

be replaced with lower-fat choices (eg, sandwiches or rolls instead of pastry, fruit-based frozen desserts instead of ice cream), and quantities of added fats (eg, butter, spreads and fried foods) should be minimised. Spreads and oils used should be from monounsaturated or polyunsaturated sources. Fish is often not a popular item with children, but should be encouraged to assure it a place in a consequent adult eating pattern.

Where fat intake is reduced, total energy needs must be met with increased amounts of cereal, fruit and vegetables.¹³ Some children of lower primary school age with lower appetite (along with any younger children in the family) find achieving adequate energy intake difficult with this bulkier diet, and some discretion must be used within the family about the age at which the lower-fat diet is introduced. For such children, more liberal inclusion of monounsaturated and polyunsaturated fats can be used to restore energy density.

For Australian children, food prepared outside the home is somewhat higher in total fat than food prepared at home, whether eaten at home or away from home.⁷ Where food prepared outside the home is a regular item in the family diet, consideration should be given to the choice of eating places and foods chosen.

Snack foods contribute significantly to energy intake over the day,⁷ and should contribute similarly to nutrient intake. Information from teachers and parents emphasises the prevalence of potato crisps and high fat snack items in the school lunch box.¹⁸

Many children have access to a school-based lunch service and the favourite items are often high in fat, such as doughnuts and sausage rolls. Younger children need assistance with ordering better alternatives or limiting access to such high-fat-content foods. After-school snacks should include basic food items (eg, vegetable soup, bread or toast, fruit and milk or yoghurt).

Adolescence and young adulthood

DURING ADOLESCENCE AND YOUNG ADULTHOOD dietary fat continues to play important roles as an energy source, a significant cell structural component, a precursor to agents of metabolic function and a potent gene regulator.¹ Energy requirements for the final stage of growth can be highly variable, but the increasing prevalence of obesity suggests a problem with energy imbalance. Rather than being the result of excess food intake,² this has been attributed to

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Linda C Tapsell and Marijka J Batterham

reduced physical activity.³ Physical activity levels decline substantially during adolescence and young adulthood.⁴ Once obese, adolescents are generally even less active than their non-obese counterparts,³ and this is not necessarily accompanied by greater energy or fat intakes.⁵ Adolescents who are obese are more likely to become obese adults than younger children who are obese.⁶ As overweight in adolescence is a more powerful predictor of risk of heart disease and atherosclerosis than overweight in adulthood,⁷ the effect of reduced physical activity at this stage is compelling.

Is dietary fat implicated in the development of obesity and heart disease risk at this stage?

The impact of dietary fat on obesity needs to be considered in the context of current body composition, physical activity

Summary

- Advice supporting regular physical activity, healthy food choices and smoking avoidance is definitely warranted in adolescents, particularly where early negative eating trends are evident.
- A difference in emphasis may be required for males and females with respect to physical activity and diet.
- The amount of dietary fat is important in maintaining energy balance, and the type of fat is important in reducing the development of heart disease.
- Low-fat foods are suitable at this lifestage, but it is also important to avoid sources of "hidden" saturated fatty acids (biscuits and fast foods) and to include sources of polyunsaturated and monounsaturated fatty acids (oils, margarine, lean meat, poultry and nuts).

and genetic potential. This is implied in a recent Australian finding that a child's body fatness and parental adiposity were stronger predictors of future and maintained overweight than dietary factors.⁸

If an adolescent is already overweight, dietary fat may be less well tolerated. Obese and non-obese adolescents appear to consume equivalent amounts of high-fat, low-nutrient-dense foods when adjusted for total energy expenditure,⁹ and the ability to burn fat after a meal is associated with adiposity in adolescents.¹⁰ Type of dietary fat is also significant — in contrast to polyunsaturated fatty acids, saturated fatty acids are less readily mobilised and oxidised, and they are potent gene regulators for fat-cell proliferation.¹ The type of dietary fat also has an impact on heart disease risk factors. Longitudinal studies in adolescents and young adults have shown an inverse relationship between total cholesterol and dietary polyunsaturate to saturate (P:S) ratio over time.¹¹ A positive association between dietary saturated fats and total cholesterol level has also been shown in an Australian adolescent population, although dietary factors may be more important in girls, with body composition (possibly exercise related) more important in boys.¹²

Are low fat foods suitable for adolescents?

The draft *Australian dietary guidelines for children and adolescents* recommend 25% of total energy as fat, with less than 10% of energy from saturated fat for children aged over 15 years.¹³ The recommendation for 30% of energy as fat should provide the requirements for growth as long as total energy intake is adequate.¹⁴ Concern has been expressed that reducing dietary fat in the prepurbertal years may result in inadequate nutrition,¹⁵ but a seven-year study has shown the safety and efficacy of low-fat approaches.¹⁶ In 1995, the major sources of dietary saturated fat for Australians aged 12–18 years were milk and cereal products (including

biscuits, pastries and battered foods). Oils and margarines, and meat and poultry, were major sources of polyunsaturated and monounsaturated fats, respectively.¹⁷ Effective strategies for reducing fat intake in children include the use of skim milk and choosing only lean meat, although in one study choosing only lean meat was associated with reduced micronutrient intakes, possibly because of associated lower energy intakes.¹⁸ Surveys of Western populations produce fairly consistent views on adolescent eating patterns. Unhealthy behaviours developed in childhood (being sedentary, a high intake of saturated fats, and, later, smoking) persist through adolescence,¹⁹ so it is an important time for intervention.

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