

# **Promoting healthy eating for children**

A planning guide for practitioners

Department of Human Services



Prepared by Deakin University for the Department of Human Services

Published by Victorian Government Department of Human Services, July 2005

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## ***Preface***

In 2001 and 2002, members of the Physical Activity and Nutrition Research Unit at Deakin University reviewed the published literature on evaluated healthy eating interventions among children aged 0–15 years. From stakeholders involved in promoting children’s healthy eating, the study team sought opinions on problems and opportunities in this area. This planning guide is based on the study findings and a broad reading of the area. It is intended to help health, education, and community practitioners and other child carers devise and evaluate interventions to help children and their families consume healthy foods.

The guide attempts to overcome a gap in literature on children’s healthy eating interventions, with the current literature being diffuse and focused mainly on children in primary schools. Relatively little research has been published on interventions in preschools and family and community settings.

# ***Part A: Children's healthy eating—general comments and principles***

## **1 Introduction**

The foods that we eat are important to our long term health and well being. This link is particularly so for children, given the impact of nutrition on healthy growth and development. However, despite widespread community awareness of the importance of healthy eating, recent surveys have shown that many children have poor eating habits.

Healthy eating in childhood is important for of the following reasons:

- Eating a healthy diet is the cornerstone of optimal growth and development for infants, children and adolescents. A nutritious diet allows children to reach their maximal educational potential (NHMRC 2003; Journal of the American Dietetic Association 1999).
- Consumption of a wide variety of foods during childhood is likely to establish food preferences that will last into adulthood—'educated palates' (Birch and Marlin 1982). The food preferences of many 70 and 80 year olds, for example, tend to resemble the foods that were widely available during their childhood (Horwath 1989). It can be more difficult to influence food preferences later in life. Much social support and roughly four to six weeks are needed to alter taste preferences during adulthood (Tuorila 1987).
- Basic knowledge of foods and normal eating (so-called 'food and nutrition schema') is learned in childhood (Birch 1999; Johnson and Johnson 1985; Rozin and Vollmecke 1986). Examples are the belief that it is good to eat two or three pieces of fruit each day, and the belief that confectionery should be eaten only occasionally.
- Maternal and childhood eating habits can have an impact on adult health. Children who consume large quantities of energy dense foods, for example, are likely to become overweight and obese, especially if they are sedentary (Booth et al. 2001). In turn, obese children have a greater chance of being obese as adults and suffering from associated disease conditions such as type 2 diabetes and heart disease (Baur 2001; Fagot-Campagna 2000; Must et al. 1992). There is also increasing evidence that conditions such as rickets and lack of calcium and vitamin D (Mason and Diamond 2001; Nowson and Margerison 2002; Nozza and Rodda 2001), iron deficiency (Cooper and Simmer 2001; Karr et al. 2001) and iodine deficiency (McDonnell, Harris and Zacharin 2001) can affect undernourished Australian children. It is also now established

that maternal dietary habits during pregnancy may have long reaching effects on the health of children (Barker 1994; Moore and Davies 2001).

## 2 What is healthy eating for children?

Most of us recognise that some patterns of food intake are healthier than others. An over reliance on foods that contain large amounts of saturated fats, sugars and salt, combined with a low intake of fruits, vegetables and cereal foods, leads to adverse health consequences such as overweight/obesity and associated social rejection (NHMRC 2003). For this reason, many children's interventions have focused only on changes in nutrient intake (for example, changes in fat intake). However, a focus on food intake, food patterns, the experience of food and an enjoyment of eating is more likely to develop long lasting positive attitudes towards healthy eating (Johnson and Johnson 1985; Pollard 2001; Tapper, Horne and Lowe 2003).

In the Review of Children's Healthy Eating Interventions (Worsley and Crawford 2004), 'healthy eating' was defined as the consumption of a wide variety of fresh fruit, vegetables, legumes and wholegrain cereal foods, as well as dairy and animal foods (or other protein-rich foods) along the lines suggested by *The Australian Guide to Healthy Eating* (Smith, Kellett and Schmerlaib 1998) and *The Australian Dietary Guidelines for Children and Adolescents* (NHMRC 2003). However, this is a fairly limited definition; for some people, 'healthy eating' can include other aspects of eating such as:

- eating only to satisfy appetite or hunger (so-called 'intuitive eating');
- enjoying a variety of different foods and flavours (see, for example, Ehrlich and Murkies 2001);
- uncoerced eating—that is, not being forced to eat particular foods; and
- having regular meals and snacks.

*The Australian Dietary Guidelines for Children and Adolescents* and the *Australian Guide to Healthy Eating* are vital guides for practitioners who wish to promote healthy eating among children.

### ***The Australian Dietary Guidelines for Children and Adolescents***

Recently revised, *The Australian Dietary Guidelines for Children and Adolescents* (NHMRC 2003) (figure 1) form the basis of most public health nutrition approaches in Australia. They are the most up-to-date summary of the basic principles of human nutrition as they relate to the Australian population's health. For this reason, they are essential reading for all practitioners who are trying to promote healthy eating among children, because they define 'healthy eating'.

**Figure 1: Extract from The Australian Dietary Guidelines for Children and Adolescents**

**Encourage and support breastfeeding**

**Children and adolescents need sufficient nutritious food to grow and develop normally**

- Growth should be checked regularly for young children
- Physical activity is important for all children and adolescents

**Enjoy a wide variety of nutritious foods**

**Children and adolescents should be encouraged to:**

- Eat plenty of vegetables, legumes and fruit
- Eat plenty of cereals (including breads, rice, pasta and noodles), preferably wholegrain
- Include lean meat, fish, poultry and/or alternatives
- Include milks, yoghurts, cheese and/or alternatives
  - Reduced fat milks are not suitable for young children under 2 years, because of their high energy needs, but reduced fat varieties should be encouraged for older children and adolescents
- Choose water as a drink
  - Alcohol is not recommended for children

**and care should be taken to:**

- Limit saturated fat and moderate total fat intake
  - Low fat diets are not suitable for infants
- Choose foods low in salt
- Consume only moderate amounts of sugars and foods containing added sugars.

**Care for your child's food: prepare and store it safely**

**These guidelines are not in order of importance**

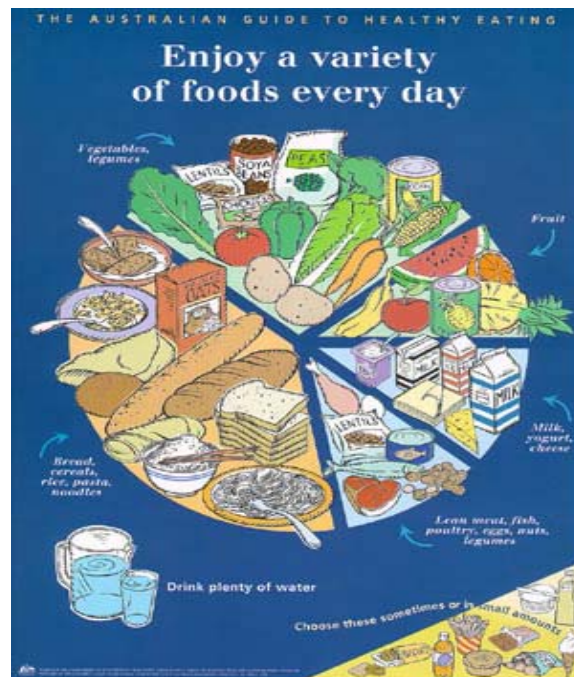
Each one deals with an issue that is key to optimal health. Two relate to the quantity and quality of the food we eat—getting the right types of food in the right amounts to meet the body's nutrient needs and to reduce the risk of chronic disease. Given the epidemic of obesity we are currently experiencing in Australia, one of these guidelines specifically relates to the need to be active and to avoid overeating. Another guideline stresses the need to be vigilant about food safety, and, in view of the increasing awareness of the importance of early nutrition, there is a further guideline that encourages everyone to support and promote breastfeeding.

Source: NHMRC (2003)

### **The Australian Guide to Healthy Eating**

*The Australian Guide to Healthy Eating* (Smith, Kellet and Schmerlaib 1998) is the official Australian Government guide to healthy eating. Extensively tested among several Australian population groups (Smith, Kellet and Schmerlaib 1988), it provides a useful basis for education and counselling activities.

**Figure 2: The Australian Guide to Healthy Eating**



### **3 What's the problem?**

There are several causes of concern about children's eating. While appearing to vary according to age, they include:

- poor food selection and preferences for only a small number of foods among children of all ages (Magarey, Daniels and Smith 2001);
- meal skipping (especially breakfast—Pollitt and Mathews 1998);
- fussy eating and food refusal among toddlers (mentioned by practitioners in the Review of Children's Healthy Eating Interventions);
- difficulties with meals and the impact of parents' working lives; and
- excessive energy consumption and the increasing prevalence of overweight/obesity among primary and secondary school children (Baur 2001; Booth et al. 2001; Fagot-Campagna 2000; Magarey, Daniels and Boulton 2001).



### **Poor food selection**

'Food selection' is a term used to describe the types and amounts of food that people usually consume. Poor food selection refers to an over reliance on a small number of foods, typically those that contain large amounts of fats, sugar and salt (for example, confectionary and 'fast foods'). *The Australian Guide to Healthy Eating* considers it to be the low consumption of foods such as fruits, legumes, vegetables and wholegrain foods. Children, especially very young children, often have little food choice because their parent or carer usually prepares and serves certain foods to them. However, they may exert some choice over what is offered by refusing to eat some foods.

The most recent National Nutrition Survey (ABS 1999), conducted in 1995, suggests many children are consuming foods that contain large amounts of energy in the form of fats and sugars, along with salt, and less than optimal amounts of nutrient dense foods such as fruits, vegetables and wholegrain foods (based on 'optimal' as recommended by *The Australian Dietary Guidelines for Children and Adolescents*). Children's eating practices also appear to have been changing for the worse over the past few decades.

### **Meal Skipping**

For primary and secondary students, some nutritionists have expressed concern about the timing and content of meals. Missing breakfast or lunch, for example, has been linked with cognitive and mood deficits (Pollitt and Mathews 1998).

### **Fussy eating among toddlers**

Many infants and young children (usually less than 4 years of age) tend to prefer familiar foods (Birch 1999). However, several practitioners in the Review of Children's Healthy Eating Interventions reported that some children as young as 2 years of age presented problems with food refusal and fussy eating that appeared to be related to narrow preferences for high salt, fat and sugar foods.

#### **Box 1: A snapshot of children's eating habits**

On the day of the 1995 National Nutrition Survey, the following were the findings among 5–8 year olds:

- About 40 per cent of children ate no fruit.
- Almost 30 per cent of children ate no vegetables.
- Potato comprised half of the vegetables eaten.
- Seventy-five per cent of potatoes were fried or mashed with added fat.
- Other than potato, children consumed only 1.5 types of other vegetable.

- As many children ate confectionery (60 per cent) as ate fruit.
- Eighty per cent of children ate foods such as cakes, biscuits and pastries.
- One-third ate 'snack' foods such as chips, Twisties and Cheezels.
- Only 25 per cent of children reported drinking water.
- Seventy per cent reported drinking fruit or vegetable juice.
- Thirty-eight per cent reported drinking soft drinks.
- Twenty-five per cent used beverage flavours (for example, cordial).

*Source:* Based on analysis of CURF data from the 1995 National Nutrition Survey (ABS 1999)

### **Impact of working life**

Recent research conducted in Melbourne shows that 35 per cent of parents with children of preschool or primary age have schedules that make it difficult for them to eat the evening meal with their children. Thirty-five per cent of mothers find it difficult to find time to prepare the evening meal; 15 per cent of mothers do not consider the evening meal to be a pleasant family time, and 30 per cent of families have the television on during the evening meal on most nights (Campbell et al. 2002).

One possible flow on effect of the increased duration and intensity of parental working lives (Pusey 2003) has been the rapid increase in the provision of food for children outside traditional school hours. Over 50 per cent of high schools now provide breakfast programs (Maddock, Warren and Worsley 2004). For further information about out of school hours care see [www.nosha.org.au](http://www.nosha.org.au), and for details of the National Heart Foundation's Eat Smart, Play Smart initiative in this area see [www.heartfoundation.com.au](http://www.heartfoundation.com.au).

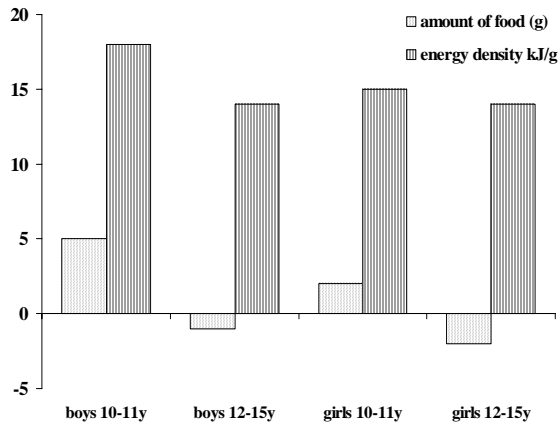
### **Excessive energy consumption**

Comparisons of children's intake of foods show relatively little change between 1985 and 1995 in the amount of foods consumed by children (Magarey 2000) but major increases in the energy that children consumed in this period. The later finding appears to be associated with large increases in children's consumption of the following types of food:

- a 40–56 per cent increase in confectionary intake (lollies and chocolates)
- a 29–48 per cent increase in beverage intake (includes soft-drinks)
- a 46 per cent increase in the intake of cereal-based products and dishes (for example, cakes and sweet biscuits)
- a 59–136 per cent increase in the intake of sugar products and dishes

*Figure 3: Change in the amount and energy density of food consumed, 1985–95*

## Percent change in amount of food and energy density of food 1985-95



**Source: A Magarey, pers. comm. ( 2003) Overweight and obesity**

There has been a great deal of media coverage of the 'epidemic' of obesity among Australian children. Table 1 shows the results of three surveys conducted during the past 15 years. The best available information suggests about 20 per cent of children are now overweight and about 5 per cent are obese (Booth et al. 2001). Obesity is a serious chronic health condition (WHO 2000), and obesity in childhood is associated with increased risk factors for heart disease (Baur 2001; Must et al. 1992). Disturbingly, type 2 diabetes (or adult onset diabetes) has begun to appear among adolescents (International Diabetes Institute 2002). In addition to its effect on physical health, obesity in children is also associated with reduced psycho-social health (WHO 2000).

**Table 1: Obesity in Australian children (according to surveys conducting 1995–97)**

	New South Wales Schools Fitness and Physical Activity Survey		National Nutrition Survey		Health of Young Victorians Survey	
	Boys (%)	Girls (%)	Boys (%)	Girls (%)	Boys (%)	Girls (%)
<b>Acceptable</b>	79.9	78.7	80.7	77.7	78.9	76.4
<b>Overweight</b>	14.9	16.3	14.4	16.9	15.8	17.8
<b>Obese</b>	5.2	4.9	4.9	5.4	5.3	5.7
<b>Overweight/Obese</b>	20.1	21.3	19.3	22.3	21.1	23.5

Source: Booth et al. (2001)

## 4 How do children learn about food and eating?

Children are great learners! They learn from their parents, their friends and the mass media. They have many goals that they pursue during the various stages of childhood. Like adults, they have strong needs for social approval, cognitive consistency or predictability in life, exploration of novelty, and intimacy (Epstein 1994).

American food psychologist Leann Birch noted that infants learn taste preferences from their exposure to the flavours of the food that their mothers eat in utero (via the amniotic fluid) and from flavours carried by breast milk (Birch 1999; Fisher et al. 1999). Children learn to like new foods through *repeated exposures* to those foods in an encouraging parental environment, through *watching* their parents eating and enjoying food, and through the *reinforcement* that parents and other children give them when they eat new foods (Birch, Johnson and Fisher 1995).

The same processes are at work among toddlers and primary and secondary school children, but peer behaviours and opinions become relatively more important. If a child is given a new food that his or her companions do not like, the child will probably develop a dislike for that food. However, when a food is presented among companions who like that food, the child will probably also like the food. Birch showed that preschool children soon began to eat foods they previously disliked (such as Brussels sprouts) when they were paired with peers who enjoyed these foods (Birch 1980; see also Neumark Sztainer et al. 1999).

Banning foods and other coercive tactics are likely to be counterproductive, often inducing positive preferences for the banned foods or aversions to foods that are forced on the child. Coercion is not the same as repeated presentation of unfamiliar novel foods that the child dislikes at first; so long as the re-presentation is done in a pleasant manner, the more opportunities (within reason) that a child has to taste a new food, the more likely he or she will be to eventually liking it. Preschoolers often 'join in' and eat whatever their peer group eats at preschool, even though they may not eat the same foods at home. Teenagers' adoption of bottled water is another example of this conformity. Once an eating habit becomes socially acceptable (to the peer group), the habit often becomes common place.

In the United Kingdom, the 'Food Dudes' trials provided videotaped fruit and vegetable promotion strategies for parents of preschoolers at home, as well as programs for primary school children (Tapper, Horne and Lowe 2003). Within a few sessions, the use of these tapes successfully induced substantial, long lasting increases in the intake of fruit and vegetables. The tapes employed the following basic principles:

- *Exposure*. Simply exposing children to healthy fruit and vegetables at school (for example) can double their consumption (Tapper, Horne and Lowe 2003). Several

Australian preschool programs (in Western Australia, for example) now employ this principle, encouraging parents to expose their children to new foods on repeated occasions. Birch (1999) has shown that a new food may have to be presented to a child on as many as 10 occasions before the child learns to accept it. A prerequisite of this 'exposure' approach is to not allow the eating occasion to degenerate into a power play between the child and parent or carer: if the child refuses to eat a new food, the parent or carer should not consider the refusal to be a problem, but simply serve the food again at another time.

- *Modelling.* Like adults, children like to observe and emulate people they admire, so adults should eat and enjoy the foods they want their children to eat. Children are great hypocrisy detectors: they soon spot parents who tell them to eat fruit but rarely do so themselves, or schools that tell them to eat fewer cakes and pies but promote those foods in the canteen.

For very young children, parents are often their main 'significant others' who bear the responsibility of modelling healthy eating. For this reason, it is important to focus programs on parents, most of whom share their children's less than healthy eating patterns (Campbell and Crawford 2001; Cutting et al. 1999; Koivisto Hursti, Fellenius and Sjoden 1994; NHMRC 2003). For older preschoolers and primary and secondary school students, peers and teachers become increasingly important (although most Australian secondary school children usually turn to a parent as their main confidant). Preschool and school teachers are adept at setting up social situations in which peers can model desired behaviours. The US CATCH program has successfully employed peers to promote healthy eating in secondary school programs (Luepker et al. 1996).

- *Reinforcement.* When people behave in a desired way, their behaviour can become entrenched through reinforcement, usually the provision of a reward. Reinforcement is part of parenting, whereby parents 'shape' or encourage children to act in certain ways and not others—a process known as 'socialisation' (Parke 2004). Often, when toddlers eat a new food, they are reinforced in some way by their parents—perhaps by a smile, a nod, a hug or some other sign of approval (Birch 1999; Rozin and Vollmecke 1986).

Birch's work and that of Tapper, Horne and Lowe (2003) in the 'Food Dudes' program suggest it is unwise to use food as a reward in itself, either for eating the 'right' food or for any other behaviour (such as sitting still in the baby seat in the car). If a child eats a serving of cabbage, for example, do not reward him or her with a piece of cake or a lolly. Such a reward would undermine the value and enjoyment of the cabbage: the child may view the lolly bribe as a sign that the cabbage *must* taste bad! Non-food

rewards—for example, a smile or kind word, or recognition from one of the ‘Food Dudes’ program’s cartoon characters (perhaps a sticker)—are more effective. Rewards and reinforcement shape behaviours, including eating behaviours, as demonstrated in the ‘Food Dudes’ program.

## **5 What are the influences on children’s eating?**

Many factors influence children’s eating, including their parents and family members, their friends, educational institutions and the mass media, especially television. Like most adults, most children do as their peers do. Birch (1999) showed that the food consumption of toddlers and primary and secondary school children is influenced by the social groups to which they belong. If we are to influence children’s eating, therefore, we should try to influence these groups, as well as appeal to the children directly. This approach has several implications.

### **Parents**

The ways in which parents consume food will influence their children (Koivisto Hursti 1999; Koivisto Hursti, Fellenius and Sjoden 1994; Michela and Contento 1986). If the parents do not eat fruit, for example, then the children will be unlikely to do so. Interventions should aim, therefore, to influence parents’ habits because parents are the gatekeepers for much of the food entering the family (Campbell and Crawford 2001; Harnack et al. 1998). This means the messages of any intervention program have to appeal to parents, who must find any changes worthwhile for themselves as well as their children.

Informing parents about how *The Australian Guide for Healthy Eating* (Smith, Kellet and Schmerlaib 1998), for example, is relevant to their families and how to apply the guidelines, may initiate a powerful change process because parents can adapt the guidelines to their children’s needs and goals. There is uncertainty about parents’ knowledge of nutrition, with few studies having been performed in Australia. However, Wardle, Parmenter and Waller (2000) showed that people with high levels of basic nutrition knowledge are 25 times more likely to consume large amounts of fruits and vegetables each day, compared with those with little knowledge (even when accounting for socioeconomic differences). Explanations of basic nutrition principles may thus be worthwhile. Parents benefit from being clear about what healthy eating entails and being advised on eating options to help children eat healthy foods in an enjoyable manner.

