ABC of Nutrition

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CHILDREN AND ADOLESCENTS

Children

What children eat is largely controlled by their mothers. Four simple principles should help them.

(1) Eat from each of the four basic food groups every day. These include all the essential nutrients between them.

(2) Aim for variety within each food group—for example, not always the same vegetable. The child should be prepared to eat food from other cultures. Faddiness is a social handicap in later life.

(3) To minimise dental caries, sweets and other sugary foods should be rationed and not eaten between meals as a rule. If they are, the teeth should be brushed afterwards. A healthy child going through a phase of not finishing ordinary amounts of food at three main daily meals should not have snacks between.

(4) Rickets is the most likely deficiency disease in Britain; children of people from the Indian subcontinent in northern cities are most at risk. The three preventive measures are:

- spending more time out of doors,
- eating plenty of the foods that contain some vitamin D,
- taking NHS vitamin drops (vitamins A, C, and D) in winter.

Foods that contain some **Vitamin D**

Milk, eggs, cheese, butter, liver all contain some.

Fatty fish (herring, mackerel, sardines, pilchards, tuna, and salmon) contain more.

Infant milks, infant cereals, margarines, some breakfast cereals, some yoghurts, and branded food drinks have vitamin D added during manufacture.

In the schoolgoing years 5/21 of children's meals during term time, or (including holidays) 16% of their annual meals, are the responsibility of the school authorities. The 1975 guidelines on school lunches of the Department of Education and Science aimed to provide about one third of a child's energy needs and 42% of his protein needs. Other critical nutrients—iron, calcium, zinc, and several vitamins are associated with protein in the diet.

Since 1980, however, local authorities have no longer been obliged to provide school meals for most children, and the nutritional content of the food they do provide is no longer laid down.

Adolescents

Teenagers are not fed; they eat. For the first time in their lives they assume responsibility for their own food intakes. At the same time they are intensely involved in day-to-day life with their peers and preparation for their future lives as adults. Social pressures thrust choices at them: to drink or not to drink, to smoke or not to smoke, to develop their bodies to meet sometimes extreme ideals of slimness or athletic prowess. Few become interested in foods and nutrition except as part of a cult or fad such as vegetarianism or crash dieting.

E M N HAMILTON and E N WHITNEY
Nutrition: Concepts and Controversies, 1979

Ten facets of eating behaviour are different or more pronounced in adolescents than in other people and each may cause concern in the older generation.

(1) *Missing meals*, especially breakfast. This does not usually affect classroom performance, partly because of—

(2) *Eating snacks* and confectionery. The major snack is usually in the afternoon, after school. Snacks tend to be high in “empty calories”—fat, alcohol, and sugar—but some provide calcium (for example, milk) or vitamin C (fruit).

(3) *“Fast,” take away, or carry out foods*—These provide some nutritious portions, but adolescents may not choose balanced meals from what is offered. There is little accessible information about the nutrient composition of fast foods.

(4) *Unconventional meals* may be eaten in combinations and permutations that other members of the family do not approve of, but they may add up to an adequate nutritional mix.

(5) *Start of alcohol consumption*—This is the most dangerous of the new food habits. Alcohol related accidents are the leading cause of death in the 15-24 year age group.

(6) *Soft drinks and other fun drinks*—If an alternative to alcoholic drinks soft drinks should not be discouraged, but they provide only empty calories and by replacing milk can reduce the intake of calcium.

(7) *Distinctive likes and dislikes for foods*—The order of preference differs between cultures and subcultures and between boys and girls.

(8) *High energy intakes*—Many adolescents go through a phase of eating much more than adults, sometimes up to 16.7 mJ (4000 kcal). This seems to occur near the age of peak height velocity in girls (around 12 years), but in boys may come later than the age of peak height velocity (usually 14 years). Presumably the larger, more muscular male late adolescent is expending more energy at this stage.

(9) *Low levels of some nutrients*—The critical ones are iron, calcium, and in some studies vitamins A and C and zinc. Iron deficiency is quite common in adolescent girls who are menstruating, still growing, and often restricting their food intake. It may sometimes occur in boys too. Accretion of calcium in the skeleton can be as much as 100 g/year at peak height velocity. Around 20% is absorbed so that 500/365 g is needed in the diet—that is, 1370 mg/day.

Percentage of daily nutrients provided by different meals among 290 school students (boys and girls) aged 16-17 in Sydney, Australia (based on four day records and interviews)

	Breakfast	Lunch	Dinner	Snacks
Energy	16.7	23.8	33.0	26.1
Protein	16	25	41	18
Fat	15	25	37	23
CH ₂ O	20	23	27	31
Alcohol	0	14	36	50
Calcium	26	19	26	28
Iron	23	23	37	9
Vitamin A	18	26	36	21
Thiamin	28	22	28	20
Riboflavin	27	17	26	18
Vitamin C	14	19	27	27

Truswell AS, Darnton-Hill I. Food habits of adolescents. *Nutrition Reviews* 1981;39:73-87.

