

Healthy Food Provision and Promotion in Schools: A Literature Review

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Key points

Messages from the literature

- *Food and health policy in Scotland and other developed countries includes schools as a key setting for implementation of initiatives and programmes to provide and promote healthy food and drinks.*
- *A holistic multi component approach shows more evidence of effectiveness than single strand approaches.*
- *Promoting healthy eating can be an integral and acceptable component of the school curriculum. Educational interventions should identify and promote specific behaviour changes rather than aim to increase knowledge of nutrition.*
- *A holistic approach in schools is being widely promoted as best practice for general promotion of physical, mental and social well-being for pupils and staff as well for educational attainment.*
- *Pupil and parent involvement appears to be key to success.*
- *Approaches that are novel and fun achieve better results.*
- *The physical and social environment exerts an important influence on pupils' uptake and experience of school meals.*

Implications for research in general

- *There is a lack of robust evaluation of healthy eating initiatives, particularly in terms of well-designed studies that use control or comparator sites and in studies using longer term follow up.*
- *There is a lack of evidence on the impact of school-based healthy eating initiatives on inequalities in healthy food consumption between different groups of children (e.g. socio-economic, ethnic groups).*
- *There is a lack of evidence on the impact of school-based healthy eating initiatives on healthy food consumption in the home.*

Glasgow-based initiatives

- *There are a spectrum of school-based initiatives operating in Glasgow which aim to provide and promote healthy food and drinks for pupils in an equitable way.*
- *Past evaluations and consultation exercises indicate that these initiatives have had a positive impact on access to healthy food and on healthy eating in terms of attitudes, beliefs and behaviour.*
- *Further robust research and evaluation is needed to further examine impacts, particularly in relation to differences between groups and impacts beyond the school gate.*

1. Introduction

The Scottish diet is renowned as one that is high in fat, salt and sugar and low in fruit and vegetables. Scottish young people continue to follow a diet that falls short of national recommendations and compares poorly with that of other European countries²⁻⁴.

Obesity amongst adults and children is a growing public health concern in Scotland and other developed countries. An unhealthy diet and low levels of regular physical activity are known to contribute to obesity⁵⁻⁷. Commentators have described an 'obesogenic environment' as a major factor in the growth of obesity⁷. Examples of this obesogenic environment include the heavy promotion of fast food outlets, energy dense snacks, and high sugar drinks to children; low cost and large serving sizes of foods and a transport system and urban design that inhibit active transport and active recreation. A recent survey of health related behaviour amongst children and young people across 35 countries found that Scottish children and young people consume more sugary soft drinks than any of their counterparts except Israel⁸. Recent data from the 2003 Scottish Health Survey also shows that more children are drinking sugary soft drinks frequently than in 1998.(see Figures 1 and 2 below)^{9,10}.

Figure 1: Percentage of boys drinking non-diet soft drinks at least once daily (1998 and 2003)*

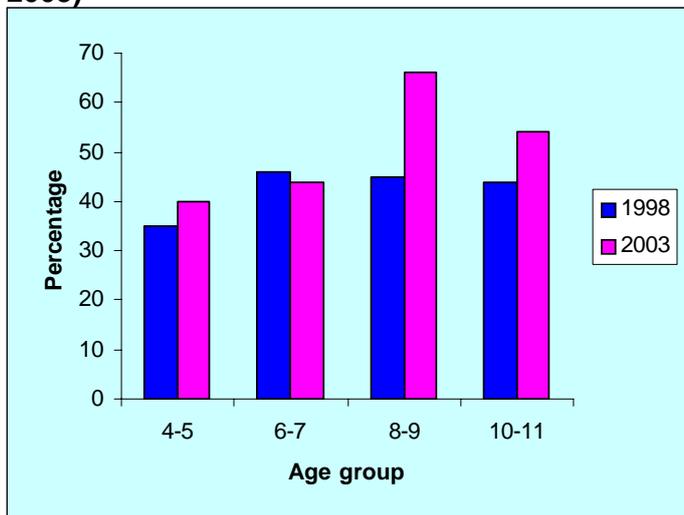
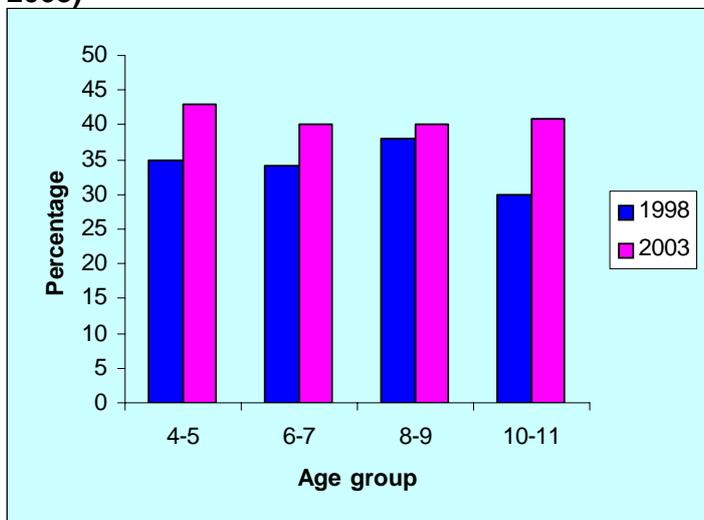