Parents can experience a variety of pressures, which can contribute to poor eating habits such as:

- major time pressures (Pusey, 2003)
- financial problems; food insecurity is experienced by at least 5 per cent of Australians (Booth and Smith 2001)

- lack of access to car transport and access to cheap sources of healthy foods (Ellaway and McIntyre 2000)
- unfamiliarity with the foods available in Australia (in the case of some newly arrived communities ) (Renzaho, Burns and Reidpath 2002).

The following are examples of communication tools to reach parents:

- Schools often use newsletter to provide hints.
- The 'Food Dudes' program provides a video to demonstrate ways in which to feed preschoolers.
- The Department of Human Services Victoria has produced nutrition tip sheets to help parents improve their family's eating patterns and these are disseminated widely across Victoria.

### **Other adult carers**

Other carers of children, such as preschool workers and school teachers, are important targets of any intervention. Western Australia's preschool program (Pollard, Lewis and Miller 2001) has provided preschool staff with training in nutrition and child feeding behaviour (along the lines suggested by Birch), which appears to have given staff more practical knowledge and confidence in developing children's preferences for healthy foods and advising parents on how to shape their children's eating behaviours (J Lewis, pers. comm., 2002).

### **Peer groups**

Some research has been conducted on ways in which to influence the peer group. The CATCH program, for example, recruited secondary students who were one or two years older than their target group (Luepker et al. 1996). These group leaders were instructed about healthy eating and other health issues. There was some evidence that these older children, whom the juniors 'looked up to', had a positive influence on their junior peers' behaviours. Experienced school and preschool teachers often use this approach informally by identifying which child is an 'opinion leader' and then recruiting him or her to influence the other children's behaviours.

### **Cultural norms and values**

Any healthy eating interventions must account for children's and parents' opinions, practices and views of what is 'right' or 'appropriate' eating behaviour, as well as the children's preferences. Much behaviour is influenced by social norms (called subjective norms in the theory of planned behaviour) (Ajzen 1991; Montano, Kasprzyk and Taplin 1997). This involves expectations about what is considered to be 'normal' behaviour, as well as perceptions of the degree to which others will approve or disapprove of a behaviour.

The fruit and vegetable mass media campaigns in Western Australia during the past decade and the recent Coles–Dietitians Association of Australia program (Reeve 2001) have attempted, with some success, to influence people's expectations about the amount of fruit and vegetables that should be eaten each day. Market research has shown that Australian teenagers aged 15–18 years disapprove of drinking beverages with straws because the behaviour is considered to be 'sissy' or 'juvenile'; teenagers that use straws face group disapproval or ostracism (D Windus, pers. comm., 2000). Educational activities, which can influence these social norms, are thus likely to bring about changes in the food consumption behaviours within the group.

People have many more expectations about the consequences of eating and drinking than about the nutritional benefits. In this sense, children and adolescents do not differ from adults. They have more immediate concerns than the long term benefits of nutrition promotion, such as being with friends, playing computer games, studying, having fun and looking good. The benefits of reduced serum cholesterol levels, for example, are probably not in the mindset of most 16 year olds, never mind 5 and 10 year olds (Nowack and Crawford 1998). Some subcultures of children and adolescents may be more or less nutritionally centred—for example, adolescents concerned about their body shape may be highly interested in certain aspects of nutrition (such as the fat content of food), whereas others in more 'macho' teenage male culture may have no interest in nutrition or healthy eating.

It is important, therefore, to identify what interests and motivates children and adolescents, and to ensure healthy eating programs engage their interests and needs (where possible). Food and eating need to be linked to children's aspirations, such as the need to 'eat properly' (Charles and Kerr 1998), to be accepted by their friends, to eat like their friends do (Fieldhouse 1986; Neumark Sztainer et al. 1999) or like their television heroes do (Morton, 1990) or even, in adolescence, to eat according to their ecological values (for example, to adopt a vegetarian diet so they can care for the environment (Worsley and Skrzypiec 1997).

### **Television**

Television has several roles in many families: it can be a useful child minder (Salmon et al. 2004), a source of constant stimulation, an escape into fantasy and/or a source of information about people and the outside world (Gerbner et al. 1993). Television and the mass media play important roles in the postmodern society in which most of us are highly dependent on others—for example, we rely on others to fix the photocopier, mend the leaking tap, and grow and prepare foods (over one quarter of foods eaten in Australia are prepared outside the home). They enable us to 'see' into areas of society that we do not experience directly—for example, what it is like to be a detective, how foods are grown, how the people we aspire to be live and eat (Gerbner 1993). The mass media, especially television, allow us to fantasize



through the stories told (via science fiction, soap, detective, sports and even home and garden shows—Gerbner 1993).

From the point of view of healthy eating, television advertising is a problem. Australian children are exposed to more television food advertising than probably every other nationality (Morton 1990). Morton showed that 80 per cent of food advertising in children's viewing hours is for confectionery and foods and beverages that contain large amounts of fat, sugar and salt. Long hours of exposure to television programs are associated with increased risk of obesity in children (Campbell et al. 2002; Dietz 1996). Current guidelines suggest children should spend no more than two hours per day viewing all electronic entertainment media (American Academy of Pediatrics 2001; Australian College of Pediatrics 1994), but Australian primary children watch television for an average of two and a half hours per day (ACNielsen Media International 2001).

The problem is not only the exhortations to consume foods that are the out of balance with the Australian Dietary Guidelines, but also the potentially misleading portrayal of 'normal' eating. Advertising has been called the 'distorting mirror' of society (Pollay 1986). Cartoon characters, sports heroes and film stars, for example, are used to promote a narrow variety of food and beverages to children (Lewis and Hill 1998; Morton 1990; Story 2003). Younger children often model their behaviours on their favourite cartoon characters ('virtual persons'), while teenagers in particular tend to aspire to be like members of reference groups such as football or netball teams, or music or film stars. These virtual characters, whether present in advertising or in programs and movies, appear to have strong influence over many children and teenagers (Solomon 1994). Children and adolescents often judge the social desirability of their own behaviours by referring to these portrayals—that is, they refer to these portrayals and the groups that they represent to judge the appropriateness of their own actions (Solomon 1994).

Parents and educators face the challenge of providing attractive alternatives to compete with this commercialism. A number of initiatives have supported schools and families to deal with this issue. Education courses have been developed to build scepticism among primary children about the mass media (Chandler 1997). In Victoria, the SWITCH program encourages children to reduce their television viewing in favour of physical activities (Salmon et al. 2003). At a national level however, major changes to television food advertising content are required to reduce children's exposure to models of unhealthy food and beverage consumption. These changes will require the development of advocacy coalitions and the encouragement of innovation in the food industry. As a starting point, raising people's awareness of the problems of food advertising is important.

### **The physical environment**

The physical environment affects everyone's eating and drinking behaviours, as shown by the increased sales of cold drinks on hot summer days. Proximity to supermarkets and other food outlets is an important influence (Cheadle et al. 1993). In the United Kingdom, Ellaway and MacIntyre (2000) showed that the further away people are from shops, the less they use those shops. In Melbourne, Reidpath et al. (2002) found that suburbs of low socioeconomic status have four times as many fast food outlets as found in suburbs of high socioeconomic status, which they argued may be one factor in the greater prevalence of obesity found in the poorer suburbs. In the United States, Cheadle has shown in a series of studies that the types of food sold by local supermarkets strongly predict the nutrition status of the local population (Cheadle et al. 1990; Cheadle et al. 1991; Cheadle et al. 1993; Cheadle et al. 1995). Finally, French et al. (2001) in the CHIPS project (box 13) found that the availability and pricing of foods in school vending machines has major effects on the foods purchased by the students.

The implication of all these studies is that efforts to work with children and their families should account for the proximity of food shops and for the micro-environment in the home, the school and other areas where children purchase or consume foods. In particular, the quality of foods and drinks stocked in vending machines that are close to children may need to be questioned and improved (see the school canteen discussion below).

## **6 Lessons from the Review of Children's Healthy Eating Interventions**

Thousands of interventions have aimed to improve children's eating, but most have not been reported and even fewer have been evaluated. The Review of Children's Healthy Eating Interventions (Worsley and Crawford 2004) was conducted to review published evidence of interventions that aimed to change children's food consumption in healthy ways.

Children's healthy eating interventions can be highly effective. The research literature suggests interventions can improve the quality of children's food intake, both in the short term and possibly for several years. The review found 115 publications that reported the results of evaluated interventions, with over one third of those interventions found to be successful in meeting their stated aims of changing children's eating behaviours. However, the review identified several weaknesses in this area:

- Many interventions have not been evaluated, so the efficacy of particular approaches is impossible to judge.
- Most evaluations have been conducted immediately after (within three months of) the completion of the intervention.

- Most reported interventions have been conducted for only short durations (typically three months or less), and long term interventions (over a year or more) have been rare (Resnicow, Cross and Wynder 1993)
- Many interventions have had nutritional endpoints—for example, the investigators aimed to reduce serum cholesterol levels or saturated fat consumption. Fewer studies have focused on eating and food (and beverage) consumption, such as increases in the consumption of fruit and vegetables (for example, Tooty Fruity).
- Most interventions among school-aged children have been conducted by external researchers with limited funding from grant agencies. Few intervention programs have been conducted within health and education systems by professionals employed in those systems (for example, teachers, community workers and preschool educators), although there were some useful exceptions—for example, preschool programs in Western Australia (Pollard, Lewis and Miller 2001). As a result, healthy eating programs have had limited life spans and have rarely been institutionalised within health and education systems.
- Most interventions have been conducted in primary schools (see the CATCH study below) and maternity hospitals. These settings are highly convenient for professional researchers and, along with preschool day care centres, offer major opportunities for practitioners to influence children's food and beverage consumption. However, wider community settings and family settings have rarely been used to focus on the promotion of children's healthy eating. The North Karelia (Puska et al. 1985), Stanford Heart Health (Farquhar et al. 1990) and similar programs were effective, but their impact on children and their families is uncertain. There have been very few evaluated family- or community-based interventions in children's healthy eating.
- A common deficiency of published reports has been their lack of detail about the mode of intervention. Often, the briefest details have been given about 'classroom education' or 'family counselling', or about the changes observed in food consumption, with more emphasis often being given to changes in biomedical status (such as body weight or serum cholesterol concentrations).
- There is some evidence that interventions that use multi-method approaches (such as classroom instruction combined with improved food services and parent involvement) are more successful than single method approaches (Cliska et al. 2000), although the quality of input into each method is crucial.

## 7 General principles for promoting healthy eating

The following issues need to be considered before embarking on any interventions.

### **What is an intervention?**

In the present context, an intervention is usually a deliberate change that is made to the child's environment with the purpose of altering the child's feeding (or drinking) behaviours to improve the child's health and nutrition status. This 'deliberate change' can be general (such as the introduction of a preschool food policy) or highly specific (such as a parent smiling when the child eats vegetables).

A key aim of children's healthy eating promotion is to bring about sustainable long term dietary improvements. This usually involves altering the ways in which families, child care organisations or schools operate, thus the importance of food policies. Behavioural change takes time and persistence, and needs to involve the help of many people and agencies. Working out exactly which changes are required and setting a schedule of goals for the child, parents, teachers, schools and other organisations are important steps.

Many parents and community health and education workers are willing to help implement healthy eating programs for children. In any locality or setting, it is important to consult with these stakeholders to decide on the desired outcomes of any healthy eating program and to work out ways in which to evaluate progress towards project goals. A school community, for example, might decide to develop a food policy that will aim to transform the canteen sales to include more fruit and vegetable products. If a policy with goals and responsibilities is written (who does what and when), then the success of the policy can be reviewed from time to time and actions can be taken to either modify the goals or strengthen actions to better meet the goals.

### **The practitioners' role in healthy eating promotion**

The role of practitioners in healthy eating promotion varies according to their occupation (for example, the role of nurses is different from that of teachers) and the settings in which they work (for example, a hospital, a preschool or the community). Setting good examples (that is, 'modelling' healthy behaviours) is an essential role of all practitioners, so it is important for practitioners to set their own healthy eating goals and act to achieve them. An equally important general role is listening to parents' and children's views, needs and wants. Healthy eating should be a natural part of everyone's lives; practitioners have to find ways in which to fit healthy eating into people's lives. The Review of Children's Healthy Eating Interventions found little evidence that the design and implementation of many published interventions had accounted for children's and parents' opinions and life experiences. Yet, children and parents are the *key people* in any healthy eating program, and they should be heavily involved in the

design, implementation and evaluation of any interventions, in keeping with the principles of sound community health promotion (Wass 1994).

For many people, food and eating are moral issues (Coveney 2000)—that is, some ways of eating are perceived as ‘wrong’ and others as ‘right’. Practitioners need to avoid becoming labelled as the ‘diet police’, which can happen if their activities are too prescriptive. There are many ways to eat healthily; the essence of good practice is to enable people (parents and children) to choose their own ways of doing so. In summary, the practitioner’s role is to facilitate children’s, parents’ and professionals’ access to information and food resources to enable children and families to eat in healthy ways; practitioners should not try to ‘own’ the project.

### **Aiming for small, measurable, sustainable, systemic changes**

A key finding of the Review of Children’s Healthy Eating Interventions was that large scale externally funded interventions were often no more effective than small scale interventions, and that very few interventions were sustainable in the long term. Often, when external funding ceased, the programs ceased. Several practitioners interviewed for that review noted that small, systemic but significant changes in daily practice are preferable to one-off ‘gee whiz’ campaigns because they are more likely to be feasible in the long term. Again, this approach is consistent with the local community focus of effective health promotion (Department of Human Services, Victoria 2003a; Wass 1994). It suggests healthy eating promotion should be a normal part of a teacher’s, nurse’s, carer’s or parent’s ‘job’.

### **The importance of sound information**

Although parents and carers do not need to be mini-nutritionists to help children eat healthy, enjoyable foods, there is little doubt that they require sound knowledge of key nutritional and behavioural principles. However, many adults have less than optimal knowledge of nutritional principles (Wardle, Parmenter and Waller 2000), and the distribution of this knowledge appears to be differentiated among social economic groups, with lower socioeconomic status groups having less knowledge (Wardle, Parmenter and Waller 2000). Several stakeholders interviewed for the Review of Children’s Healthy Eating Interventions noted substantial demand for clear information about the feeding of children. Without an understanding of the basic principles of nutrition and child development, parents, teachers and other carers may find it difficult to alter children’s food consumption habits (Worsley 2002).

Good examples of suitable information materials include *What’s there to eat? The practical guide to feeding families* (Department of Human Services, Victoria 2001), the ‘Filling the Gap’ tip sheets (Department of Human Services, Victoria 1997), *The Australian Dietary Guidelines for Children and Adolescents* (NHMRC 2003), publications by Nutrition Australia, the National

Heart Foundation's manual for out-of-school hours carers, and *The Australian Guide to Healthy Eating* (Smith, Kellet and Schmerlaib 1998).

### **A focus on eating, not just nutrition**

Healthy eating should be enjoyable. Unfortunately, there is a widespread perception among children that healthy food *must* be distasteful (Hill 2002). This perception may be related to some parents' and community members' overly constrictive views of food. In contrast, healthy eating involves consuming a wide variety of foods and a more relaxed approach to nutritional principles.

Children can enjoy most foods so long as the foods are well prepared and eaten in a supportive social environment (D Wilson, pers. comm., 2003). Usually, children and parents need to be involved in handling, choosing, preparing and tasting food. Good examples are school gardening and kitchen projects (such as those operated by Collingwood College—[www.educationfoundation.org.au/kidsandcommunity/project.asp?projectID=93](http://www.educationfoundation.org.au/kidsandcommunity/project.asp?projectID=93)), the Tooty Fruity program (discussed below) and the classroom-based fruit and vegetable campaigns run annually by the Western Australian Department of Health in conjunction with the horticultural industry (Pollard 2001). These projects emphasise the experiential aspects of food—learning about how food feels, smells and tastes.

Useful guides to healthy, enjoyable eating can also be found in cookery books (Saxelby 2003; Ehrlich and Murkies 2001), the 'slow food' movement's publications (which emphasise the natural, organic production of production and consumption of local foods) and manuals such as the National Heart Foundation's (2003) *Eat smart, play smart* school manual, *FoodPower* (Smith and Schmerlaib 1988) and *What's there to eat? The practical guide to feeding families* (Department of Human Services, Victoria 2001).

Nutritional outcomes such as prevention of obesity and adequate nutrition status are desirable consequences of healthy eating; however, if people do not make healthy food choices in the first place, their nutrition status will be poor. The Review of Children's Healthy Eating Interventions showed that interventions during the 1980s placed little emphasis on eating behaviours and focused too much on biomedical outcomes (such as low plasma cholesterol levels). These goals have now been shown to be overly narrow and limited predictors of health status (Stanton 1999; Trichopoulou et al. 2003). An emphasis on ways of enjoying a wide variety of foods from the standard food groups (the first guideline in NHMRC 2003) avoids the risk of changes in nutritional fashions and does not confuse people.

### **Goal setting**

To change their behaviours, people need to have a clear picture of what they should change; they need clear goals and strategies to achieve those goals. This simple principle applies just

as much to practitioners' work programs as it does to parents' and children's eating behaviours.

Several interventions have employed self-monitoring schemes in which children set their own eating goals, then try to meet them; if children meet their goals, they are rewarded with praise or something tangible, such as a gold star (see the discussion on 'Food Dudes' below). In moderation, such schemes are useful behavioural strategies because they focus everyone's minds on a task and they build in feedback and positive reinforcement. Again, there are useful guides to this approach (Maynard et al. 1987; Cullen, Baranowski and Smith 2000). For this approach, the collection of baseline information about eating is important so any changes can be evaluated and fed back to the participants to motivate them. Reinforcement or reward of desired behaviours is a key principle of behaviour change. It does not have to be given on every occasion; often, mere recognition that the person has achieved the goal can be highly effective in maintaining the behaviour change.

Several researchers, however, have warned about the dangers of using food 'treats' to reward children for 'good' behaviour (such as eating vegetables or sitting quietly in their car seat). This type of reward usually makes the treat more desirable in the child's eyes (Birch 1999; Tapper, Horne and Lowe 2003).

#### **A focus on children's and carers' needs and wants**

Practitioners can easily concentrate only on healthy eating goals. However, parents and children may not perceive healthy eating as a highly valuable goal. They may want to do other things instead, such as quit smoking, work longer hours to earn essential household income or, in the case of children, retain the approval of their friends, who may regard healthy eating as 'sissy'. This recognition of other goals (some of which conflict with healthy eating goals) does not prevent practitioners from adopting other strategies to reach healthy eating goals.

FoodCent\$ is an excellent example of the flexible thinking required (Foley 1998; Foley and Pollard 1998; Foley, Pollard and McGuinness 1997). This Western Australian program operates for low income households. The designers of FoodCent\$ were aware that many of their clients suffered from major financial hardships that tended to make nutritional considerations relatively less relevant to them. The practitioners thus used the dietary pyramid as a way of saving money, rather than as a way of talking about the healthiness of foods. As a result, most participants adopted healthier food patterns after only a few group sessions and maintained them for up to four years (section 6). In other words, the practitioners focused on the clients' expressed wants (ways of saving money) rather than solely on their professional orientation (health and nutrition).

### **Box 2: FoodCent\$**

For the FoodCent\$ program, low income participants were encouraged in supermarket tours to work out the cost per kilogram of some of the products they buy (for their children). The program practitioners then pointed out that the whole foods towards the base of Nutrition Australia's Healthy Food Pyramid can be purchased more cheaply and prepared (via short cooking lessons) quickly. Children's taste tests of the parents' cooked products (like homemade muffins) usually showed that the children preferred the homemade cheaper foods to commercial products. Once participants mastered these simple shopping and cooking skills, they carried on using them for up to four years, saving a lot of money and, incidentally, eating more healthily.

The significance of FoodCent\$ for nutrition promotion is that it focused on the participants' needs and wants (saving money) rather than the practitioners' needs (healthy eating). In doing so, it enabled clients and their families to save money and eat more healthily. The promotion of healthy eating, therefore, does not require nutritional preaching or have to focus on health—the participants' needs have priority.

\* The Healthy Eating Pyramid is available from [www.nutritionaustralia.org](http://www.nutritionaustralia.org).

It is important to focus on the clients' needs, wants and views of health and nutrition. Many primary and secondary school students, for example, associate the concept of 'health' with 'boredom' and other negative connotations (Hill 2002), so some may perceive foods labelled 'healthy' as being unattractive. Some canteen managers identify the foods that children perceive as attractive and market their foods accordingly. At Loreto College in Adelaide, many students thought that Italian trends were attractive, so the canteen manager gave the healthier products (such as salad rolls and chilled water) Italian names to make them more attractive to the children. As a result, salad rolls outsold meat pies and pasties four to one! Marketers do this routinely, associating their products with images that are attractive to their potential customers. Mineral water, for example, is often advertised using images showing 'sophisticated' models sipping the product poolside. While practitioners have to be concerned about health, many children are less concerned. For this reason, practitioners may need to motivate children to eat more healthily by linking healthy foods to the children's social and personal needs, especially their need for social acceptance.