Mean energy intakes of boys and girls studied in 1930-55 compared with more recent studies in relation to WHO/FAO (1973) recommendations

Whitehead RG *et al*, *Human Nutrition: Applied Nutrition* 1982; 36A: 57-62

Between the ages of 10 and 20 years:

Lean body mass goes from (average) 25 to 63 kg in boys, 22 to 42 kg in girls;

Body fat goes from (average) 7 to 9 kg in boys, 5 to 14 kg in girls;

Triceps skinfolds (subcutaneous fat) in boys stay at about 9 mm with a dip at year 15; in girls they climb steadily from 11 to 16 mm;

Body calcium goes from about 300 g in both boys and girls to over 1000 g in boys and 750 g in girls

Too thin: entering anorexia nervosa range

Height without shoes		Weight* (kg)
Metres	Ft, in	
1.45	4, 9	38
1.48	4, 10	39.5
1.50	4, 11	40.5
1.52	5, 0	41.5
1.54	5, 1	42.5
1.56	5, 1	44
1.58	5, 2	45
1.60	5, 3	46
1.62	5, 4	47
1.64	5, 5	48.5
1.66	5, 5	49.5
1.68	5, 6	50.5
1.70	5, 7	52
1.72	5, 8	53

*body mass index ($W/H(m)^2$) of 18.

Priorities

It is common practice today to believe that many teenagers have atrocious food habits and are on the brink of nutritional disaster. The basis for such a generalisation is questionable. We point with pride to our youth—their size, their attainments, and their vitality, even though we view with alarm their food habits. Are we implying that food has no relation to fitness, or do we have a distorted picture of their food choices and eating patterns?

R LEVERTON
J Am Diet Assoc 1968;53:13-6.

(10) *Adolescent dieters*. There are two aspects to this: obesity and social dieting. Obesity affects about 10% of boys and girls, but its exact prevalence is difficult to determine because there are no generally accepted standards for adolescents. Weight for age needs to take height into account and the stage of puberty. Obese adolescents are usually inactive and tend to have low socioeconomic status. Dietary management should aim to hold the weight constant while the young person continues to grow and so thins out. Increased exercise should be emphasised and anorectic drugs should not be used.

For every case of obesity there are several adolescent girls of normal weight modifying their diet because they are not as thin as they or their peers think they should be. They may fast and binge alternately. With a smaller energy intake they are more likely not to reach their requirements for iron and other essential nutrients. In a small minority this social dieting goes on to anorexia nervosa (incidence about 1% of middle class girls aged 15-25). Treatment of anorexia nervosa is best handled by a specialised psychiatrist-dietitian team. The general practitioner's main role is to recognise the early cause. The longer the duration the worse the prognosis. A young woman whose weight goes below a body mass index (weight (kg)/height(m)²) of 18 should be warned, with her parents, that her thinness is unhealthy and referred for treatment if she cannot increase it. By contrast, adolescent boys are more likely to worry that they are not growing tall enough or not developing enough muscles.

Does diet affect acne?

The popular belief is that chocolate, fatty foods, soft drinks, and beer can all aggravate acne vulgaris. This is not surprising since 85% of people have acne at some time during adolescence and most adolescents eat and enjoy these foods.

Controlled trials—for example, of chocolate—have proved negative but their design can be criticised. It is very difficult to produce double blind conditions. Individual cases appear to respond to cutting down confectionery, fatty foods, or alcoholic drinks and there are other reasons to recommend such a dietary change. Zinc, polyunsaturated fats, and vitamin A are reported to improve acne, and adolescents can be advised to eat foods that are good sources of each: meat and wholemeal bread (zinc), polyunsaturated margarine or cooking oil, and carrots or liver (vitamin A).

Perspective, patience, and a sense of humour help in watching and advising on adolescent food habits.

The serious ones are drinking with driving, usually in boys, and excessive slimming, usually in girls.

No young person wants to lose his teeth and spoil his good looks. As in children, sticky sugary foods should not be eaten between meals, or if they are the teeth should be thoroughly brushed afterwards.

Parents have more influence than they may think. They can choose which foods and drinks they buy and prepare and keep in the refrigerator. The adolescent's food habits were laid down in the family and the family remains one influence. The other three are the peer group, the need to develop an independent personality, and society in general.

Adolescence is a transitional stage when the structure of food habits is loosened. In a few years the young person will usually get married, work out a compromise set of food habits with the spouse or partner, and settle down to re-establish the eating behaviour of a new family. It is here, in preparing for and starting marriage that nutrition education should probably focus more.

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