year-olds), whose needs are high in relation to weight, while their appetites are often small. It is appropriate that fat provides less energy than it does in infancy, but more than that for school-aged children and adolescents. While fat is an important macronutrient, emphasis needs to be placed on foods which contribute not only fat but are nutrient-dense as well, such as dairy products and eggs. Young children display the well-known human preference for high fat and high sugar content foods.<sup>1</sup> However, fostering a taste for a variety of nutrient-dense foods is necessary during this time because of high nutrient needs in the face of an often poor appetite and a reluctance to try new foods.

### Role of fat for development

In general, growth during the toddler, and especially the preschool, years is steady and slow compared with infancy. However, the need for nutrients, including energy, is still high relative to weight in order to support the developing body components such as bones, teeth, or muscles. In addition to the energy they supply, dietary fats are also a vital source of essential fatty acids and other bioactive compounds that are crucial requirements for a variety of cells and tissues.

The essential fatty acids, linoleic acid (omega-6 family) and alpha-linolenic acid (omega-3 family), continue to be required for skin health (linoleic acid), and as precursors for both the long-chain versions of the omega-3 and omega-6 fatty acids found in the brain (omega-3 and omega-6) and retina (particularly omega-3).

### What are the fat requirements?

Total fat requirements for young children is a contentious subject in that the impact of a low-fat versus a moderate-fat diet in the future development of obesity and atherosclerosis has been vigorously debated since the 1970s.<sup>2</sup> Some experts claim that a low-fat diet needs to be encouraged from the age of two years to maximise the likelihood of future healthy dietary habits to reduce the risks of obesity and coronary heart disease, while others are concerned that this approach

### Summary

- Toddlers (1–2-year-olds) are in transition from the high-fat diet of infancy to the relatively low-fat diet of preschoolers, school-aged children and adolescents.
- Toddlers and preschoolers need to be continually encouraged to try a wide range of foods supplying all types of fats, and with the emphasis on nutrient-dense foods.
- Reduced-fat and skim milks are not appropriate for toddlers, because milk is a major fat source for 1–2-year-olds, but reduced-fat milks are encouraged for preschool-aged children.
- No solid evidence exists to support the manipulation of dietary fat for the treatment of attention deficit hyperactivity disorder or the prevention and treatment of asthma.

in toddlers, in particular, may provide insufficient energy for normal growth and development. There are sound arguments on both sides of this public health issue, but each child's case needs to be judged in the context of family eating patterns, as well as his or her growth pattern and family history. In general terms, the toddler is in transition from the high fat diet of infancy to the lower intake required by preschool and older children. Health professionals are likely to see extremes in fat intake, and there will no doubt be specific cases of children who would benefit from moderating their fat intake, and others whose appetites are poor or whose fat intake has been restricted and for whom a higher fat intake is necessary.

The 1995 version of the National Health and Medical Research Council's *Australian dietary guidelines for children and adolescents*<sup>3</sup> recommended 35%–40% of energy from fat for 2–5-year-olds, but the more recent draft version of these Guidelines has revised this to 30%.<sup>4</sup> It should be noted that the mean percentage energy intake obtained by the 1995 National Nutrition Survey<sup>5</sup> was 33% of energy from fat for the 2–3-year-old and 4–7-year-old age groups. No specific guidelines are provided in Australia about the relative contributions from monounsaturated and polyunsaturated fats for this age group, but the draft guidelines recommend no more than 10% of energy from saturated fat for 2–5-year-olds. The limited data from the 1995 National Nutrition Survey for 2–3-year-olds<sup>5</sup> suggest that about half the dietary fat is saturated (about 15% of total energy) and relatively little is polyunsaturated.

### Fat as a source of fat-soluble vitamins

While it is apparent that fat-soluble vitamins (A, D, E and K) are located in the fat component of foods, it is not so readily appreciated that their distribution in foods is not uniform. The top sources of vitamin A for the 2–11-years age group are vegetables, milk products, fat spreads and oils.<sup>5</sup> Dietary sources of vitamin D are margarine, oily fish and eggs. Regardless of the food source of these com-

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pounds, fat needs to be present in the gut for absorption of these fat-soluble compounds. Thus, a diet comprising a moderate amount of fat will ensure that any fat-soluble vitamins consumed can be used.

### Reduced-fat products

The 1995 and draft Australian dietary guidelines for children and adolescents recommend that reduced-fat and skim milks should not be used for children aged under two years, because milk is a key fat, and thus a key energy source for this age group.<sup>3,4</sup> There are many other reduced-fat products available, and their use for toddlers will largely depend on the choices made for the rest of the family — after all, not many shoppers (or fridges) would cope with providing two versions of all options! As a guide, where products form a major part of the toddler's diet, it is better to use the whole-fat version where possible. Reduced-fat varieties can be encouraged for older children,<sup>3,4</sup> and this practice would contribute to the recommended reduction in saturated and total fat intake for 2–5-year-olds.

### Is there a role for dietary fat modification in managing attention deficit hyperactivity disorder?

In most children diagnosed with attention deficit hyperactivity disorder (ADHD) the cause is unknown, but thought to be multifactorial. Some researchers have proposed that one cause involves essential fatty acid metabolism. The limited data available relate to school-aged children rather than preschoolers, and indicate some anomalies in blood fatty acid levels of 6–12-year-old boys with ADHD.<sup>6</sup> However, the link between this and the expression of behavioural abnormalities has not been established and dietary intervention is not currently warranted.

### Level of evidence of fats associated with asthma

Asthma is also a heterogeneous, multifactorial condition and is increasing in prevalence among Western children. The idea that dietary fat manipulation may reduce the risk of developing asthma, or the number of episodes of asthma, has been around since the 1980s. Some authors have suggested an increasing linoleic acid intake as a contributing factor to the increasing prevalence,<sup>7,8</sup> specifically in relation to the impact of this increase in the ratio of omega-6 to omega-3 fatty acids in our diets. Haby et al studied 3–5-year-olds in regional NSW, but their cross-sectional study used a non-validated short tool to monitor the participants' home use of polyunsaturated fatty acid (PUFA) fat on bread or toast or in roasting and frying for their children's food,<sup>8</sup> and did not assess the ratio of omega-6 to omega-3 PUFAs in the children's diets. Similarly, the studies which suggest that fish (a valuable source of long-chain omega-3 fatty acids) is protective<sup>9</sup> have not adequately assessed the omega-3 PUFA intake of their participants. Exposure to omega-3 fatty acids *in utero* or postnatally, or both, may influence immunological development and hence asthma

(and allergy) risk; studies involving omega-3 fatty acid supplementation are currently under way around Australia to investigate this possible relationship. In relation to asthma management, the conclusions of a Cochrane review were that there is little evidence to recommend that people with asthma should supplement or modify their dietary intake of marine omega-3 fatty acids to improve their asthma control.<sup>10</sup>

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