### **The best settings for interventions**

The Review of Children's Healthy Eating Interventions showed that most interventions have been conducted in ante-natal and postnatal centres and in primary schools. These settings are important influences on children's eating, but other settings—for example, preschools, secondary schools and local communities—may be just as important yet have been less



studied by researchers. Interestingly, the greatest percentage of effective interventions was found in secondary schools. This suggests some settings may be more amenable for researchers to study, while others may be better places to conduct effective interventions. It is important to select settings for interventions according to their potential to facilitate healthy eating, rather than because they are convenient settings in which practitioners can work. Part B examines potential settings in detail and provides examples of interventions in particular settings.

### **The importance of parents**

One key problem is access to parents. Parents remain major influences on many children until adulthood (Ambert 1997; Lamb 1997) but it can be difficult to involve them in healthy eating programs. Settings such as preschools, family day care and out-of-school care centres tend to involve more contact with parents (for example, when parents drop off and pick up their child), which may provide opportunities for the promotion of healthy eating (via the imparting of advice about eating, for example). However, other approaches that may be required include: the use of mass media advertising (to raise parental awareness and support for school programs); interventions in work sites, health centres and leisure and sporting settings; school newsletters; mail-outs of booklets and videos to children's homes; and communication via retail outlets.

Parents probably benefit as much as their children from healthy eating interventions, particularly given that over half of them are likely to be overweight or obese (AIHW 2003). Families are thus more likely to adopt programs that target parents' eating habits as well as children's. Most parents decide which foods enter the household (the gatekeeper theory) (Koivisto Hursti and Sjoden 1997), so when they change their purchasing and eating habits, there is a good chance that their children will change accordingly (Koivisto Hursti, Fellenius and Sjoden 1994).

### **Local community partnerships**

While most interventions have been conducted in single settings such as primary schools, most children and parents purchase or consume foods in several settings, such as the home, the supermarket, bakeries, fast food outlets, milk bars, canteens, specialty food shops (for example, greengrocers), cafés, restaurants and so on. Each setting has its own influences on food consumption, so it is important to intervene in those settings in which children (and their parents) purchase or consume food. The formal control of these settings varies, ranging from parental control in the home, to the control of the owner of the local supermarket, corner deli or local café, to local government regulation of the sale of food. This diversity of control suggests the need for local community partnerships between the healthy eating practitioner and a variety of community and commercial groups. The wider and more integrated the partnerships, the more likely children and parents will be enabled to choose healthier foods.

A novel example of a community partnership is the current obesity prevention study in a small regional town in Victoria. Facilitated through the activities of one community development officer (who is funded by the Department of Human Services Victoria), the project aims to build the capacity of the local community to undertake obesity prevention activities—for example, to acquire funding from VicHealth for a walking school bus initiative, to promote the drinking of water at schools, in preschool centres and in public places, to develop lunchbox guidelines for parents and to promote school canteen policies. The development officer does not undertake any interventions, but instead communicates about healthy eating (and other issues) with members of the local community (such as teachers, health officers, retailers and local government officials) so they can conduct interventions of their own design in their own settings.

This approach is quite different from that of the randomised control trial intervention, but it is similar to the type of work done in economic development and in community health promotion (Wass 1999). The aim is to facilitate change by people who work in and control a wide range of settings. It is a much more naturalistic approach than the randomised control trial intervention, relying on social cohesion and the social diffusion of innovations through the community (Rogers 1993). Other examples of the use of community partnerships to change eating behaviours include the Penrith Food Project (Rychetnik. et al. 2002), Eat Well SA (Coveney, Carter and Smith 1999) and California's Leaders Encouraging Activity and Nutrition (LEAN) program, which has succeeded in having soft-drinks banned from sale in Los Angeles schools from 2004. LEAN is a community advocacy program of the California Department of Human Services and the Public Health Institute ([www.dhs.ca.gov/lean](http://www.dhs.ca.gov/lean)). The success of this legislative change is likely to depend on the availability of adequate funding for those school activities previously funded through soft-drink sales.

**Figure 4: Example of a community advocacy program—the Leaders Encouraging Activity and Nutrition (LEAN) program in California**

**Soda pop to be banned in LA schools  
LOS ANGELES, 28 August 2002**



The ban's being phased in to help schools like this one—James Monroe High in Los Angeles—cope with the loss of revenue averaging \$39 000 per high school and \$14 000 per middle school. (AP)

**QUOTE**

**A similar ban is in place in the Oakland Unified School District in northern California, and in Texas, the sale of junk food is banned in public schools at lunchtime.**

(CBS) Health concerns have prompted school officials in Los Angeles County to vote to phase out the sale of soda pop and sugar-laden soft-drinks to its 748 000 students.

In voting unanimously to end the sale of soda in vending machines and cafeterias by January of 2004, the Los Angeles School Board rejected arguments that its 677 campuses need the money they make from the drinks, saying that students' health should take precedence over fund raising.

But they also voted for a compromise measure that would allow for the superintendent of schools to address the issue of lost revenue in a report to be filed six months from now.

'I find it appalling that we are discussing economics at the risk of our children's health,' said board member Marlene Canter, who sponsored the measure. She argued that schools should not rely on students to subsidize their own educations.

The school district already prohibits carbonated drink sales at elementary schools. The new measure extends the ban to the district's approximately 200 middle and high schools. It only takes effect during school hours. ....

Still permitted during school hours are water, milk, beverages with at least 50 per cent fruit juice and sports drinks with less than 42 grams of sugar per 20-ounce serving ...

The new policy in Los Angeles will phase out soft-drinks in vending machines and cafeterias, where they will be replaced by water, milk and fruit and sports drinks.

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Source: Web download of CBS media release.

### Selecting the best method

Many of the most effective healthy eating interventions have employed combinations of methods to change children's eating behaviours. However, other effective interventions have used only one approach (such as lectures to parents). It is difficult to tell from published reports how intensively various approaches have been pursued, so a comparison of the effectiveness of various change methods is problematic. Nevertheless, multiple methods are likely to be more effective than single methods, because different methods are likely to have different effectiveness among different types of people.

Some of the change approaches used have been based on specific psychological or educational theories, while others have not. The various methods include:

- *Lessons about food and nutrition.* This category includes classroom teaching in schools, as well as lectures to members of the community and counselling sessions in hospitals and clinics. Unfortunately, most published reports do not indicate the type of teaching involved—whether it was didactic or group discovery learning, for example. There is evidence that the latter is very effective in promoting the nutrition learning of primary school children (Johnson and Johnson 1985). Some lessons have been theoretical; others have involved practical cooking skills and taste appreciation (for example, Tooty Fruity and Western Australia's fruit and vegetable campaigns).
- *Parental involvement.* This category covers many types of activity. It may simply require parents to monitor children's homework, but more usually requires them to work with children at home on eating-related tasks (such as cooking and eating healthy meals several times per week). Alternatively, programs may be directed mainly towards parents—for example, the use of videotaped lessons to teach parents how to include more fruit and vegetables in their children's diets in appealing ways. The 'Food Dudes' program in the United Kingdom (Tapper, Horne and Lowe 2003) (box 6) more than doubled children's fruit and vegetable intake as a result of this type of approach. Generally, few programs have involved parents at all. This is unfortunate because parents are probably the main influence on many children's eating habits (Birch 1999; Contento et al. 1993; Michela and Contento 1986; Tapper, Horne and Lowe 2003).
- *Changes to the food supply.* Several school studies have shown that the types of food served in the school canteen influence children's eating. French et al. (2001) showed that changes in the content (and the pricing) of vending machine foods in Minnesota schools had marked effects on students' purchasing of those foods (box 13). Students preferred low fat snacks, especially if the snacks were sold at reduced prices (French et al. 2001). It is common knowledge among catering companies that the positioning and

price of foods in school canteens affects their sales. Children tend to choose foods that are close to the edge of the counter and that are lower in price than similar products (D Wilson, pers. comm., 2003).

- *Self-monitoring approaches.* These approaches are based on cybernetic and social cognitive theories of behaviour (Bandura 1986; Carver and Scheier 1982). They are personal change strategies, not unlike food policies that schools and other organisations may adopt to guide their food and nutrition activities. Participants are encouraged to become aware of aspects of their current diet, such as their daily intake of fruit. Then, they are asked to try to change this aspect in a specific way (for example, 'I will eat an apple at morning recess instead of my usual chocolate biscuit'). They record their attempts and, if they succeed (that is, if they reach an agreed target level, such as eating an apple for recess for three days in a row) they are rewarded in some way (perhaps earning a gold star or some non-food treat). This approach is quite effective, so long as it is not carried to extremes. It teaches the learners about the virtues of goal setting, makes them think about the future and can employ powerful reinforcers (such as teacher, parent or peer praise). An early example of self-monitoring is the STAR system (**S**ee, **T**arget, **A**pply yourself, **R**eward yourself) used in the South Australian Body Owner's Program in 1980 (Coonan, Worsley and Maynard 1984). More recently, Luepker et al. (1996) used a form of self-monitoring in the CATCH program.
- *Award and accreditation schemes.* At an organisational level, accreditation and award schemes are good examples of this category. Child care centres, for example, may examine the state of their staff's food and nutrition skills, enter a training scheme, and, when successful, be given a healthy eating award for a period of time, as in Western Australia's Start Right, Eat Right award system (box 4).

**Box 3: Summary of general principles for promoting children's healthy eating**

- Aim for small, measurable, systemic changes
- Facilitate children's, parents' and professionals' access to sound information.
- Focus on eating, not only nutrition.
- Use goal setting strategies.
- Account for children's and carers' needs and wants.
- Consider interventions in a range of settings in which children and their families purchase or consume foods and beverages.
- Deliver interventions across multiple settings (which may involve community partnerships), because this approach is likely to be more effective than single setting interventions.
- Use multiple method interventions that include family involvement, changes to the food

supply, and education and policy strategies, because this approach is likely to be more effective than single method interventions.

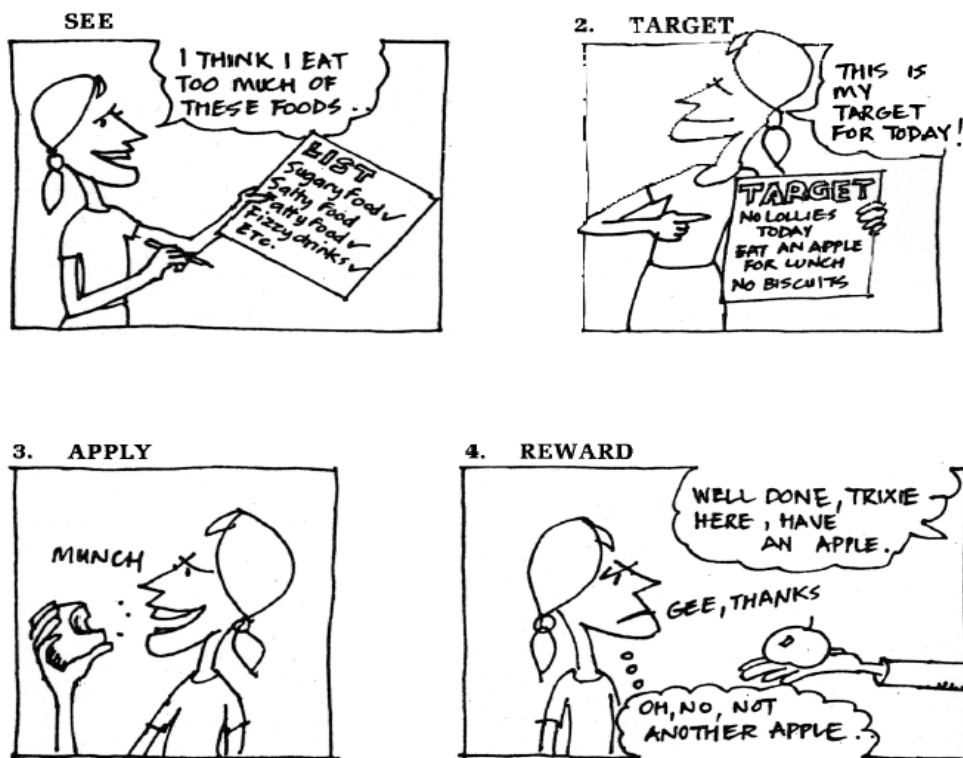
- Establish food policies for all settings in which children and families live and work.

**Figure 5: A self-monitoring system—the star plan**

The **STAR PLAN** is simple but powerful. It gives you a way of controlling the things you do . . . or of controlling the things you may not want to do. In all cases you remain the boss. It helps you to look at the things you do, to decide if they need a change for the better. It then helps you to help yourself make the changes successfully.

The **STAR PLAN** is very simple and has been developed by psychologists (sy-col-o-gists) to help you solve problems. If you become good at it you should be able to use it in as many ways as you like, in sport, socially or with school work.

**THE STAR PLAN**



See  
Target = STAR  
Apply  
Reward

Source: Coonan, Worsley and Maynard (1984)

#### **Box 4: Award and accreditation schemes—Start Right, Eat Right**

*The Health Department and Perth's child care centres have joined forces in a new award scheme to combat poor diet in WA children.*

The WA Start Right, Eat Right Award seeks to encourage and recognise centres providing nutritious and varied food for children.

The scheme, the first of its kind in Australia, is designed to target children under the age of 5—the age when life-long eating habits are forming.

Health Department nutritionist Margaret Miller said with nearly 17,000 children attending child care centres in Western Australia, centres had a significant opportunity to promote good eating habits, particularly more fruit, vegetables and milk products.

She said some of the ways child care centres taught children about good eating would be helpful for parents at home.

'There were no specific food and nutrition guidelines for day care centres in WA until the Health Department released its recommendations, which aim to provide at least 50 per cent of the recommended daily intake of nutrients,' she said.

'To assist centres to meet the Health Department recommendations, the Start Right, Eat Right award scheme has been initiated to acknowledge centres providing nutritious and safe food,' Ms Miller said.

The Health Department will award day care centres that have:

- cooks who have undertaken nutrition training
- obtained the FoodSafe certificate and have good food hygiene practices
- had their menus assessed to ensure they provide at least 50 per cent of the recommended daily intake of nutrients for children
- demonstrated the centre program encourages good eating habits.

The Start Right, Eat Right award was developed as part of the Cent\$ible Food Service Project, Curtin University, is funded by Healthway and is administered by the Lady Gowrie Centre.

*Source: Start Right Eat Right, HealthyView – The magazine of the Health Department of Western Australia, Winter 1998.*

## **8 Planning an intervention—theories and models used in healthy eating interventions**

Interventions that are based on a theoretical position tend to be more successful than those that are not based on a theory. A theory is merely a model containing the most important influences on a behaviour or set of behaviours like fruit eating. If you know what might influence eating, you can design an intervention to overcome any barriers and to foster positive influences.

The problem for designers of healthy eating interventions is that there many theories on which to base interventions. Some theories are broad and include many social, economic and

political influences, while others are much more focused (for example, those including only sensory factors). Most theories are derived from social psychology and the social sciences. They were developed to explain a variety of behaviours but relatively few of them have been developed to explain eating behaviours. Theories are practical necessities because they provide a checklist of influences on which the intervention can focus. They facilitate the selection of intervention goals and provide the basis for evaluating the intervention.

An influential review of the dietary behaviour literature by Baranowski, Weber, Cullen and Baranowski (1999) shows:

- 1 that interventions based on current socio-psychological theories tend to be more effective than interventions which are not theory based, but
- 2 that the effectiveness of interventions based on the different theories does not differ substantially and accounts for no more than 30 per cent of dietary change. The current models used in public health nutrition programs are preliminary and largely inadequate.

### **Which theories of dietary behaviour might be employed?**

To some extent, the practitioners' choice of theory depends on their aims and the context in which the intervention is to be conducted (for example, with individual children in a classroom or across the broad community. Some of the most common individual oriented models are outlined below. A number of these and other theoretical approaches to health promotion are described in Nutbeam and Harris (1999).

#### ***The theory of planned behaviour (Ajzen 1991)***

This theory assumes that people's behaviours are largely determined by their *attitudes* towards the behaviour—that is, whether they like or dislike undertaking the behaviour. It is not so much about whether a person likes fruit, but whether they like *eating* fruit that matters.

In turn, a person's attitudes are products of their beliefs about the behaviour. What would be the consequences of eating fruit for people? How likely it is that eating fruit would reduce their risk of bowel cancer, give them smoother skin and leave a nasty taste in their mouth? These are *likelihood* or *expectancy* estimations. People usually evaluate the consequences of a behaviour in terms of how good or bad it would be for them: an adult eating fruit might perceive the behaviour as likely to reduce the risk of bowel cancer, whereas a teenager probably would not consider that consequence to have any value because he or she does not think about bowel cancer.

In their minds, people process information about the likely consequences of their behaviours and the value of those consequences for themselves. They integrate these beliefs into a single attitude about the particular behaviour—for example, 'I do not like eating fruit'. This



theory is thus an example of an expectancy value theory. Such theories are based on the old maxim that people will maximise the benefits of their actions and minimise the drawbacks.

The theory of planned behaviour categorises attitudes and beliefs into two streams: the non-social consequences (for example, the unfamiliar taste of a fruit, disease risk reduction) and social consequences (called subjective norms—for example, 'if I eat fruit, my friends will tease me'). It thus recognises the importance of the social environment for behaviours. It also acknowledges that people may have positive attitudes towards certain behaviours but may be unable to perform those behaviours ('I like fruit but I can't buy any to eat'). This is called *self-efficacy*.

This simple theory relates to the final stages in the decision making process. It assumes that people are conscious of the factors that influence their behaviours and that people make reasoned decisions. Many food behaviours, however, are influenced by factors that are not in people's consciousness. They may be habitual (and 'not on my mind') or influenced by biochemical processes (for example, a liking for fruit being influenced by its sugar concentration). Nevertheless, attitudes and beliefs about healthy eating are important factors that need to be assessed when planning healthy eating interventions

***Social cognitive theory (social learning theory) (Bandura 1986)***

This theory is one of the most widely used models in health promotion. It underpins many of the US healthy eating programs (for example, CATCH—box 12). It is an expectancy value theory that focuses on the interaction between the individual and the environment, particularly how the reinforcers in the environment can shape an individual's behaviour. In this regard, recent healthy eating programs such as 'Food Dudes' are similar to aspects of social learning theory, although they trace their roots to mid-20th century learning psychology.

Social learning theory emphasises the influence of other people on individual's behaviours (the situation). If the majority of children like broccoli or zucchini, for example, then each child will feel pressured to conform to the majority's behaviours. Bandura (1986) coined the term *reciprocal determinism* to highlight the continuing interaction between an individual and the social group, something that Tapper, Horne and Lowe (2003) and Birch (1999) have used in their studies of the shaping of young children's eating.

Several cognitive factors also influence behaviour. These include *observational learning* (or learning by observing others), so 'Food Dudes' demonstrates how people should eat. This can change people's expectations about the values of certain behaviours: if a child sees another child being praised by his or her mother for eating fruit, he or she is more likely to eat fruit because doing so may earn praise. Finally, the model emphasises the role of *self-efficacy*—that is, the belief in your own ability to successfully perform a behaviour. Both

observational learning and participatory learning (practising the behaviour) are likely to increase self-efficacy and thus bring about changes in behaviours. Closely associated with these notions are the principles of feedback and goal setting, which enable learners to plan to change their behaviours.

The social cognitive theory links individual factors with environmental influences, so it is useful for children's health eating promotion.

***The transtheoretical theory (stage of change model) (Prochaska and Di Clemente 1984)***

This is one of the few models that has been designed to explain behavioural change. It is starting to become used in healthy eating promotion campaigns (Horwath 1999) although its individual orientation makes it less applicable to broad community approaches. For any behaviour, such as eating fruit, it proposes that people can be in any of a sequence of several stages of change:

- 1 *Precontemplation*—the person is not even thinking of changing their behaviour. This suggests the need for awareness raising (for example, 'if you cut your fat intake, you may lose weight').
- 2 *Contemplation*—the person is considering change. Typically, people do not change because they perceive barriers to making the change. The health promoter thus needs to emphasise the benefits of the proposed change.
- 3 *Determination or preparation*—the person makes a serious decision to change. The health promoter needs to help find ways in which to minimise the barriers to change.
- 4 *Action*—the person initiates the behaviour change. The health promoter needs to help the person develop a program of change.
- 5 *Maintenance*—the person is maintaining the change but may relapse from time to time, which may cause him or her to cease to perform the new behaviours. The health promoter needs to provide strategies to overcome relapses.

This model has been developed in clinical environments, such as in tobacco smoking cessation clinics in which there was a lot of psychological support for patients. In children's healthy eating programs, it is difficult to perceive how such intense support can be provided. However, anticipation of the stages through which a person may progress can be anticipated and built into healthy eating programs. Recent studies suggest the value of using the model to tailor nutrition communication messages to individuals in the population. The messages can be built from surveys of individual's characteristics suggested by the model (Ling and Horwath 2002).

**Table 2: General practitioners' use of the transtheoretical model to promote weight control among patients**

Stages of change	Issue	Action by general practitioner
Precontemplation	Awareness raising	Discusses with the patient the health problems of being overweight
Contemplation	Recognition of the benefits of change	Discusses with the patient the potential benefits of the proposed change
Determination or preparation	Identification of barriers	Assists patient in identifying potential barriers that he or she may face, and how these could be addressed
Action	Program of change	With the patient, works out a plan for weight loss and exercise, and monitors closely
Maintenance	Follow-up	Organises for routine follow-up and discusses with the patient the likelihood of relapse

Source: Nutbeam and Harris (1999)

**Social marketing (a communication model)** (Andreassen 1995; Miaback, Rothschild and Novelli 2002)

Social marketing uses the same methods used by commercial marketing, but it aims to benefit the population or community rather than the marketer. It uses techniques such as the targeting of market segments with advertising but instead of promoting products for profit it attempts to persuade people to adopt healthy behaviours such as healthy food choices.

Useful guides for social marketing are:

Donovan, RJ and Henley, N 2003, *Social marketing: principles and practices*, IP Publishing, East Hawthorn, Victoria.

[foundation.novartis.com/social\\_marketing.htm](http://foundation.novartis.com/social_marketing.htm)

[oc.nci.nih.gov/services/HCPW/home.htm](http://oc.nci.nih.gov/services/HCPW/home.htm)

[www.social-marketing.com/book.html](http://www.social-marketing.com/book.html).

Marketing methods are complex but effective (as the high sales of fast foods demonstrate). They are concerned with placing the right product before a selected population. This involves

determining the wants and needs of the target population, developing and selecting products that meet these needs and wants, communicating the benefits of the product, identifying the best points of access to that population (distribution channels), appropriately pricing the product, and determining the product's placement in relation to competing products.

Some school canteen managers have a sound grasp of social marketing. They name their foods in ways that appeal to children; they do not preach health (which is largely an adult concern), but instead promote product features that children desire (for example, 'coolness', taste and colour). They place their healthy products prominently before children and relegate less healthy products to less prominent positions. Another example is the FoodCent\$ scheme, which does not promote nutrition but instead promotes the dietary pyramid as a way of saving money—something that is highly valued by its target audience. Donovan, Egger and Francis (1999) wrote a useful paper on the use of marketing methods in health promotion.

***The precede–proceed model (Green and Kreuter 1991)***

This model arose out the health belief model's failure to account for environmental influences on behaviour. It proposes three sets of influences on people's behaviours: predisposing factors, enabling factors and reinforcing factors. Predisposing factors include attitudes, beliefs and values (guiding principles in people's lives, such as egalitarianism, achievement motivation, tradition and security). Enabling factors include developing skills (for example, can the person cook?), availability ( is fruit available at school?), accessibility ( is the fruit affordable and visible?) . Reinforcing factors include support from family, peers, teachers, employers and health providers, among other sources.

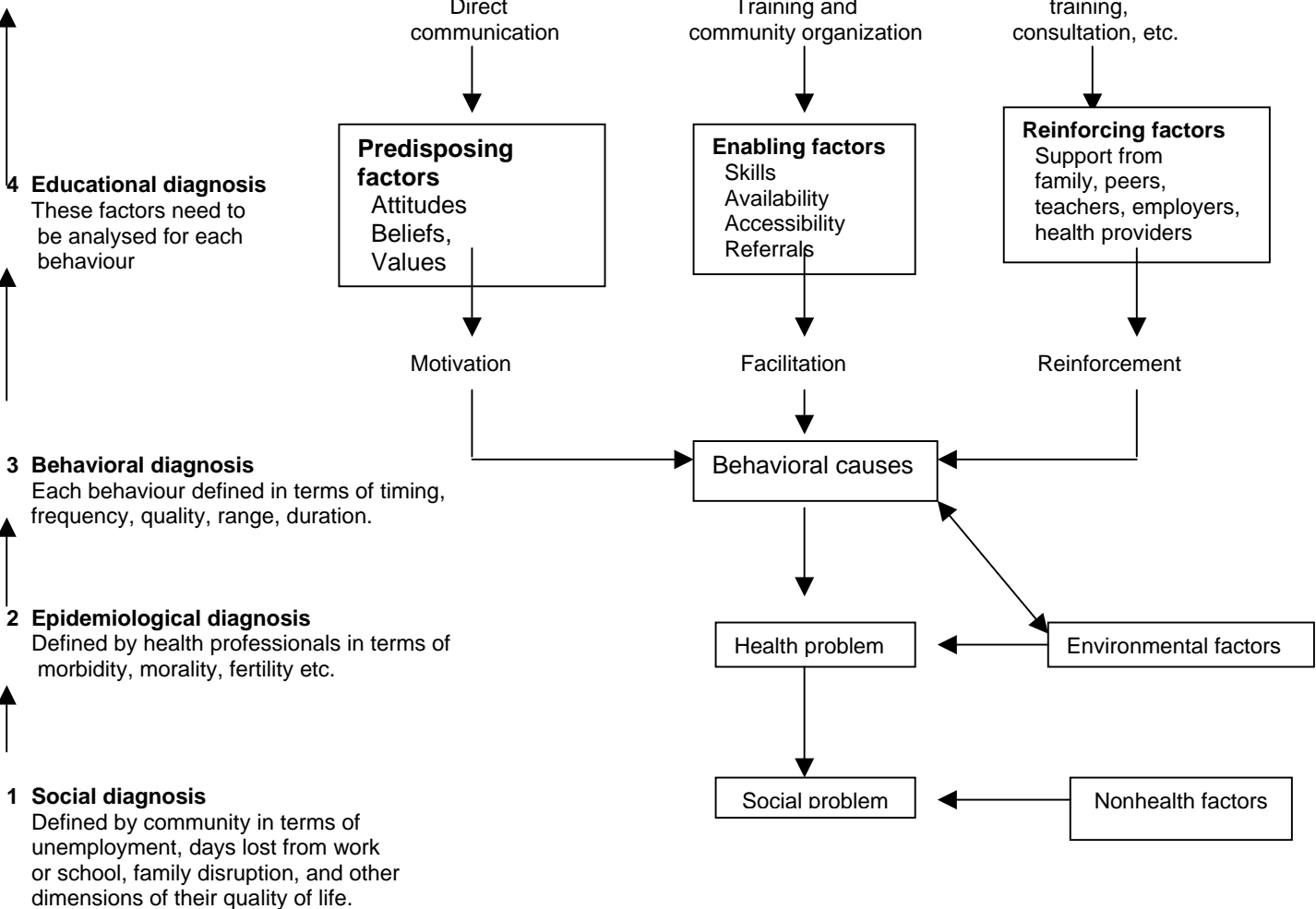
The model proposes that health program planning needs to occur through a series of levels or stages, each of which deals with aspects of the health promotion program (such as the administrative diagnosis, the educational diagnosis, the behavioural diagnosis, the epidemiological diagnosis and the social diagnosis). The model has been widely used but rarely in children's healthy eating programs. In many ways, it combines aspects of individualistic theories (such as the theory of planned behaviour) with broader community-based approaches. It provides a useful checklist of issues that any health promotion program needs to consider. In Australia, the Tooty Fruity program perhaps comes closest to this model in practice.

**Figure 6: The Precede–Proceed Model**

The Precede-Proceed Model for health education planning and evaluation begins at the end of the causal chain (bottom left) with the social diagnosis. Subsequent steps correspond to the casual relationships among factors linking health education to ultimate health and social goals. (Source: Adapted from Green LW: Prevention and health education. In Wallace RB, editor: *Public health and preventive medicine*, ed 14, Norwalk, Conn. 1998, Appleton-Century-Crofts.)

**5 Administrative diagnosis**

Interventions are matched with educational and behavioural objectives from steps 3 and 4, budgeted, sequenced, and coordinated.



Source: Green and Kreuter (1991)

### **The food-related lifestyle model** (Grunert, Brunsø and Bisp 1993)

This model was designed by a group of consumer food behaviour and marketing specialists in Denmark. It was specifically designed to explain food consumption. It provides a useful checklist of influences on food consumption, which may be useful for practitioners working with children and their families.

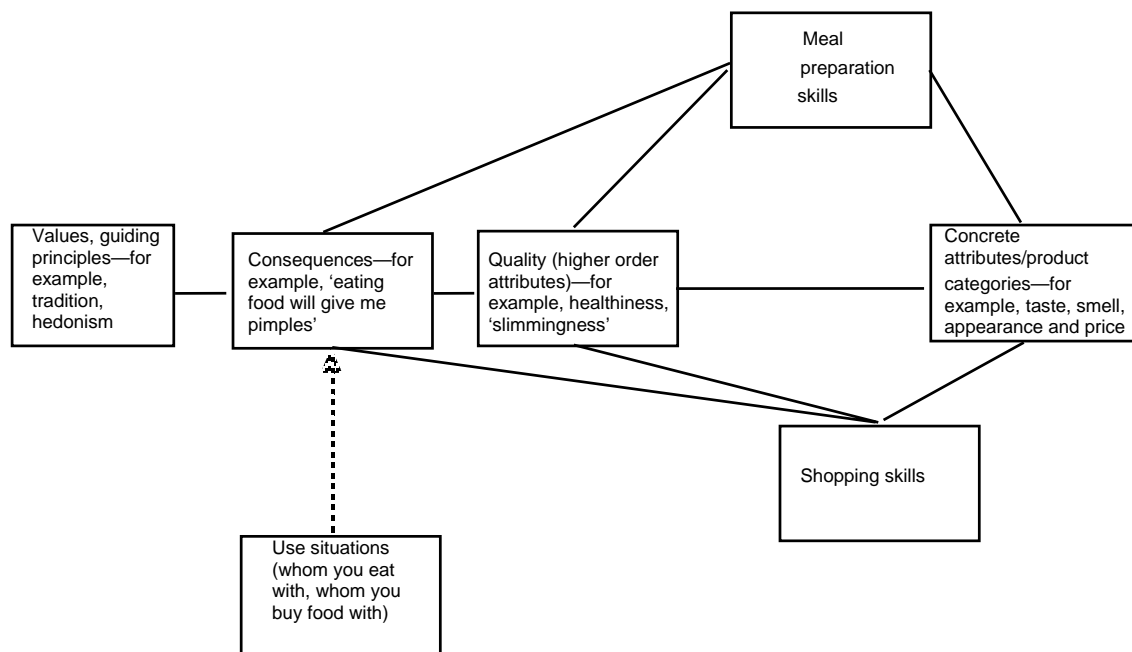
The components of the food lifestyle model include the following:

- *Use situations* are the social situations in which we eat and buy foods. These are major influences over children's eating behaviours—for example, children may eat different food at home compared with their eating at preschool.
- *Concrete attributes* include the taste, smell, texture and appearance of food, as well as its price. The more exposed children are to the characteristics of a food, the more familiar they become with the food and the more likely they are to eat it.
- *Quality considerations (higher order attributes)* include abstract perceptions such as healthiness, 'slimmingness', naturalness and trendiness. Often, practitioners, parents and children have quite different perceptions of foods, and they value foods differently. Many adolescent females, for example, perceive meat as 'cruel and male' and dislike it accordingly. Parents (and other adults) often assume that their higher order views of food are commonsense and shared by everyone. Views such as 'sugar is poison' are often mistaken for nutrition knowledge and can interfere with successful healthy eating promotion.
- *Shopping and meal preparation scripts or skills* are the procedural knowledge (the 'how to' knowledge) that enables people to buy and make enjoyable foods. Scripts that incorporate healthy eating principles are likely to enable children (and adults) to eat more healthily. The attainment of optimal scripts is one aim of nutrition education. It includes the ability to decode food labels and advertising. The education process can reasonably be expected to affect and develop these influences on healthy eating.
- *(Perceived) consequences* are the consequences that children and adults expect after consuming foods—for example, the expectation that they will feel full after eating a certain meal, or bloated or fat after eating bread, or that their friends will laugh at them if they eat fruit. The more likely a consequence is perceived to be, the more the consequence will influence the eating of a food. Many people may feel that eating has no important consequences, or they may fixate on only one possible consequence, such as becoming overweight. It is important to identify these perceived consequences or lack of them.

Healthy eating promotion programs can do much to explain the realistic consequences of eating particular foods. There is a danger that health practitioners will concentrate only on consequences in which they are interested (for example, the danger of obesity) and ignore the consequences that matter to children and parents (for example, 'chips fill me up', 'chocolate makes me feel better'—both of which may be true and immediate).

- *Values* are the guiding principles, which children soon acquire, usually from their parents. Values tell us what is 'good'. They certainly affect our food behaviours, but different children (and their parents) often hold quite different values. Health conscious people, for example, often place a high premium on security (for example, personal and family safety), whereas many teenagers tend to value stimulation and excitement far more highly, so they may not care much about warnings about the dangers of over consuming fast foods and soft-drinks because they are more interested in the sensory and image ('sociability') qualities of these foods and drinks.

**Figure 7: The food-related lifestyle model**



### Community models

In contrast to the individual focused theories, some models have a broader, community orientation. The Review of Children's Healthy Eating Interventions found few community-based approaches that specifically focused on children, yet the sheer pervasiveness of food and eating throughout the community suggests broad, multi-strategy, community-based

approaches to healthy eating are likely to be effective. The approaches taken by Eat Well Australia (and Eat Well South Australia, Queensland and Tasmania) generally follow the strategies outlined in the Ottawa Charter (described below).

Useful resources include:

Eat Well Tasmania: [www.eatwelltas.com.au](http://www.eatwelltas.com.au)

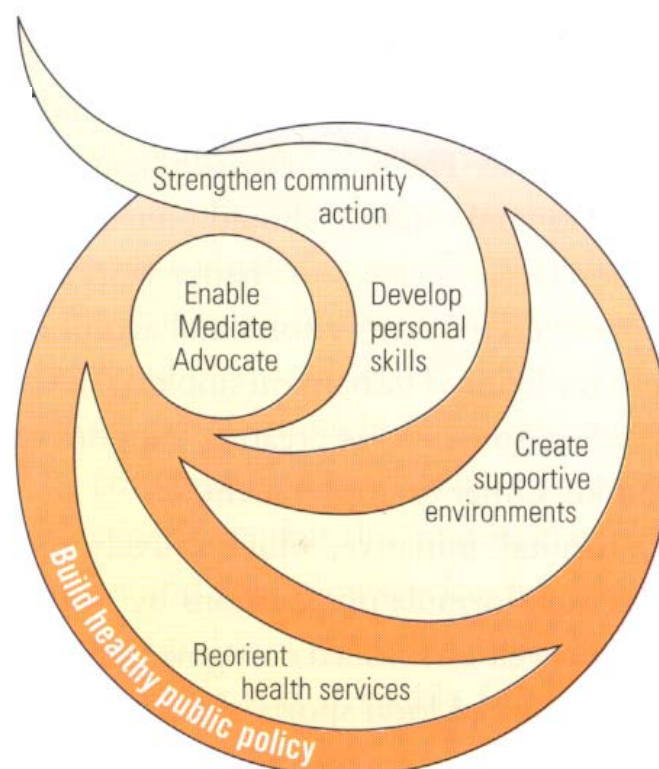
Eat Well South Australia, Eating well for Young People: [www.healthinsite.gov.au](http://www.healthinsite.gov.au)

Eat Well Australia: [mphp.gov.au/publications/signal/eatwell2.pdf](http://mphp.gov.au/publications/signal/eatwell2.pdf)

Eat Well Queensland: [www.health.qld.gov.au/QPHF/Documebts/EWQ\\_SmartEating.pdf](http://www.health.qld.gov.au/QPHF/Documebts/EWQ_SmartEating.pdf).

The Ottawa Charter is a useful guide to the types of action that can be followed in any community, such as a school or a local council area. It does not deal with specific content issues; instead, it provides a set of broad action strategies and allows individual communities to develop programs that suit their specific needs. It is broad enough to allow the incorporation of a number of theoretical approaches.

**Figure 8: The Ottawa Charter**



Source: Carey et al. (2003)



## 9 How to conduct a healthy eating program

Many health promotion textbooks describe the ways in which programs are designed and implemented. Some of the main stages are briefly outlined here.

### **Identifying stakeholders**

At the outset, the practitioner should identify the main players (stakeholders) who influence children's eating. These stakeholders may be parents, teachers, school canteen staff and local food vendors, as well as the children.

### **Getting support from the organisation and community, and raising awareness**

The practitioner may perceive a problem with the eating habits of a group of children, but does anyone else? If other people also recognise the problem, do they think it matters? It is usually necessary to communicate with the stakeholders about the importance of healthy eating and to negotiate with them on the need for specific health promotion actions. While everyone might agree that the school canteen sells a poor range of foods, for example, there may be little agreement on whether anything can be done about it ('we will lose money') or what steps might be taken to improve the situation.

The practitioner will often foster support from a group of influential stakeholders who hold concerns about the children's food and who want to play active roles in improving the situation. This process will take many meetings and much discussion and negotiation until everyone agrees on a set of practical aims. Many people do not realise the importance of eating habits for children's health, so the health practitioner is often in a good position to raise their awareness of the issues and to suggest ways in which to translate their concern into concrete actions.

### **Communicating with children and parents (advisory groups)**

The usual 'targets' of healthy eating programs are children and their parents. It is essential, therefore, to set up lines of communication with children and parents, which will enable them to tell the program managers about their concerns and about the outcomes of their attempts to change their eating. Communication also allows the program to explain its aims and distribute other information. However, it can be difficult to set up lines of communication. Children may not be easily contactable, even at school, and parents are usually too busy to attend meetings, so additional strategies may be required (such as the setting up of parent advisory groups, the use of school newsletters and local newspapers, and the recruitment of local pharmacies, general practitioners and retail food outlets) to keep the community informed.

### **Setting goals and making plans**

A key purpose of setting up good communication with stakeholders is to establish a clear set of behavioural goals and plans to achieve those goals. The project should specify exactly what the children and their families are being asked to do (for example, 'eat one extra piece of fruit every day'). Goals may also be set for subgroups within a community—for example, the school canteen may have its own goals (perhaps to increase sales of salad rolls by 10 per cent in the next three months). Goals should specify what the desired behaviour change is, who should do it and in which context (at home, at school, in the supermarket and so on). They are essential for the conduct of the project and for its evaluation. The planning of goals is also essential, because it will clearly state the sequence of activities and the timelines for goal achievement.

### **Identifying barriers and opportunities (including costs)**

When the goals are being planned, members of the planning group are likely to identify opportunities for behaviour change, as well as barriers to change. The planning group should mainly comprise local stakeholders because they will be in a good position to identify these opportunities and barriers. The group may wish to conduct a preliminary survey to identify these factors more precisely (formative evaluation). Typical opportunities are access to local supplies of fruit and vegetables, and the availability of willing volunteers to work with children. Barriers may be related to ignorance of the issues, lack of family support, and poor business skills in the running of school food services. The planning group needs to suggest ways of overcoming the barriers and using the opportunities. (The precede–proceed model might be very useful at this stage of planning.) It will also work on the evaluation of the project at this early stage (see below).

### **Establishing strategies and activities**

The planning group will soon recognise ways of meeting the project goals. The Ottawa Charter and the precede–proceed model in particular may be useful in identifying strategies and associated activities. One of the first decisions will be about the scope of the project: is it going to be fairly narrow, dealing with the children and their families in a single context (such as the classroom or a clinic), or is it going to be a broad, community-wide project? If the former, then individual focused models (such as the theory of planned behaviour or social cognitive theory) might be useful; if the latter, then broader models are required. The strategies adopted by individual oriented approaches might include self-monitoring of eating behaviours or the use of social (group) reinforcement via experiential learning (say, in food tastings). Strategies used in broader approaches might focus more on the food environment, such as fruit and vegetable promotions in supermarkets, or reform of the school canteen. There is no reason for not using a combination of both approaches—both are valuable in their appropriate contexts.

### **Conducting an evaluation (measurement tools)**

Evaluation of any activities is essential. It is a key project goal, and planning for evaluation must be undertaken from the inception of the project. Evaluation need not be expensive or unduly onerous, but it should be appropriate to the extent and intensity of the activities undertaken. As noted, formative evaluation is about scoping ideas for the goals and implementation of the project—it is essential.

Process evaluation is also essential and invaluable. It involves keeping a record of events during the project's implementation (from the first meeting right until the end). This account helps identify the barriers to implementation and the actions that were taken to overcome or avoid those barriers. It also acts as a 'group memory': people often forget what they have decided, so a record helps keep everyone task focused. Above all, the process evaluation allows transparency so outsiders can be shown what the project has considered and done. It is especially useful for recording events and processes, which are not easily measured. So, if it happens, write it down!

Outcome evaluation is often the only form of evaluation considered. It is often perceived to be difficult to do because it usually involves some form of quantitative measurement, but it can be quite qualitative (for example, interviews of key stakeholders before and after the intervention to gauge how they have changed). More usually, measurements are made of participants (and, often, of a comparative group of similar non participants) before and after various stages of the intervention. Such measurements are undertaken to assess the size and type of the changes that occur. The types of variable that can be assessed depend on the goals of the project; they might be the children's body mass, the range of foods that children eat each day, parents' involvement in cooking with their children, the achievement of planned sales of the school canteen, or even the number of times that a general practitioner provides healthy eating advice to parents. Every variable and even every participant does not have to be measured; rather, the aim of evaluation is to check whether the intervention approaches have the desired effects and, if not, to identify ways in which to improve the program.

Evaluation is essential. In particular, it can provide evidence of efficacy whenever the program is questioned. Many authoritative members of the community are sceptical of healthy eating programs, so evidence of efficacy is an important way of bringing them on side. (For further information about evaluation, see the Department of Human Services, Victoria 2003a.)

### **Reporting**

Reporting of findings is an important part of any program. Program leaders have an ethical responsibility to report back to participants and stakeholders (because it is their project, to which they have given time and other resources). There is also a 'political' imperative to

report back: the reporting of success or failure will keep people involved and keep healthy eating on the local agenda.

Reports do not have to be long but should cover the issues that the project was designed to promote or remedy. They should be written in plain English and in other languages, depending on the languages of the people involved. They can be in a range of forms (for example, written reports on paper or on the Internet, posters, audio reports or videos), depending on the target audience's preferred communication channels. Ideally, reports of all projects should be stored in a publicly accessible location so everyone may benefit from the information. One of the main findings of the Review of Children's Healthy Eating Interventions was that many healthy eating promotions are not reported, so no-one can learn from them.

### **Institutionalising the program and training new staff**

Conducting a one-off intervention is not going to help children and their families for long, yet most interventions that have been reported have been temporary. Under the injunctions of the Ottawa Charter, health and education services should intervene continually to promote healthy eating to children through changing circumstances. Such promotion should be a part of the job. Once an intervention has been shown to be effective, therefore, we need to find ways of making it (or features of it) permanent. This effort involves changing the work duties of health and education staff so they will continue aspects of the intervention.

Institutional food policies are a useful way of assimilating the lessons learned from interventions. This assimilation has to be done in a deliberate manner. Too often, the effects of interventions are assumed to continue long after they have ceased. Given the competing influences on children's eating behaviours, this is a naïve assumption. For this reason, children's settings such as schools and preschools must have active staff training programs that explain to staff the importance of following the institution's food policies in specific ways.

## **10 Tying it all together—food policy**

Policy development is a vital tool for practitioners in the promotion of healthy eating. Most people probably think that 'policies' are something that state and federal government departments develop. However, almost any group or organisation that offers a service to others needs to develop its own policies. A policy is a set of plans to establish and achieve the desired performance goals of a group or organisation. Typically, food policies operate through institutions, instruments and information (Tansey and Worsley 1995). A workable food policy thus relies on:

- a person or group of people (an institution) being responsible for ensuring the policy is implemented. In a primary school, this group might be the canteen committee;
- instruments (such as the ability to set prices, buy or reject foods, or make bylaws governing the sale of food) enabling the policy plans to be carried out

- information about food sales or consumption (for example, the number of apples or meat pies sold from the canteen) being available to evaluate the effectiveness of the policy.

The main advantage of institutional and local area food policies is that everyone involved has a chance to negotiate the operating rules, so once those rules are agreed on, everyone knows the behaviours that are being facilitated among staff and clients. This helps to prevent arguments (between parents and school canteen staff, for example) and facilitates the evaluation of the adopted strategies.

At a broader level, the strategies of the Ottawa Charter are pertinent because they suggest approaches that food policies should encompass.

### **The need for consistent messages**

A key advantage of a state, regional or local food policy is that it can ensure consistency in communication. Many people are confused about food and nutrition issues. A policy can reduce this confusion by using clearly defined terms and messages. Difference of opinion can be discussed during the policy's formation, and consensus can thus be achieved before any programs are launched.

**Box 5: Examples of the application of the Ottawa Charter to food and nutrition policy**

- *Build healthy policy*—establish institutional or local food policies.
- *Create supportive environments*—set up school canteens that actively promote healthier foods; create local healthy eating accreditation schemes for child care centres, take-away shops and school canteens.
- *Strengthen community action*—involve parents and children in the running of local policies; develop advocacy for supportive healthy eating environments, such as establishment of fresh food markets.
- *Develop personal skills*—train child care staff in principles of nutrition and dietary change.
- *Re-orient health services*—create parent healthy eating (and physical activity) advice centres in community health centres and general practice; ensure maternity and children's hospitals supply food that complies with the *Australian Guide to Healthy Eating*; ensure local maternity hospitals are in the baby-friendly hospital scheme.

## ***Part B: Children's healthy eating—settings and example interventions***

### **1 Opportunities for promoting healthy eating**

Practitioners meet children and their carers in many different settings, including:

- the home
- antenatal clinics
- maternity hospitals and birthing centres
- maternal and child health centres
- long day care centres, preschools and kindergartens
- primary and secondary schools
- community settings such as scouting and guides clubs, sports clubs
- the workplace
- retail outlets such as supermarkets and fruit and vegetable markets
- nutrition information systems run by professional associations and food companies (for example, the Department of Human Services Victoria Better Health Channel and food companies' information services or hotlines).

In addition, children and parents encounter nutritionally relevant communications in the mass media, via program content and in food advertising. Most practitioners work mainly within one setting (for example, an antenatal centre or a preschool), while a minority work in the community across several settings. The Review of Children's Healthy Eating Interventions (Worsley and Crawford 2004) found that children and parents in different life stage settings experienced particular health promotion opportunities. The following sections examine potential settings in more detail, along with examples of interventions in particular settings.

### **2 The home**

Recent Australian research shows that families adopt varying 'rules' or ways of eating (Campbell, Crawford and Worsley 2002). Relatively little is known about the ways in which families buy, prepare and consume foods—for example, the content and timing of specific eating occasions. This is an important and fertile research area in which a number of studies have been conducted:

- Families of lower socioeconomic status, for example, tend to eat at the table (in contrast to those of higher economic status), while some ban television watching or telephone calls during meals, and around one quarter have arguments during the main evening meal at least three times a week (Campbell et al. 2002).

- Davison and Birch's (2001) work on 'parenting styles' suggests permissive and authoritarian styles can have marked effects on the quality of foods consumed.
- In Victoria, Campbell, Crawford and Worsley (2002) have shown that the energy density of drinks supplied to young children is greater in families of low socioeconomic status.

The 'Food Dudes' program (box 6) illustrated the potential of the home as a setting for healthy eating. Some of the stakeholders in the Review of Children's Healthy Eating Interventions noted that many parents are interested in learning how to feed their children and how to overcome behavioural difficulties associated with food and eating. 'Food Dudes' illustrates just one approach, but there are other ways of including the home setting (such as special cooking and healthy eating demonstrations for parents at food outlets and health and child care centres, internet sites, and radio and television programs).

**Box 6: Intervention example—'Food Dudes' at home**

Our studies into increasing children's fruit and vegetable consumption were first carried out in the home environment with a small group of 5- to 6-year-old children (identified by their parents as 'fussy eaters') who ate little fruit and vegetables (Dowey 1996; Horne et al. 1995; Lowe et al. 1998). The studies employed a multiple baseline research design (Kazdin 1982), in which, following baselines of varying duration, the start of the intervention was staggered over time across foods, being introduced first for fruit and then for vegetable consumption. The studies evaluated the effects of four different procedures on children's consumption of a range of fruit and vegetables presented to them. The procedures were as follows: fruit and vegetable presentation only; rewarded taste exposure; peer modelling; and rewarded taste exposure combined with peer modelling.

The peer-modelling element consisted of a video featuring the heroic 'Food Dudes', a group of four slightly older children who gain superpowers from eating fruit and vegetables. The Food Dudes do battle against evil 'Junk Punks' who threaten to take over the planet by destroying all the fruit and vegetables, thereby depriving humans of their 'Life Force' foods. Throughout the video the Food Dudes eat and enjoy a variety of fruit and vegetables. The reward consisted of items such as Food Dude stickers, pens and erasers, awarded to the children for eating target amounts of fruit and vegetables.

The results showed that the combination of peer modelling and rewards was very effective at increasing children's consumption of both fruit and vegetables. Prior to the introduction of the intervention, the children were consuming an average of 4 per cent of the fruit presented to them at home by their parents, and just 1 per cent of the vegetables. However, upon the introduction by their parents of the video and rewards, fruit consumption increased to 100 per cent and vegetable consumption to 83 per cent.

Follow-up measures taken six months later showed that not only were the increases large, they were also maintained over time. The children were still eating 100 per cent of the fruit presented to them and 58 per cent of the vegetables, even though they were no longer receiving the rewards or watching the video. In addition, there was evidence to show that the effects were not simply restricted to the fruit and vegetables that the children had been rewarded for eating, but also occurred for other items children were able to name as fruit or vegetables.

By way of contrast, the results also showed that continued presentation of fruit and vegetables alone had no effect on children's consumption. Likewise, the effects of the peer-modelling video without the rewards were minimal. There were some effects when the rewards were used without the video (especially with fruit), but by far the greatest increases in consumption were achieved when the video and rewards were combined. We believe that because the rewards are labelled as 'Food Dude' items, they acquire considerable potency through their association with the characters on the video, and that for this reason the effects of the combined elements are greater.

**The 'whole-school' program**

We have recently completed the development and evaluation of a 'whole school' Food Dude program for use across the entire primary age range (4–11 years). The program is designed to be implemented entirely by school staff and contains the following elements:

- a Food Dude video containing six 6-minute adventure episodes
- a set of Food Dude rewards
- a set of letters from the Food Dudes (these provide praise and encouragement and remind children of the reward contingencies)
- a Food Dude homepack to encourage children to eat fruit and vegetables in the home context as well as at school
- a staff manual and staff briefing video to help teachers implement the program correctly
- a set of education support materials to help teachers meet curriculum targets using the Food Dude theme.





The main intervention phase of the program lasts for a period of 16 days during which children watch the Food Dude video episodes and listen to their teacher read out the Food Dude letters. Children also receive rewards when they eat the fruit and vegetables that are presented to them. They receive a Food Dude sticker for tasting a food, or a sticker and a small prize for eating a whole portion.

The intervention phase is followed by a maintenance phase during which there are no videos and the letters and rewards become more intermittent. It is possible to implement the program either at snack time or lunchtime or at both.

#### **Evaluating the program**

Initial evaluation of the new whole-school program was carried out in three schools, in Bangor in North Wales, Harwell in Oxfordshire and Salford in Manchester (Lowe et al. 2001; Lowe et al. 2002).

The studies showed that the program resulted in large, statistically significant increases in fruit and vegetable consumption in all three schools at both snack time and at lunchtime. The increases occurred for both boys and girls in infant and junior classes (4–7 and 7–11 years respectively).

Data collected from a subset of parents in the Salford school also showed a significant increase in the number of portions of fruit and vegetables consumed on weekdays. (The number of portions consumed on weekend days showed an increase but this failed to reach statistical significance. Since most of the program was delivered at school during the weekdays, the absence of change at the weekend may have occurred due to a lack of appropriate cues, e.g. being reminded at home of the positive consequences of eating fruit and vegetables.)

Further evaluation of the program was carried out in two schools in Lambeth in south London (Lowe et al. 2002; Tapper et al. 2002). One of these acted as an experimental school, receiving the full Food Dude program, whilst the other acted as a control and simply received the additional fruit and vegetables for the duration of the study. Again, the results showed significant increases in fruit and vegetable consumption at snack time and at lunchtime in the experimental school, but not in the control school. Follow-up measures, conducted four months after the end of the intervention, also showed that children in the experimental school were still eating significantly more fruit and vegetables at lunchtime than they had been prior to the introduction of the program.

Teachers and parents also responded very positively. As well as commenting on how much children had enjoyed the program, teachers reported additional benefits such as enthusiasm for curriculum work using the Food Dude theme, improved school attendance and an increased confidence amongst children who were not normally big achievers. Likewise, almost all of the parents who returned a questionnaire sent to them at the end of the study felt that their child had enjoyed and benefited from taking part.

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Tapper, K, Lowe, CF, Horne, PJ, Jackson, MC, Hardman, CA and Woolner, J 2002, 'An intervention to increase children's consumption of fruit and vegetables [Abstract]', *Proceedings of The British Psychological Society*, vol. 10, p. 102.

#### **Web link**

The Food Dudes site: [www.fooddudes.co.uk](http://www.fooddudes.co.uk)

Source: Tapper, Horne, and Lowe (2003)

### **3 Hospitals and maternal and child health centres**

#### **Antenatal clinics and care of pregnant women**

Respondents to the stakeholder consultation in the Review of Children's Healthy Eating Interventions noted that expectant mothers and fathers are usually intensely motivated to provide the best start they can for their babies. We now know that the nutritional quality of the maternal diet is an extremely important life-long influence over the child's health (Barker 1994; Moore and Davies 2001). Australian research suggests the protein status (especially milk proteins) of the mother's diet influences placental size and function, and birth outcomes (Moore and Davies 2001). In addition, we know that adequate folate intake is important in the prevention of neural tube defects (NHMRC 2003). Current Australian guidelines recommend that all women of reproductive age have 0.4 milligrams of folate each day. Foods such as citrus fruit and beans are important sources. An interesting policy issue has been the voluntary fortification of breads and other foods with folate to prevent the adverse consequences of folate deficiency (for example, neural tube defects such as spina bifida) among newborns. It is important to encourage a varied diet at this time (NHMRC 2003).

Many women become more interested in nutrition during pregnancy (Devince and Edstrom 2001). This increased concern about nutrients presents an opportunity to guide women (and their partners) towards the consumption of a range of foods, as suggested in *The Australian Guide to Healthy Eating* (Smith, Kellett and Schmerlaib 1998) and *The Australian Dietary Guidelines for Children and Adolescents* (NHMRC 2003). If for example, expectant mothers believe they may be nutrient deficient, they can be reminded of the value of fruits, vegetables, lean meats and dairy foods in providing these nutrients; suggestions about convenient ways in which to prepare these foods are also likely to be well received. Pregnancy and the months after childbirth offer many opportunities (or 'teachable moments') for health practitioners to advise women and their families about food and health issues.

#### **Maternity hospitals and birthing centres**

Counselling and education in hospital before and immediately after birth can help mothers establish breastfeeding. The Review of Children's Healthy Eating Interventions showed that counselling in the days and weeks after birth can increase the likelihood of a mother breastfeeding her child. Box 7 summarises 10 steps to successful breastfeeding.

Australian research (McIntyre, Turnbull and Hiller 1999) suggests support from fathers, other adult family members and the general community is required if mothers are to breastfeed for six months after birth. Many breastfeeding mothers find that the external environment (outside their homes) is not conducive to breastfeeding. Many workplaces, for example, do not provide quiet, private rooms for breastfeeding, and some actively oppose it (McIntyre, Turnbull and Hiller 1999). Similarly, shops, restaurants, bus and rail termini, and airports often do not

provide adequate facilities. This lack of conducive environments often convinces mothers that it is more practical to cease breastfeeding relatively soon after birth.

To address this problem, the Australian Department of Health and Aged Care has created an information kit for businesses about ways in which they can provide supportive environments for women to breastfeed. The kit also includes signs, which can identify premises as 'baby friendly'. For such environmental changes to become widespread, advocacy and awareness raising programs are required to shift societal norms about the acceptability of breastfeeding in public.

***Box 7: Intervention example—the baby friendly hospital initiative***

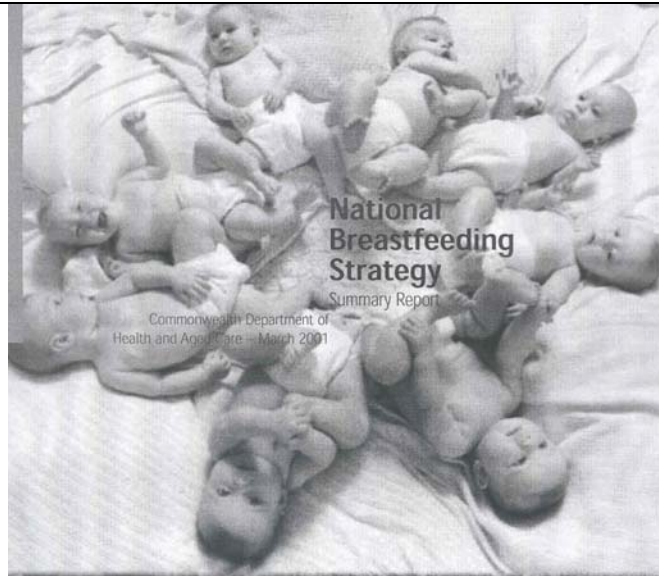
**The 10 steps to successful breastfeeding that underpin the baby friendly hospital initiative**

- Have a written breastfeeding policy that is routinely communicated to all health care staff.
- Train all health care staff in skills necessary to implement the policy.
- Inform all pregnant women about the benefits and management of breastfeeding.
- Help mothers initiate breastfeeding within half an hour of birth.
- Show mothers how to breastfeed and how to maintain lactation even if they should be separated from their infants.
- Give newborn infants no food or drink other than breast milk, unless medically indicated.
- Practise rooming in, allowing mothers and infants to remain together 24 hours a day.
- Encourage breastfeeding on demand.
- Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
- Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

Source: Australian Department of Health and Ageing ([www.health.gov.au](http://www.health.gov.au))

The National Breastfeeding Strategy (box 8) includes several initiatives, such as the identification of 'baby friendly' shops and restaurants through simple signs that inform mothers that they can breastfeed on the premises (McIntyre, Hiller and Turnbull 1999) and the distribution of information kits for mothers.

## Box 8: Intervention example—the National Breastfeeding Strategy



The National Breastfeeding Strategy was announced by the Commonwealth Government in the 1996–97 Federal Budget as part of its *Health Throughout Life* policy statement (Department of Health and Family Services, 1996). *Health Throughout Life* introduced a range of new public health measures in the areas of maternal and child health, childhood immunisation, diabetes, injury prevention, HIV/AIDS and the minimisation of the harm from drug abuse.

The Budget package lifted the profile of public health as a national priority and reflects the Government's commitment to provide a more creative and flexible public health approach to meet the changing needs of individuals and the Australian community. These new initiatives recognise the great potential of public health: that relatively small outlays on prevention and early intervention can lead to many millions in savings to health care dollars in the future. As a result, the \$2 million National Breastfeeding Strategy is a key component.

The aim of this report is to provide a summary of all the projects funded under the National Breastfeeding Strategy. It is targeted to all health professionals, health and community organisations and the general public. The report can be used as a resource for obtaining further information on

breastfeeding initiatives undertaken by the Commonwealth.

This report was prepared by the Primary Prevention Section, Primary Prevention and Early Detection Branch of the Population Health Division, Commonwealth Department of Health and Aged Care. The report was compiled from information obtained in written reports received from the individuals/organisations who were contracted by the Department to do the projects as well as from verbal consultations and references to corporate documents held within the Department of Health and Aged Care.

The report focuses on:

- ▶ the objectives of each project;
- ▶ how each project achieved its objectives;
- ▶ resources produced, to whom they were disseminated and details on where to obtain further copies of the resources; and
- ▶ achievements of the project, particularly relating them to the overall aim of the National Breastfeeding Strategy.

Unless otherwise indicated, all resources produced under the National Breastfeeding Strategy can be found on the Department of Health and Aged Care website at: [www.health.gov.au/pubhlth/strateg/brfeed](http://www.health.gov.au/pubhlth/strateg/brfeed)

### **Maternal and child health centres**

The statewide system of maternal and child health nurses provides community-based education, counselling and support for families, and health surveillance for infants and young children. The nurses contact all new parents and offer a series of appointments for their child from the birth until 6 years of age. More than 98 per cent of infants are seen within the first two weeks of life, and parents are then offered centre-based support within a structured format specified by the Victorian Government (at birth, then aged 2 weeks, 4 weeks, 8 weeks, 4 months, 8 months, 12 months, 18 months, 2 years and 3–3½ years, with extra visits according to perceived need and available funding). Nutrition and healthy eating are discussed during these visits (Department of Human Services 2003c)

Some of the stakeholders contacted in the Review of Children's Healthy Eating Interventions reported that new parents are often anxious about feeding their infants. In part, this is likely to be a consequence of the small size of the parents' family of origin: with the majority of families in the 1980s and 1990s having had only one, two or three children, many new parents are likely to have had little close experience with babies until they have their own. In addition, many young parents live away from the support of their families. Strong encouragement and emotional support may be required to help young parents feed and care for their infants, and to overcome problems such as food refusal and fussy eating (as reported by community dietitians in the Review of Children's Healthy Eating Interventions). Some of the community dietitians in the review claimed that some toddlers may have a great deal of influence over food selection, countermanding the parents' wishes. They claimed that such behaviour may lead to poor dietary habits, such as over reliance on bland, high energy, low fibre foods. These anecdotal reports require further investigation, but they suggest the problems facing new parents are quite different from those faced by earlier generations.

Simple behavioural and nutritional principles such as those suggested by Birch (1999) and used in the 'Food Dudes' toddlers project (Tapper, Horne and Lowe 2003) can be effective ways of assisting new parents to create a harmonious healthy feeding environment for their children. The 'Filling the Gap' program, provides child nutrition tip sheets that maternal and child health nurses distribute. Evaluation of this program showed that over half of the families who responded to the survey evaluation had changed their children's snacks or meals. The evaluation also showed that the tip sheets reinforced parents' existing knowledge, especially about sweets and sweet drinks, and appropriate food and exercise (Department of Human Services, Victoria 2003b).

The Parental Education and Support (PEAS) project was a prospective pre- and post-non-randomised intervention trial that ran through the Royal Children's Hospital Centre for Community Child Health (Melbourne). It was delivered, via the state-run maternal and child health infrastructure, to first-time parents during the first two years of their child's life. It

presented simple community-based interventions to families via one-on-one consultations, group discussions and written materials. Feeding problems were one set of problems that the PEAS project covered.

## **4 Early childhood services**

### **Long day care and family day care centres**

Thousands of parents in Victoria entrust the care of their infants and preschool children to carers who operate from their own homes or from commercial premises. These carers experience the concerns of parents and, unlike many other practitioners, usually feed the children. Given the early establishment of food and taste preferences (Temple et al. 2002), more evaluated healthy eating (and activity) initiatives need to be undertaken with preschool children.

Long day care involves both private and community run centres. Family day care is usually provided for small groups of children by carers in their own homes. Children are usually fed in both long day care and family day care, so there are major opportunities (both at the centres and via the parents) to shape and reinforce the development of healthy eating habits.

Recently, Montague (2004) reviewed the opportunities and barriers in these settings to promote healthy eating and physical activity. The review showed that workers in these centres are often keen to teach the principles of healthy eating to children and their parents. Prior to Montague's report, the Department of Human Services Victoria adopted the Western Australian Start Right, Eat Right program and is piloting the program in Victorian long day care. This program offers basic nutrition and healthy eating training for carers, which enables them to provide parents with practical behavioural and nutritional advice about feeding children, as well as healthier food choices in the centres (Pollard, Miller and Lewis 2001). The program has been in operation in Western Australia for several years, and has been widely adopted by most of the state's family day care centres. Anecdotal observation suggests the role of carers as healthy eating advisors has been strengthened in Western Australia (J Lewis, pers. comm., 2002).

The Start Right, Eat Right program involves:

- the training of preschool long day care staff in nutrition and child feeding principles, along with menu that includes whole foods and discourages highly processed foods (Pollard, Miller and Lewis 2001)
- newspaper advertising of preschools that have nutritionally trained staff, so parents can choose to send their children to preschools that serve healthier foods (Pollard, Miller and Lewis 2001).

## **Preschools**

Preschools and kindergartens target 3 and 4 year olds. Some of the education provided involves socialisation and education about food and eating, so these centres offer important opportunities to influence children's food learning and eating practices. *Food facts for preschoolers* is a useful education guide produced by the Kindergarten Parents Victoria ([www.kpu.org.au](http://www.kpu.org.au)).

## **5 Primary schools**

In Victoria, there are over two thousand state, Catholic and independent primary schools. These schools are an important setting for the promotion of children's healthy eating because the vast majority of children aged 5–12 years attend them. Not only can children's eating be influenced, but school-based programs have potential to influence the food consumption of the children's parents and other family members too.

The Review of Children's Healthy Eating Interventions suggested interventions that directly involve parents or that change the food school supply are probably more effective than those based solely on classroom activities. There is a lot of evidence that the use of group-based experiential learning techniques within well designed curricula can have profound effects on children's attitudes to food and their knowledge of it (Johnson and Johnson 1985).

In Australia, several initiatives are pertinent to primary (and secondary) schoolchildren's eating habits, as discussed in the following subsections.

### **The model national nutrition education curriculum (Reynolds 2000a, b, c)**

The Victorian curriculum standards framework (VCAA 2002) incorporates aspects of the national curriculum, which recommends the content and pedagogy regarding food and nutrition. The framework encompasses substantial education efforts that are likely to influence children's and families eating behaviours. However, its effects on children's knowledge and food habits have not been evaluated. The amount of educational effort spent on nutrition education varies from teacher to teacher and from school to school, as does the extent to which children's experience of food preparation and tasting is fostered.

### **The Health Promoting School Network**

Schools are special communities in which children, teachers and other members of the community spend time. They are sources of social capital in the local community: in addition to their teaching roles, schools have other functions, such as fostering interactions among members of the community and fostering the health of the children who attend school. The 'health promoting schools' movement has developed in Australia over the past two decades; it emphasises the community and health building roles of schools (Nutbeam and St Ledger 1997).

The Health Promoting Schools Framework underscores key relationships between:

- curriculum, teaching and learning—that is, food services are consistent with ongoing teaching in the school;
- school organisation, ethos and environment—that is, school staff, parents and students are involved in ‘whole’ of school nutrition policy and program development, and the food service reflects the sociocultural backgrounds of the students; and
- community links and partnerships—that is, schools develop links with community health organisations, food markets, farming and environmental groups.

The World Health Organisation originally endorsed the ‘health promoting schools’ concept in the 1990s. The concept has now evolved, internationally, into the FRESH framework (focus on resources for education in school health), which recommends the provision of portable water, sanitation, hygiene and food and nutrition services in all schools around the world. Several international organisations (including the World Health Organisation, the Food and Agricultural Organisation, UNESCO and the World Bank) endorse the FRESH framework.

Useful resources in this area include:

[www.hlth.qut.edu/ph/ahpsa](http://www.hlth.qut.edu/ph/ahpsa)

[www.softweb.vic.edu.au/hps](http://www.softweb.vic.edu.au/hps)

[www.worldbank.org](http://www.worldbank.org)

[www.sahps.net](http://www.sahps.net) (South Australian health promoting schools network)

[www.cdhf.org.au](http://www.cdhf.org.au).

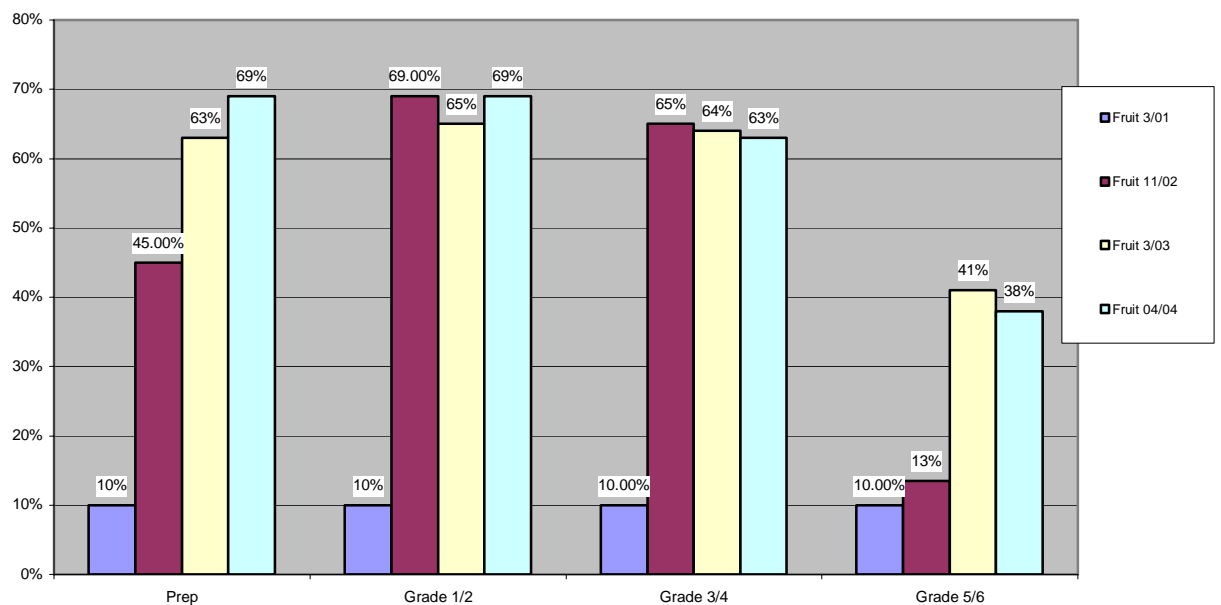
### **School fruit and vegetable programs**

Various fruit and vegetable awareness raising programs are occasionally conducted in several states, whereby children are encouraged to taste and prepare fruit and vegetables. Victoria’s Department of Human Services recently adopted the Western Australian program in trials conducted (with the Victorian Home Economics and Textile Teachers’ Association) in the northern suburbs of Melbourne. Preliminary evaluations suggested children, teachers and parents responded positively to this program, which encourages classroom consumption of fruit and vegetables. One aim of the Western Australian program during the past decade has been to increase children’s expectations about the number of servings of fruit and vegetables that should be consumed each day. Surveys conducted by the Western Australian Department of Health showed these expectations have been increased (C Pollard, pers. comm., 2002). Similar findings have been found for the Coles–Dietitians Association of Australia ‘7 a day’ program (Reeve 2001), which aims to increase the population’s consumption of fruit and vegetables.

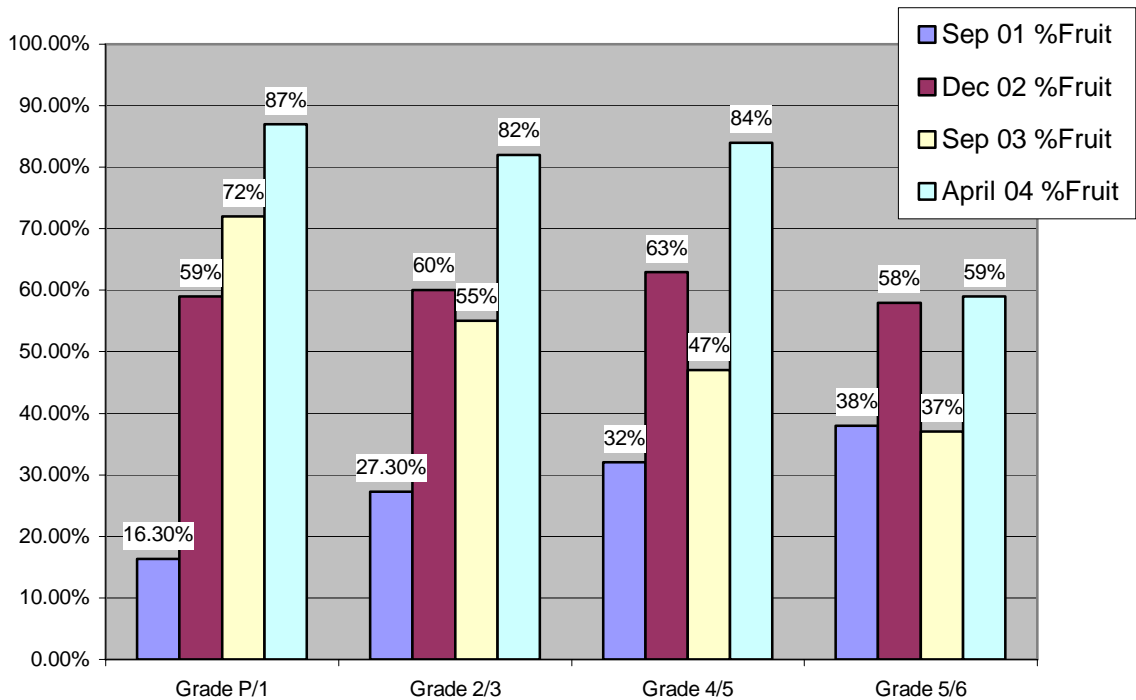


Two straightforward innovations that have been trialled in several Victorian primary schools are scheduled fruit breaks and the introduction of water bottles (Muller 2003). The Fresh Kids program, coordinated by the Western Region Health Centre, in partnership with nine local primary schools in Melbourne's inner west, has demonstrated remarkable changes in children's eating patterns. At two pilot schools, the percentage of children eating fruit rose from 20% per cent to over 70% when scheduled fruit breaks were introduced during class time. By taking a whole-of-school approach to nutrition promotion, underpinned by the development of school policy, a culture of eating fruit has been sustained for over three years (figures 9 & 10). Similar increases in the consumption of water were observed when children were allowed to drink in class from their own water bottles.

**Figure 9: Change in percentage of children with fruit to eat at Footscray Primary School from 2001-2004**



**Figure 10: Change in percentage of children with fruit to eat at Christ the King Primary School from 2001-2004**



Other Australian examples of the promotion of healthy eating in schools include:

- the promotion of healthier food choices over less healthy foods in primary schools—for example, by renaming salad rolls as ‘cool’ foods eaten by older peers (Loreto College, Adelaide).
- visits to fresh fruit and vegetable markets by preschool and primary children to expose them to new taste and food experiences in vibrant settings (for example, Footscray primary school)
- community garden and school garden schemes, which allow children to acquire skills and knowledge in the production of fresh foods, as well as positive attitudes towards whole foods (for example, Collingwood College’s vegetable garden, the Royal Children’s Hospital roof garden, local government city farms).
- the fruit and vegetable campaigns in Western Australian schools (see [www.fruitnvegweek.health.wa.gov.au/home/index.asp](http://www.fruitnvegweek.health.wa.gov.au/home/index.asp)). See also newsletters from the Children’s Health Development Foundation in Adelaide: [www.chdf.org.au/i-cms\\_file?page=110/Foodmatters8Carers.pdf](http://www.chdf.org.au/i-cms_file?page=110/Foodmatters8Carers.pdf)
- the ‘Fresh for kids’ campaign in New South Wales ([www.freshforkids.com.au](http://www.freshforkids.com.au))
- the Tooty Fruity Veggie project—a two-year intervention to increase fruit and vegetable consumption among primary children in northern New South Wales (box 11).

Further examples of interventions in schools can be found in the listing of National Child Nutrition projects at [www.health.gov.au/pubhlth/strateg/childnutrition.htm](http://www.health.gov.au/pubhlth/strateg/childnutrition.htm). Information about health promoting schools can be accessed at [www.sofweb.vic.edu.au/hps/](http://www.sofweb.vic.edu.au/hps/) and [www.hlth.qut.edu.au/ahpsa](http://www.hlth.qut.edu.au/ahpsa).


The World Health Organisation website has a detailed description of its fruit and vegetable promotion initiative ([www.who.int/entity/dietphysicalactivity/media/en/gv\\_report.pdf](http://www.who.int/entity/dietphysicalactivity/media/en/gv_report.pdf)), and the Report of the Fourth International 5aday Symposium held in Christchurch in 2004 also provides practical updates on fruit and vegetable promotion ([www.5aday.co.nz/symposium/](http://www.5aday.co.nz/symposium/)).

### **Other electronic resources**

The [www.human-race.org.au](http://www.human-race.org.au) system allows children to record their performance in physical activity tasks and in some aspects of food preparation. These recordings can provide teachers with feedback. Such programs need to be further developed, perhaps to evaluate the effects of self-monitoring of food intake, for example. A similar website that can be used to promote children's healthy eating is [www.kidsfoodclub.org](http://www.kidsfoodclub.org).

Setter, Kouris-Blazos and Wahlqvist (2000) developed a useful set of recommendations for the conduct of school-based healthy eating interventions in Australia. Huon, Wardle and Szabo's (1996) guide to the design of school-based nutrition programs is also useful.

Figure 11: Example 1 of a canteen food policy



# Fact Sheet

Canteen Policy of \_\_\_\_\_ School

PROMOTING CHILDRENS HEALTH

**Why have healthy foods in canteens?**


The school's canteen reflects the value the school puts on healthy eating practices. The canteen is an integral part of the school and as such illustrates and complements classroom programs. As well as an educational role, it has important service, social and cultural role in our multicultural society.

For many students who use the canteen regularly the food purchased there makes a significant contribution to total food intake and nutrition. Nutrition is important to health throughout life. It is particularly important at times of rapid growth and development, which include the school years.

The school canteen will aim to:

- Encourage the development of good eating habits consistent with the *Australian Dietary Guidelines for Children and Adolescents*
- Provide a variety of food and drinks recommended by the NSW School Canteen Association and in line with the NSW Government's *Fresh Tastes @ School Canteen Menu Planner*.
- Develop an appreciation of the social, ethnic and cultural aspects of foods, as well as the nutritional aspects.
- Provide students with practical learning experiences about making healthy food choices that reinforce classroom teaching on nutrition.
- Function as an efficient business enterprise.
- Demonstrate high standards of food safety and hygiene in relation to the preparation, storage and serving of food at the canteen consistent with the national Food Safety Standard.

..page 1



New South Wales School Canteen Association 3 Carlingford Road Epping NSW 2121 Phone: 02 9876 1300  
Fax: 02 9876 1471 Email: [nswsca@ozemail.com.au](mailto:nswsca@ozemail.com.au) Web: [www.schoolcanteens.org.au](http://www.schoolcanteens.org.au)

- g. Provide an opportunity for the school community to participate in decisions concerning the operation of the school canteen through the canteen committee.
- h. Encourage courtesy and consideration among all personnel using canteen facilities.
- i. Provide an opportunity for parent and community involvement in children's education environment.
- j. Provide a financial contribution towards resources for all students in the school

### Distribution of the Policy Document

- a. A current copy of this policy and supporting documents will be on permanent display in the school canteen.
- b. A copy of the current canteen policy that has been signed and dated will be given to all canteen committee members at the first canteen committee meeting following the parent body annual general meeting.

### Administration

- a. The "sponsoring body" shall be the-
  - Parent Body Committee
  - Principal
- b. The sponsoring body will manage the school canteen through a canteen committee.
- c. The canteen committee will be responsible for operating the canteen in accordance with this policy and its supporting documents.
- d. The canteen committee will present a report to each general meeting of the sponsoring body.
- e. The committee chairperson shall present a written report and the auditor's report to the annual general meeting of the sponsoring body.
- f. The sponsoring body must approve all canteen capital purchases exceeding \$500 by a majority vote at a general meeting, prior to purchase.

The sponsoring body shall have the right to reorganise, disband or close the committee. Such decisions are to be supported by majority vote at a general or special meeting. The school community must be given at least seven days notice in writing. Notice of motion for action must be given in writing, to the secretary of the sponsoring body, and must be signed by 5 financial members of the sponsoring body. ..page 2

Figure 12: Example 2 of a canteen food policy



## Fact Sheet

**Principal Managed Canteen**

In cases where a change in the method of control is proposed by the principal, the principal shall inform the parent body of their intention and afford its members an opportunity for full discussion with him/her. Where agreement cannot be reached by this means, the parties concerned shall have the right to present their case to the next highest authority.

**Leased Managed Canteen**

The school canteen agreement entered into between the lease holder and the school is to be consistent with the principles recorded in the schools canteen policy.

**Gifts/Concessions**

All discounts, allowances, complimentary articles, gifts concessions and the proceeds thereof from any supplier of goods or services, directly or indirectly, to the canteen shall remain the property of the canteen and be properly recorded and later accounted for at the time of stocktaking.

**Alterations to this Policy**

This policy shall not be added to, or amended, except at the annual general meeting of the sponsoring body, or a special meeting thereof (called for that purpose); and then only with the approval of the majority of those present who are entitled to vote.

This policy will be reviewed annually by the canteen committee/ principal and suggested amendments will be forwarded to the sponsoring body at least one month prior to the sponsoring body's annual general meeting.

..page 3



New South Wales School Canteen Association 3 Carlingford Road Epping NSW 2121 Phone: 02 9876 1300  
Fax: 02 9876 1471 Email: nswsca@ozemail.com.au Web: www.schoolcanteens.org.au

**Registration**

We the undersigned, hereby certify that this policy was adopted at the annual general meeting of the sponsoring body held on:

\_\_\_\_\_ the \_\_\_\_\_ day of \_\_\_\_\_ 2 \_\_\_\_\_

*Secretary:*

\_\_\_\_\_

*Sponsoring body:* \_\_\_\_\_

*President:* \_\_\_\_\_

*Sponsoring body:* \_\_\_\_\_

*Principal:* \_\_\_\_\_

*Canteen committee representative:* \_\_\_\_\_

..page 4

**Box 9: Intervention example—a model charter for a health promoting school**

'Our school aims, through all our activities and structures, to assist students, staff and other members of our school community to experience physical, mental and emotional wellbeing.'

We are committed to:

- ensuring our physical surroundings are safe, pleasant and stimulating
- effectively teaching skills for health in the classroom
- relating and communicating well with members of our school community
- creating school policies and procedures that promote health
- participating with staff, students and their families in planning and carrying out health-promoting initiatives
- inviting local organisations to work with us to make our school community more healthy.

Our school will:

- provide personal development, health and physical education programs that are integrated with student welfare
- provide at least three supervised sessions of vigorous physical activity per week for all students
- involve the local community in the review, implementation or evaluation of at least one health promoting program per year
- provide the canteen with a policy of selling health promoting foods
- provide a fully equipped and well maintained first aid area, staffed by a qualified person, and ensure careful attention to practices and medications
- recycle paper, aluminium and glass and use environmentally friendly products where possible
- address safety in all school activities, including sport, playground, practical lessons and school traffic environments
- provide an environment that minimises health risks, with particular regard to air and noise pollution
- provide programs that address major public health issues such as road safety and drug education with community participation in planning and implementation
- establish links with local health services on issues relating to the health of students and staff.

Source: WHO (1995), at [www.deakin.edu.au/faculty/education/math\\_sci\\_enviro/hpsschools/model.htm](http://www.deakin.edu.au/faculty/education/math_sci_enviro/hpsschools/model.htm)



### **What has been learned about nutrition promotion in schools?**

- *Role models.* Are teachers, parents and practitioners perceived to follow the recommendations found in the *Australian Guide to Healthy Eating* and *The Australian Dietary Guidelines for Children and Adolescents*? If they are poor role models, children are less likely to eat healthily.
- *Timetable and changes in classroom rules.* Children should be enabled to consume foods and drinks that conform to healthy eating recommendations. The introduction of fruit and water breaks shows that most children are happy to eat healthily if the school enables them to do so.
- *Feedback and encouragement (positive reinforcement).* Children, teachers and parents should be rewarded for eating healthy foods. Footscray Primary School, for example, made the issue of water bottles fun and rewarding for children by introducing bottle decorating competitions and awarding small prizes for bottles that children judged to be 'best'. At a more abstract level, teachers and parents can benefit from feedback that shows they are complying with healthy eating recommendations (for example, through evaluation showing the extent to which they have improved their children's eating habits). People tend to learn only when they receive feedback about the effects of their actions (Powers 1979). Children, teachers, school principals and parents need to be informed about their compliance with healthy eating guidelines, and the evaluations should be motivating.
- The food and nutrition curriculum can be taught in a variety of disciplinary areas (for example, maths, English and social studies). The experiential aspects of eating food are important because they are how children develop preferences for healthy foods.
- The school food environment has to be consistent with the nutrition curriculum taught in the classroom. School canteens, for example, should actively promote healthy foods and beverages.
- Healthy eating is best promoted at school through the adoption of school food policies that involve students, teachers, canteen staff and parents (see below).

### **School food services**

In Australia, parents are generally assumed to be responsible for supplying food to their children at school, either by preparing food that children take to school or by giving children money to purchase food from canteens, tuckshops or corner stores. Schools are encouraged to develop their own ways of regulating the consumption of foods on their premises (Department of Education & Training, Victoria 2003). Several other OECD countries have not adopted this approach. For example in France, Germany, Italy, the United Kingdom and the United States, government subsidies fund schools to provide healthy food to children ([www.localfoodworks.org](http://www.localfoodworks.org)). This approach is undertaken in a variety of ways and with varying

degrees of success. In these countries, the feeding of children is perceived as a shared responsibility of the community (government) and parents.

It may be time to question the food services provided in schools, for the following reasons:

- The number of adults who can work as volunteers in school food services is diminishing. Only 37 per cent of primary and secondary schools involve adult volunteers in the school canteen, for example (Maddock, Warren and Worsley 2004). Many parents work long hours in paid employment outside the home (ABS 2000; Pusey 2003), which makes food provision for children more difficult than in earlier generations. In response to this social change, over half of secondary schools provide food for children before school hours (Maddock, Warren and Worsley 2004), and the number of out-of-school hours child care centres is rising rapidly ([www.facs.gov.au/internet/facsinternet.nsf/childcare/families-outside\\_school\\_hours\\_care.htm](http://www.facs.gov.au/internet/facsinternet.nsf/childcare/families-outside_school_hours_care.htm)).
- The sale of food to customers, especially minors, carries legal responsibilities regarding the safety of the food. Companies and individuals that sell unsafe foods are liable to prosecution (under the *Victorian Food Act 1984*). Recent developments in the United States suggest the legal responsibility for food safety may extend to the adverse health effects of foods (such as those high in saturated fats) many years after sale (Caraher 2003).
- There is concern among educators and parents (Cleland, Worsley and Crawford 2004; Maddock, Warren and Worsley 2004) that the nutritional quality of foods sold in schools does not correspond with the knowledge taught in the classroom. In other words, the sale of fast foods undermines classroom nutrition education about the dietary guidelines, for example.
- Canteens are one of the settings in which children should be able to use their theoretical learning to practise healthy food habits. They can be used to reinforce the health messages taught in the classroom.
- Children and parents perceive many of the foods commonly sold by school food services (such as chocolate, hot chips and meat pies) as 'unhealthy' (Cleland, Worsley and Crawford 2003), so why are these foods sold in such high volumes?
- Many schools are finding it difficult to run school services that supply healthy food to children (Maddock, Warren and Worsley 2004). To worsen matters, school canteens are often used solely as revenue earners to subsidise other school activities (such as sports teams) (D Wilson, pers. comm., 2003).

Strong advocacy is needed to raise public and political awareness of the need for high quality food provision in schools. One powerful advocacy tool is the monitoring of school food sales and a comparison of these sales with the recommendations of the *Australian Guide to Healthy Eating* and Victoria's School Canteen Guidelines (Department of Education and Training, Victoria 2003). The disparities should be made available to schools and other responsible education and health organisations.

The NSW School Canteen Association is a useful model that attempts to promote healthy eating among children through its networking among schools, food identity and NSW Health. Schools pay an annual subscription to the association, which provides them with canteen guidelines, training and lesson plans, and access to healthy food products provided by companies that meet the Association's nutrition criteria ([www.healthy-kids.com.au](http://www.healthy-kids.com.au)).

Although considerable policy development may be required at state level, school communities can do much to improve the quality of food that they supply by adopting school food policies. Only through 'ground up' approaches can the school community make its food policies sustainable. The recent Department of Education and Training, Victoria (2003) guidelines on healthy school food ([www.sofweb.vic.edu.au/scln/docs/ExecMemo017](http://www.sofweb.vic.edu.au/scln/docs/ExecMemo017)) suggest a healthy school food service:

- makes it easy for students to choose healthy snacks and meals
- offers a variety of nutritious food and snacks
- promotes food that is consistent with current best knowledge in the provision of nutritious food for students
- can be an avenue for consistent and continual health education
- complements the diverse elements of the school curriculum
- involves students and parents
- is an integral part of the entire healthy school environment.

The guidelines suggest:

The school food services and the curriculum programs on healthy eating should complement each other. Ideally, positive peer pressure within the education setting will create a culture in which nutritious food and a healthy lifestyle are actively chosen. This culture should permeate the whole school environment and have an impact on the family. (Department of Education and Training 2003,)

Box 10 outlines ways in which to set up a school food policy.

***Box 10: How to get started on a healthy school food service***

The following points are suggestions to support a school council to move towards a healthy food service.

- Form a working party or a subcommittee of the school council, involving canteen staff, teachers, parents and, where appropriate, students.
- Engage support for the provision of a healthy school food service.
- Involve the principal, canteen administrator, canteen staff (including paid and volunteer workers), the canteen committee, teachers and other staff, the school parent body,

parents and students.

- Build awareness and knowledge.
- Collect and disseminate current and reputable information about nutrition and health through the provision of guest speakers, professional development for teachers and activities/videos for the school community.
- Find out what is already happening.
- Identify whether there is already a policy in place, whether it is recent, if it follows current guidelines and if it is being properly implemented.
- Identify any other school policies that impinge on the school food services.
- Find out what people think.
- Survey the school community. The type and range of foods provided by the school food services and the popular food items need to be identified. The extent to which the parents/staff/students support the school food services and the degree of satisfaction with them also need to be established.
- Develop a draft policy based on the information provided in these nutrition guidelines and circulate it to the school community for feedback.
- Present the modified draft to the school council for approval.
- Develop a detailed implementation plan.
- Stipulate a timeline for reviewing and evaluating the policy on a regular basis.

*Source:* Department of Education and Training, Victoria (2003)

Experience in Victoria and other states strongly suggests school food services can be run on a financially sound basis while providing healthier, appetising food choices. These outcomes require training in sound business, marketing and nutrition practices. A successful example of the linking of schools with the local community is Collingwood College, which has school garden and cooking programs that involve children and their families with food markets, food retailers and regional personnel of the Department of Human Services (Alexander 2003).

Several groups are concerned about the operation of school canteens—for example, students, parents, canteen staff and teachers. However, they are likely to have conflicting views and interests, such as differing views on what constitutes healthy food, the prices that should be charged, and the purpose of any financial surpluses made by the canteen. To achieve their educational goals and to maintain harmony in the school community, many schools devise their own school canteen policies (often as part of broader school policies).

### ***School canteen policies***

These policies are sets of operating rules and principles that should:

- involve students, parents and teachers

- actively promote healthy foods and beverages through marketing approaches such as loyalty schemes, preferential positioning in the canteen (with the foods at the front of the counter selling first) and lower prices
- set sales objectives that are consistent with the dietary guidelines for children and adolescents, and regularly monitor the school's progress against those objectives
- train staff in the principles of healthy eating, nutrition and business management
- limit the use of confectionery or other unhealthy foods to promote school objectives (such as the sale of fast food vouchers to support sports teams)
- avoid sponsorship deals with fast food and beverage companies that involve the placement of high energy, low nutrient dense products in the school (for example, soft drink vending machines).

Useful resources in this area include:

- the Children's Health Development Foundation's (Adelaide) *School canteen manual: a hands-on approach for South Australian schools* ([www.chdf.org.au](http://www.chdf.org.au))
- the Primary Fightback Resource Kit ([www.diabetes.com.au/resources/webresources.htm](http://www.diabetes.com.au/resources/webresources.htm))
- the Active-ate program (Queensland), which includes classroom materials (Tuckshop Shortcuts, Breakfast Boost, Dig In—Creating an Edible School Garden, H<sub>2</sub>O, Fruit and Veg to Go, Fat in Food posters) ([www.health.qld.gov/ActiveAte/beyond/default.asp](http://www.health.qld.gov/ActiveAte/beyond/default.asp))
- Fruit and water school policy and related publications from the Department of Health, Western Australia ([www.population.health.wa.gov.au/promotion/resources](http://www.population.health.wa.gov.au/promotion/resources))
- The School Health Index—an approach promoted by the US National Center for Chronic Disease Prevention and Health Promotion, which has useful planning documents for developing school food and health policies ([www.cdc.gov/nccdphp/dash/SHI/elementary1.htm](http://www.cdc.gov/nccdphp/dash/SHI/elementary1.htm)).

**Box 11: Intervention example—the Tooty Fruity Vegie project**

The Tooty Fruity Vegie (TFV) project was a two-year, multi-strategic health promotion program aimed at increasing fruit and vegetable consumption among primary school children in the Northern Rivers region of New South Wales. The project aimed to achieve this increase by improving:

- children's fruit and vegetable knowledge, attitudes, access and preparation skills
- parents' fruit and vegetable knowledge and preparation skills and their involvement in fruit and vegetable promoting activities in the schools and elsewhere
- teachers' attitudes towards teaching about fruits and vegetables in schools and their skills and confidence in relation to teaching about fruits and vegetables.

**Intervention**

In late 1998, 10 volunteer primary schools (1174 students in total) were recruited as

intervention schools and another six local primary schools (992 students in total) were recruited to act as demographically and geographically matched controls. The project, which ran during the 1999 and 2000 school years, promoted a whole-of-school approach to implementing a range of classroom, canteen, family-oriented and community-based strategies promoting fruits and vegetables. The strategies were developed from the evidence available at the time and were designed to create a supportive environment by developing, and helping schools to implement, fruit and vegetable promoting educational resources and activities for children, their parents, teachers, schools, school canteens and the broader community.

Schools were encouraged to form project management teams to oversee the project's implementation in their school. Membership varied between schools but could include teacher, principal, child, parent, canteen, community nutritionist and Aboriginal Education Assistant representatives. These teams, assisted by a TFV project officer, were responsible for choosing the TFV strategies to be implemented in their school, organising their implementation, monitoring the response to them and modifying them as necessary. They also often initiated new, innovative strategies they found or developed themselves. Small grants of A\$270 to A\$750 per year were made available to schools, based on need, to assist with implementing TFV strategies. In line with the aim of creating a self-sustaining program, all intervention schools were encouraged and helped to recruit and train volunteers (mainly parents) to help with implementing many TFV strategies. The TFV project officers ensured information about successful strategies was communicated between intervention schools.

### **Evaluation**

The TFV project had a comprehensive process, impact and outcome evaluation plan, of which only the first two are presented here. The latter involved prospective 24-hour food records at the beginning, middle and end of the project, are currently being analysed and will be reported separately.

In order to evaluate the quality of the project's implementation and its success in relation to its broad range of impact indicators, we drafted, pilot tested, revised and administered surveys to all the children, parents, teachers, principals, volunteers and other health professionals involved in or exposed to the TFV project. In addition, a 'participation index' was completed by each intervention school's project management team to indicate the reach, frequency and quality of implementation for each key TFV strategy.

### **Results**

The results showed that the TFV project was well implemented, reached the vast majority of all target groups and was overwhelmingly positively received by them. The project enhanced the quality, diversity and frequency of classroom fruit and vegetable promoting activities,

substantially increasing children's involvement in and enjoyment of such activities. It also increased the amount, range and use of fruit and vegetable promoting materials distributed to parents, as well as increasing parental interest and involvement in, and enjoyment of, fruit and vegetable promoting activities in schools and beyond. The fun, practical and hands-on nature of many of the TFV strategies, and the parental involvement, seem to have been key factors in the project's success.

The TFV project improved children's fruit- and vegetable-related knowledge, attitudes and preparation skills and their access to fruits and vegetables at home and in school settings, and may have improved their fruit and vegetable eating intentions and actions. Analyses in progress on 24-hour food record surveys will provide more definitive evidence regarding the project's impact on fruit and vegetable intake. Attitudes and home access to fruits and vegetables appear to have improved more for girls and younger children than for boys and older children. Similarly, younger children reported more impact on their fruit and vegetable eating intentions and actions.

Source: [www.nrahs.nsw.gov.au/population/promotion/tooty\\_fruity/](http://www.nrahs.nsw.gov.au/population/promotion/tooty_fruity/)

#### ***Key lessons learned from the Tooty Fruity Veggie project***

- Support from principals and the whole-of-school approach were important in enhancing the project's implementation.
- Adequate planning, training and support for project activities were essential in establishing the project in schools. The project performed well in this area.
- Providing teaching resources that address curriculum outcome statements was important in addressing the project's competition with other topics for limited curriculum space. The project performed well in this area, and existing materials need only be professionally produced before future implementations.
- Good communication with schools and support (for example, cooking equipment and teaching resources) from the project staff were important in achieving teachers' and principals' overwhelmingly positive attitudes towards the project.
- Having school project management teams was important for coordinating and sustaining project activities. Broad representation on the project management teams was also important in maximising the range of project activities and minimising the burden on individual members.
- Committed parent volunteers were an essential part of implementing many key project strategies. Although the project increased parental involvement in school-based fruit and vegetable activities, there was still much room for improvement. Better scheduling of events, improved training, more incentives and the offering of transport and child care were suggestions for increasing parental involvement. More efforts to improve networking

among volunteers from different schools could also improve volunteer numbers and satisfaction.

- Project activities scheduled to coincide with other school events (for example, sports days) were much better attended than those run alone.
- The fun and hands-on nature of many project activities, such as the 'Kids in the Kitchen' cooking classes, food tastings and gardening, was important in maximising children's, parents', volunteers' and teachers' enjoyment of, and satisfaction with, the project.
- Fruit and vegetable tastings, cooking lessons, gardening, videos and visits to fruit and vegetable growers and markets were consistently considered the most successful activities for improving children's fruit and vegetable knowledge, attitudes and skills, and for meeting teachers' curriculum goals.
- The 'Kids in the Kitchen' cookbook and manual, the *More teacher resources for classroom activities* folder and the gardening kit were the most useful classroom resources for the teachers.

**Box 12: Intervention example—the CATCH (Child and Adolescent Trial for Cardiovascular Health) study**

The study involved 5106 third to fifth graders in four American states. The intervention conducted in 56 schools included a combination of school food service modifications, enhanced physical education and classroom health curricula. Students in 40 schools acted as controls. A wide variety of health indices were measured before (1991), during and at the completion of the program (1994).

The percentage of energy intake from fat fell significantly more in the intervention school lunches (down from 38.7 per cent to 31.9 per cent) than in the control school lunches (down from 38.9 per cent to 36.2 per cent— $p < 0.001$ ). Self-reported daily energy intake from fat among students was significantly reduced in the intervention schools (down from 32.7 per cent to 30.3 per cent) compared with control schools (down from 32.6 per cent to 32.2 per cent— $p < 0.001$ ).

Other findings reported from this large scale trial included: significantly greater response scores for dietary knowledge, dietary intentions and self-reported food choice changes for the intervention schools compared with control schools; significantly higher perceived social reinforcement for healthful eating patterns in the intervention groups; significantly reduced dietary cholesterol among children in the intervention groups (down from 223 milligrams to 206 milligrams) compared with controls (up from 218 milligrams to 225 milligrams); a significant increase in the intensity of physical activity in physical education classes in the intervention schools compared with the control schools; and significantly more self-reported daily vigorous activity in intervention students compared with controls. The study showed that



combinations of intervention approaches can be effective in bringing about dietary and health behaviour changes in large school systems.

A three-year post intervention follow-up included 73 per cent of the initial CATCH cohort (when students were in grades 6–8). At grade 8, self-reported daily energy intake from fat was significantly different for the intervention group compared with the control group (31.6 per cent versus 30.6 per cent— $p=0.01$ ). There were also significant differences for dietary knowledge and dietary intentions, but not for social support or physical activity in the intervention students compared to controls at grade 8.

*Source:* Based on Luepker et al. (1996) and Nader et al. (1999)

## 6 Secondary schools

Almost all secondary schools provide food services and teach curricula that provide opportunities to promote healthy eating. They provide a setting in which the teaching of life skills is particularly relevant to students, who begin (at various ages) to lead independent adult lives.

Secondary schools share many of the issues facing primary schools—for example, the need for consistency between what is taught in the classroom and the quality of foods provided by the school food service. However, secondary schools tend to be larger and their students tend to be less teacher-centred and more peer-oriented. The Review of Children’s Healthy Eating Interventions showed that fewer healthy eating interventions have been conducted in high schools, but that a much higher proportion of published studies were effective in attaining their aims.

The following may be among the likely reasons for this higher level of responsiveness:

- The large size of secondary schools may bring economies of scale that allow professional managers to be employed.
- More secondary schools involve students in managing school food services. In Victoria 16 per cent of secondary schools involved students in management, compared with only 4 per cent per cent of primary schools.
- Secondary students are often intensely interested in food and in experimentation with food (French et al. 2001; Worsley and Skrzypiec 1997), so may be more amenable to change.
- The timetabling requirements of secondary schools, combined with their large size, make them profitable sites for vending machine companies. Approximately one third of Victorian secondary schools have at least three of these machines (Maddock, Warren and Worsley 2004). Students’ food choices can also be influenced by reductions in the

prices of low energy foods in school cafeteria (French et al. 2001), rises in the price of high energy foods in school canteens, and the positioning of low energy foods close to student's vision (at the front of the counter) in school canteens (D Wilson, pers. comm., 2003). Box 12 describes one example of a secondary school intervention, the CATCH study, and box 13 describes an example of a food service intervention, the CHIPS study.

- In Victoria, many children in years 8 and 9 undertake home economics classes in which the principles of healthy eating may be taught. Further, approximately 30 per cent of all year 11 and 12 students take courses in health and human development and food technology, which provide further opportunities to teach the skills of healthy eating. (These courses' practical effects on food habits have never been evaluated, however.)
- Many Victorian secondary school principals are concerned about the nutritional quality of food offered to their students and want assistance to develop food policies and nutrition and marketing practices (Maddock, Warren and Worsley 2004).

The secondary curriculum provides many opportunities for teachers and others to promote healthy eating among secondary students—for example, by developing students' shopping skills, budget planning, exposure to novel foods (such as tropical fruits and vegetables) and food preparation skills, by explaining ways of meeting ethical and moral objectives through food (such as the adoption of vegetarian diets by those interested in animal welfare) and by showing how to use foods to enhance social acceptance. Secondary education also allows students to anticipate their future needs by acquiring adult life skills, such as baby care and independent living skills. School partnerships with diverse organisations such as horticultural groups, food retailers and sports clubs are likely to enhance students' acquisition of healthy food habits.

**Box 13: Intervention example—the CHIPS study**

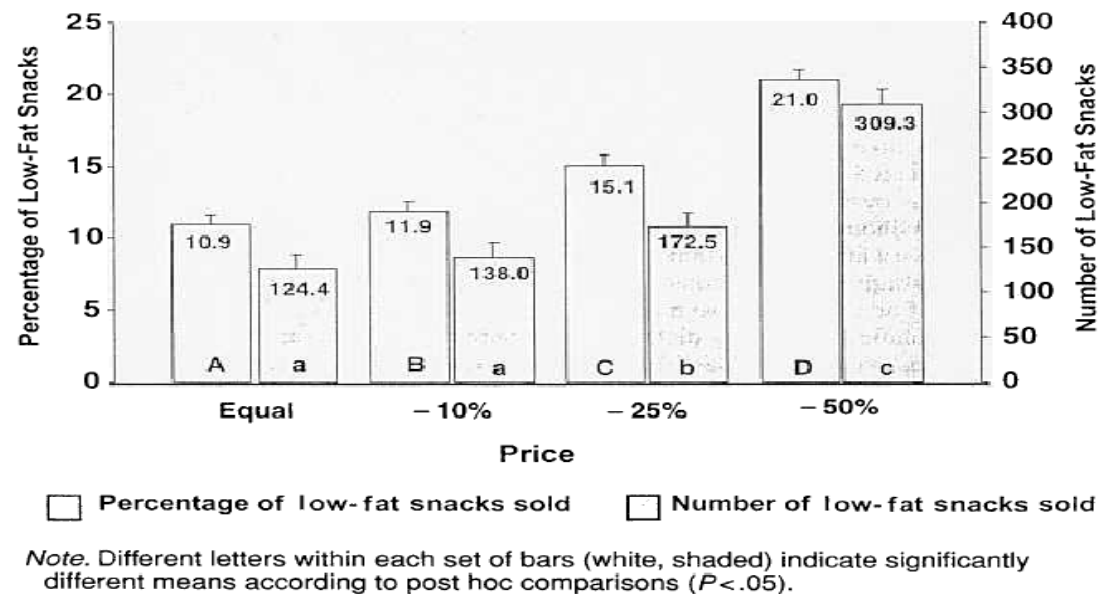
This study examined the effects of pricing and promotion strategies on purchases of low fat snacks from vending machines. Low fat snacks were added to 55 vending machines in a convenience sample of 12 secondary schools and 12 work sites in Minneapolis in the United States. Four pricing levels (equal price, 10 per cent reduction, 25 per cent reduction, 50 per cent reduction) and three promotional conditions (none, low fat label, low fat label plus promotional sign) were used singly and in combination. Sales of low fat vending snacks were measured continuously for the 12-month intervention.

Price reductions of 10 per cent, 25 per cent and 50 per cent on low fat snacks were associated with significant increases in low fat sales, with sales increasing by 9 per cent, 39 per cent and 93 per cent respectively. Promotional signage was independently, but weakly, associated with increases in low fat snack sales. The vending interventions did not affect average profits per

machine.

Reducing relative prices on low fat snack snacks from vending machines was effective in promoting lower fat purchases from those machines in both adult and adolescent populations (French et al. 2001).

**Figure 13: Percentage of low fat snacks sold and total number of low fat snacks sold per machine per treatment period, by price reduction condition, CHIPS study, 1997–99**



## 7 Family and community health

### General practitioners

There are over 28,000 general practitioners in Australia, and over 90 per cent of the population see a general practitioner at least once each year. Many general practitioner consultations deal with children and families, so there is great potential for the provision of advice about healthy eating in general practice.

Some impediments that reduce the potential role of general practitioners in promoting children's healthy eating include:

- limited time for extended consultations, given that fee-for-service conditions under which most general practitioners operate
- the general paucity of nutrition and nutrition promotion education at medical school, which means general practitioners have limited preparation for activities in this area

- the strong emphasis on treatment (often via day therapies) rather than the prevention of disease and the promotion of health, despite increasing evidence of the efficiency of nutrition and physical activity interventions in the prevention of disease.

Nevertheless, many doctors and allied health staff have strong interests in the provision of nutrition counselling for families (Helman 1985; Worsley and Worsley 1990). Medical Director (a medical software company) has begun to provide nutrition information modules for general practitioners and staff in community health centres, and these modules have been well received. These information technology services enable staff and their patients to access [www.healthyeatingclub.com](http://www.healthyeatingclub.com), which provides dietary and nutrition information for patients.

### **Community health centres**

Community health centres provide a broad range of medical and social services (often incorporating elements of general practice). They are often sited in areas of social disadvantage and have strong networks with other community organisations such as women's and Indigenous people's groups, and food banks. The following are among the advantages of community health centres in the promotion of children's healthy eating:

- They are located within communities.
- They often have active outreach programs—for example, the ability to link with schools, food outlets and community centres.
- They have skilled community workers on staff.
- They have service plans that are designed to respond to the needs of the community. If healthy eating promotion is identified as a need, the centres have a good opportunity to set up interventions.

The Fresh Kids program, coordinated by Dietitians at the Western Region Health Centre, in partnership with the Maribyrnong City Council and local primary schools, is a successful example of an initiative sustained at the local level (Figures 9 & 10). Further examples of community nutrition programs for children can be found at [www.health.gov.au/pubhlth/strateg/childnutrition.htm](http://www.health.gov.au/pubhlth/strateg/childnutrition.htm). A report on the opportunities for food and nutrition activities in local government can be found at [www.health.gov.au/pubhlth/publicat/document/nutrit.pdf](http://www.health.gov.au/pubhlth/publicat/document/nutrit.pdf).

## **8 The wider community**

### **Scouting, guides and sports clubs**

Children spend their lives in many settings other than the home and school. Cinemas, bowling alleys, playgrounds, streets, parks, supermarkets, church groups, sports and scout/guides clubs are just a few among many settings in which food is often available. They are, therefore, potential settings for the promotion of healthy eating. Few studies have examined the impact

of interventions in these settings, although one American study of guides' groups (Cullen, Bartholomew and Parcel 1997) suggested they may be effective intervention settings. VicHealth funds sports clubs on the condition that they attempt to improve the health of their members. A considerable proportion of clubs have opted to introduce healthy eating programs—for example, providing healthier food choices during sporting events.

### **Local government**

Local government is responsible for many of the basic services available to Australians, such as garbage collection, recycling facilities and social, community and environmental health services. Most local governments have developed Municipal Public Health Plans that include nutrition and food safety policies. The *Food For All* document outlines some of the food policies that local government can implement ([www.vichealth.vic.gov.au](http://www.vichealth.vic.gov.au)). A useful example of community-based approach to ensuring access to nutritious and affordable food is the Maribyrnong Council's Food Security policy (box 14). This local council is fostering partnerships between schools and local food markets, as well as links between community health agencies and community groups.

#### **Box 14: Intervention example—extract from the Maribyrnong Food Security Policy**

##### **Strategic directions**

##### ***Built/physical***

1. Council planning processes will work towards a situation where all community members have ready access to local sources of appropriate food supplies (including fruit and vegetables) and ready access to major food supply centres.
2. Council will encourage operators of rooming and boarding houses to provide all residents with ready access to safe, secure and clean cooking and food storage facilities
3. Council will promote the use and provision of community facilities to encourage the sharing of meals in both an outdoor and indoor context.
4. Council will encourage, as part of its own social impact assessment processes, consideration being given to the implications of residential and other developments on food security.
5. In order to ensure maximised benefit to the community through increased use options, any new or redeveloped council facilities will have kitchens that have been approved by the Environmental Health Section.
6. Council will encourage the local production of fruit and vegetables through its promotion and support for community gardens, school gardens and home based gardens.

##### ***Social***

7. As existing council policies and corporate strategies are reviewed and new ones developed, consideration will be given to inclusions that will positively contribute to the

food security of community members.

8. Council will include food security as part of its focus for community events and community grants where appropriate.
9. Council will encourage all social impact assessment processes to consider implications for food security.
10. Council will conduct forums and provide information on relevant avenues of support available in relation to food security on an as needs basis.
11. Council will provide access for community groups to food safety training in an effort to encourage the continuation of community-based provision of meals programs and fundraising opportunities.
12. Council will advocate to state and federal government for resourcing to help enable the adequate provision of food relief.
13. Council will collaborate with the Western Region Health Centre in implementing identified food security initiatives and explore partnership opportunities with other community groups and agencies.

***Economic***

14. Council will explore the possibility of introducing a scheme recognising local businesses that help support food security initiatives.
15. Council will foster community and business partnerships, and funding opportunities that provide accessible and affordable supplies of healthy food.
16. Council will promote the recovery of safe food for appropriate food relief services.

Source: [www.maribynong.vic.gov.au](http://www.maribynong.vic.gov.au)

**Community networks**

There are many community organisations and networks throughout Australia that support people in many ways. St Vincent de Paul and the Salvation Army are two examples of religious organisations that provide food for people in need. Along with other groups, they have also contributed to the formation of the Victorian Food Bank. Many other (non-religious) networks also contribute to the social resources of the community ('social capital'). Eat Well Australia aims to develop community networks to promote the production and consumption of healthy food. The South Australian Eat Well program, for example, developed community networks among food producers, food markets, retailers, health professionals, schools and consumer and ecology groups (Coveney, Carter and Smith 1999). External evaluation of this three-year project showed that community-based food promotion practitioners, given sufficient funding, can rapidly build effective partnerships within local communities for a variety of purposes.

### **Workplace settings**

One of the key problems in promoting healthy eating among children and their families is the relative inaccessibility of parents. Many parents are busy and spend long hours at work outside the home. During the 1970s and 1980s, interest in the promotion of health at worksites developed in North America (for example, the Stanford Five City Project—Farquhar et al. 1990), largely as part of heart health promotion. While these programs rarely focus on children's healthy eating, they sometimes attempt to influence workers' (that is, parents') eating habits.

The Working Well Study conducted in the United States in the late 1990s (Biener et al. 1999) showed that workers responded positively to work-based campaigns that promoted healthy eating. Such programs might be expected to have a positive influence on family eating habits, although this influence remains to be tested. For now, it may be useful for practitioners to remember that many parents work outside the home and that their workplace is one potential setting in which their families' eating habits may be positively influenced.

### **Retail outlets such as supermarkets and fruit and vegetable markets**

Retail outlets can have profound effects on the food eaten by consumers (Cheadle et al. 1991; Cheadle et al. 1993; Cheadle et al. 1995), because many consumers' food choices are largely limited to foods for sale in the supermarkets and other retail outlets. If a food is not in the retail outlet, it is unlikely to be eaten by many people in the surrounding locality. In turn, retailers respond to consumer demand: Quinn Supermarkets in Ireland, for example, were among the first to introduce confectionery-free checkout aisles (Quinn 1992). Other examples include Tesco in the United Kingdom and Giant Foods in the United States. Typically, they provide in-store guidance about the purchase of low fat food products, fruit and vegetables, and food suitable for people with diabetes.

In-store signage is a powerful way of influencing consumer purchases (Worsley and Beaumont Smith 1995). Some overseas supermarkets also run supermarket tours that guide shoppers to healthier purchases. Evaluations of supermarket nutrition programs show that they can have marked effects on sales of food products (Lewis et al. 2002; Worsley and Beaumont Smith 1995). American research shows that the community's food consumption strongly reflects the foods stocked in local supermarkets (Cheadle et al. 1995).

In Australia, there have been several attempts to harness the influence of retailers to promote healthy eating (Worsley and Beaumont Smith 1995). Recently, the Coles–Dietitians Association of Australia '7 a day' promotion of fruit and vegetables has had some success in increasing shoppers' awareness of (a) the number of servings of these foods that they should eat each day and (b) their reported consumption of these foods (Reeve 2001). It uses a low key approach, involving hints and tips on selecting and storing fruits and vegetables, quick

meal preparation ideas and a nutrition information leaflet (see the website [www.coles.com.au/Today/](http://www.coles.com.au/Today/)).

There is potential to establish links between practitioners (such as dietitians and home economists) and local supermarkets and greengrocers, to provide healthy eating guidance to family shoppers.

Foodbank Victoria is a non-profit, non-denominational organisation which re-distributes surplus food products to those in need (see [www.foodbank.com.au/victoria](http://www.foodbank.com.au/victoria)). Each year thousands of tonnes of food are wasted because of faults in labelling, dented packaging or short use-by-dates. Foodbank Victoria provides a link between companies who produce this food and the many people who depend on donations of food to survive. Rather than waste the food, over 200 manufacturers and distributors of food make deposits of unsaleable items to the Foodbank. Welfare agencies make withdrawals of this food and distributes it as approximately 24,000 cooked meals and/or food parcels each week.” (from mission statement [www.foodbank.com.au/victoria](http://www.foodbank.com.au/victoria)).

### **Commercial nutrition information services**

A number of food manufacturers (for example, Sanitarium and Heinz) provide nutrition information services for parents. These services are accessed by thousands of parents of babies and toddlers each year. Much of the information provided is about basic eating and nutrition problems, rather than proprietorial information. Nevertheless, commercially supported nutrition information services may be viewed with scepticism by people who are suspicious of the activities of food companies, especially manufacturers of 'fast' foods (Worsley, unpublished report, 2004). Government-provided information services such as the Department of Human Services, Better Health Channel may appeal more to some groups, as may information services provided by peak health organisations such as the Cancer Council, the National Heart Foundation and the Dietitians Association of Australia

The advent of the Internet has brought healthy eating advice to a wide section of the community for relatively little expense. A good example is [www.healthyeatingclub.com](http://www.healthyeatingclub.com). Community practitioners could use this technology to form networks and to monitor community programs.

For parents whose children are not in formal care or preschool, the services offered by maternal and child health nurses, general practitioners, community health centres, and commercial and community nutrition information services are likely to be particularly salient. A recent study suggested books, family members, the mass media and friends are among the key sources of nutrition information for young adults in the age range in which parenthood is likely.



**Table 3: Proportion of consumers who 'often' use nutrition information, by source (%)**

<b>Source</b>	<b>Women (%)</b>	<b>Men (%)</b>
Books	24	13
Articles in cooking magazines	22	10
Family	20	15
Advertising (television, radio, magazines etc.)	19	12
Articles in women's magazines	18	2
Television programs	18	10
Newspaper articles	18	10
Friends	16	5
Articles in health magazines	13	9
Doctors (medical)	12	7
Radio programs	10	4
Dietitians/nutritionists	10	9
National Heart Foundation/Anti-Cancer Foundation	10	10
Alternative health practitioners	8	3
Work mates	8	2
Articles in vegetarian magazines	5	3
Health food shops/staff	5	2
Slimming clubs	3	2

Source: Worsley and Lea (2003)

### **The mass media**

The media are pervasive and persuasive. There are major issues with the regulation of children's food advertising in Australia, which has one of the most frequent rates of advertising per children's viewing hour compared with other rates around the world (Morton 1990). Further, the products that are most frequently advertised are inconsistent with *The Australian Dietary Guidelines for Children and Adolescents* and *The Australian Guide to Healthy Eating*—that is, they tend to contain large amounts of saturated fats and sugars (energy) and salt and little else (Hammond et al. 1999; Morton 1990). Useful references on food advertising include Armstrong et al. (1998), Australian Divisions of General Practice (2003), Center on Alcohol Marketing and Youth (2002), Chan and Hedges (1995), Hammond et al. (1999), Hill and Radimer (1997), Morton (1990) and Young Media Australia (1997).

**Box 15: Television advertising to children in Australia**

- Advertisements at times that children are watching can occur at the rate of 30 per hour.
- On average, Australian children watch two hours and 30 minutes of television per day. This equates to viewing around 22,000 television advertisements per year.
- Food ads, as a percentage of total advertisements on television, range from 25 per cent to 48 per cent, and average 34 per cent (Hill and Radimer 1997).
- A study of 13 industrialised nations showed that Australia has the highest number of television food ads per hour during children's television viewing times (Australian Consumers Association 1996).
- The proportion of ads promoting non-nutritious foods ranges from 50 per cent to 84 per cent, and averages 72 per cent. The largest categories of foods advertised tend to be chocolate and confectionery, fast food restaurants and sweetened breakfast cereals (Hill and Radimer 1997).

Parents can:

- limit the amount of commercial television that their children are exposed to. Choose to watch the ABC, pay television or videos instead, especially in the early years.
- introduce children to a range of tasty foods that are good for them and that can be fun to eat
- limit the consumption of foods advertised on television to once or twice a week. Play 'spot the gimmicks' in advertisements on television: encourage your child to be sceptical about claims made in advertisements.

Source: Young Media Australia (1997)

A recent study, conducted in Melbourne, suggested consumers perceive mass media as a negative influence on children's eating (Hardus et al. 2003). However, instead of wanting bans on food advertising, most consumers would prefer reductions in confectionery and fast food advertising, and increases in the advertising of healthier foods (such as fruit and vegetables), possibly supported by government subsidies.

The current situation is unlikely to change without advocacy that can translate community unease into new policies. In the United Kingdom, the Food Commission and independent consumer groups have set up the Parents' Jury (box 16), which make awards to food products and public figures. This unsubtle public pressure has resulted in a number of changes in the production and marketing of children's food products. An Australian website for the Parents Jury has recently been launched ([www.parentsjury.org.au](http://www.parentsjury.org.au)).

**Box 16: Intervention example—awards given by the Parent’s Jury (UK)**

- the **More in My Lunchbox!** award for healthy foods suitable for children’s lunchboxes. Winner: dried fruit.
- the **Not in My Lunchbox!** award for the worst food targeted at children’s lunchboxes
- the **Happy Gnashers!** award for healthy foods that do not use added sugars to entice children to purchase them
- the **Tooth Rot** award for a food or drink relying on sugar for its appeal to children
- the **Honest Food** award for a manufacturer or retailer taking steps to reduce food additives
- the **Additive Nightmare** award for the most blatant use of additives to make a product appealing to children
- the **High Five!** award for promoting the consumption of five portions of fruit and vegetables per day
- the **Pester Power** award for the most manipulative advertising or marketing techniques used to promote unhealthy food to children.

**Join the Parents Jury!**

*Do you wish it was easier to buy healthy foods for children?  
Does your toddler nag you for sweets displayed at the checkout?  
Do you wish TV adverts weren't always promoting junk food?*

It's not easy persuading children to eat healthy foods, especially when over three-quarters of children's foods are stuffed full of fat, sugar, salt and artificial additives. We think this is unacceptable, and we know that many parents think so too. **The Parents Jury** speaks out on behalf of its members, shaming the producers of unhealthy foods and applauding the food companies which provide healthier choices. If you care about what your children eat, and want to make a difference – join the 1,200 members of The Parents Jury and make your voice heard!

The Parents Jury was set up in April 2002 and is co-ordinated by The Food Commission, the UK's leading independent food watchdog. Membership is totally free and involvement is not time-consuming. So far members have twice been asked to nominate products or companies which they feel are *encouraging*, or *undermining* children's healthy eating. If you have web access you can see all of these Children's Food Awards at [www.parentsjury.org](http://www.parentsjury.org), where you'll also find lots more useful information (a few of the 'winners' are shown below).

If you are a mum or a dad (with a child or children 2-16 years old) and would like to know more about The Parents Jury, please return the slip below and we will send you more information. Write to The Food Commission (PJ) FREEPOST KE 7546, London N1 9BR. Phone us on 020 7837 2250 or fax us on 020 7837 1141.  
Email us at [parentsjury@foodcomm.org.uk](mailto:parentsjury@foodcomm.org.uk) Website: [www.parentsjury.org](http://www.parentsjury.org)

Please send me more information about The Parents Jury 03/03

Name

Address

Postcode  Email

Send to The Food Commission (PJ), FREEPOST KE 7546, London N1 9BR

Source: [www.parentsjury.org.uk](http://www.parentsjury.org.uk)

## 9 Healthy eating interventions and food policy

Most of the published evaluated interventions have not reported the efficacy of food policies; most reports do not even mention policies. This is understandable, given that most interventions have been conducted in the scientific experimental paradigm, in which narrowly defined outcomes are achieved by manipulating certain independent variables that are often selected on the basis of narrow biomedical or behavioural models (such as social learning theory—Bandura 1986)

Historically, the concept of food policy is associated with commerce and government. Government, for example, implements written (or unwritten) policies to regulate trade or other interactions among individuals and groups within society (such as farmers, manufacturers and retailers). A food policy is a set of rules and procedures that influences the production and sale of food commodities and products. Typically, policies work through institutions (such as hospitals, preschools, schools and shops) using instruments (for example, regulations, taxes and school 'rules') and information (for example, information about the efficacy of the policy in meeting its aims—Tansey and Worsley 1995). However, all types of organisation, in addition to national and state governments (such as local governments, preschools, schools and hospitals), can design and implement food policies.

Examples of the use of policies to promote health include The Health Promoting Schools program (Nutbeam and St Ledger 1997), the Baby Friendly Hospitals initiative (to promote the initiation of breastfeeding—Comisso 2002) and local government (for example, Maribyrnong Council) long day care and school food policies. To our knowledge, the efficacy of these policies as they relate to healthy eating has not been reported. Several stakeholders who were interviewed for the Review of Children's Healthy Eating Interventions suggested the adoption of food policies by local governments and institutions in which children spend time would have long lasting effects on children's eating behaviours. These effects would occur because the settings in which children and their parents eat or buy food can be governed by 'rules' that constrain the types of food available for consumption. Stakeholders noted, for example, that some Victorian preschools have a policy of not allowing parents to supply any packaged foods. This policy encourages parents to provide fresh foods, such as fruit, vegetables and cereal grain foods.

The settings that are likely to influence children's eating directly are the home, preschools, long day care and family day care (Montague 2004), school canteens, vending machines at schools, the journey to and from school, the supermarket and take-away stores/cafés. Various informal and formal 'rules' influence children's and parents' eating behaviours in these settings—for example, in some family homes, everyone must eat the main meal together around a table with the television turned off, and some pre-schools prevent parents

from supplying commercially packaged food. Food policies can be negotiated by people within these settings, so people can devise rules that encourage healthy eating (or drinking). In some primary schools, for example, children are allowed to drink water from their own water bottles in class whenever they feel like it, the only provision being that they must have only water in the bottles.

In summary, a healthy food policy is an agreed set of rules and procedures that encourages the serving and consumption of healthy foods and beverages in a particular setting. Although a recent study (Maddock, Warren and Worsley 2004) found that as many as 60 per cent of Victorian primary schools claim to have food policies, no publication clearly demonstrates that primary schools encourage healthy eating at school or elsewhere. However, much anecdotal information from all around Australia strongly suggests locally designed food policies in settings such as preschools and primary and secondary schools have positive effects.

Further examples of food policy initiatives include:

- maternity hospitals' and birthing centres' adoption of baby friendly initiatives, which encourage the initiation of breastfeeding by new mothers primarily by banning free sample packs and other marketing inducements of infant formula in hospital
- preschools' development of their own food policies (for example, a policy to serve non-packaged food)
- the Health Promoting Schools network, which encourages schools to set up their own plans and strategies so they can promote aspects of health in the school community
- long day care centres' nutrition policies, which provide healthy eating in supportive mealtime environments for the children in the care of these centres
- the out-of-school hours care program implemented by the National Heart Foundation, which provides healthy food and physical activity programs for children (such as EatSmart, PlaySmart)
- school health policies that encourage parents to limit their children's exposure to television food advertising and to become physically active during their leisure hours (Salmon et al. 2003; Salmon et al. 2004). Measures that might be taken include the development of leisure clubs for children of various ages in the community.
- schools' refusal to allow fast food and beverage vending machines, or school policies to remove those machines already in place. Approximately 55 per cent of Victorian secondary schools have at least one fast food or beverage vending machine on their premises; one third have three or more (Maddock, Warren and Worsley 2004).
- the Victorian Department of Education and Training's (2003) school canteen guidelines for schools wishing to establish school canteen policies.

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