Figure 2: Percentage of girls drinking non-diet soft drinks at least once daily (1998 and 2003)*



* Figures produced from Scottish Health Survey data (1998 and 2003 surveys)

There is consensus that population health issues such as obesity should be addressed in an integrated way at a strategic and operational level. The UK Health Select Committee on Obesity described obesity as a perfect example of an issue that demands truly joined-up government action ¹¹. The WHO Global Strategy on Diet, Physical Activity and Health highlights the role of prevention in health services; food and agriculture policies; fiscal policies; surveillance systems; regulatory policies; consumer education and communication including marketing, health claims and nutrition labelling; and school policies as they affect food and physical activity choices ¹².

The school environment has an important role to play in provision and promotion of healthy food and drinks and in the provision of opportunities for regular physical activity. It has been estimated that school pupils consume around 30-35 % of their total energy intake at school ¹³.

Glasgow City Council has, over recent years, put in place significant and pioneering developments to provide healthy food and promote healthy eating within its schools. These include:

1. 'Glasgow's Big Breakfast', providing a free breakfast everyday for primary school pupils.
2. 'Fruit Plus', the largest scheme in the UK making free fruit available five times a week in primary schools, special schools and pre-five establishments.
3. 'Fuel Zones', bringing a 'high street' image and revitalised menus to primary, special educational needs (SEN) and secondary schools, supplemented by reward schemes to promote healthy choices.
4. Glasgow's 'Refresh', providing drinking water via water coolers in pre-five nurseries, primary, secondary and SEN schools.

The elected members of Glasgow City Council are now looking to take stock and to examine whether these developments are commensurate with current evidence of good practice / effective approaches, what effects they are having both within and beyond the school and where possibilities lie for further improvements and development of the service.

As a first step, this literature review aims to explore the evidence on healthy food provision and promotion in schools from a number of dimensions including:

- the policy context for food and health in Scotland, UK and other countries;
- the impact of choice ;
- the impact of social inequalities;
- reviews and systematic reviews on the effectiveness of interventions to promote healthy eating amongst school children;
- published material on effectiveness and reach of healthy eating initiatives in schools including examples of good practice;
- other influences such as the impact of the physical and social environment; and
- current monitoring and evaluation of national and local initiatives

2. Policy context

The World Health Organisation, in its global strategy on diet, physical activity and health sets out a challenge to combat an alarming picture of unhealthy diets and physical inactivity across much of the developed world¹². The strategy's principles for action include schools as a key setting. The strategy states:

“School policies and programmes should support the adoption of healthy diets and physical activity. Schools influence the lives of children in all countries... Governments are encouraged to adopt policies that support healthy diets at school and limit the availability of products high in salt, sugar and fats. Schools should consider, together with parents and responsible authorities, issuing contracts for school lunches to local food growers in order to ensure a local market for healthy foods.”

School food policy has been recognised for over a century in the UK as being important for public health. Legislation to provide a universal school meals service introduced in England and Wales in 1906 and in Scotland in 1908, was a direct response to concern around levels of malnourishment identified in many young recruits for the Boer War. School meals were provided by local authorities until the onset of the First World War when the service declined due to economic pressures. Following the Second World War, partly due to rationing and state provided meals, people in Britain were better nourished than at any time in history¹⁴. Legislation has continued to impact on school meals provision. The 1980 Education (Scotland) Act removed the obligation of local authorities to provide school meals, and only required them to provide meals for children whose parents claimed supplementary benefit or family income supplement. The Act also abolished the minimum nutritional standards that controlled the quality of school meals and the fixed price “national charge for school meals”. Now, at the beginning of the 21st century, nutritional standards and subsidised, fixed price charges for school meals have been reintroduced under ‘Hungry for Success’¹⁵.

‘Hungry for Success,’ the report of the Scottish Executive’s Expert Panel on School Meals, sets out a vision for a revitalised school meals service in Scotland. It provides national guidelines and standards for school meals in primary and secondary schools across Scotland¹⁵. The report calls for a whole-child, whole-school approach to food, complementing the current government commitment to make all schools health promoting schools by 2007. ‘Being Well – Doing Well: a framework for health promoting schools in Scotland’ states that the main aims of health promoting schools should be to promote the physical, social, spiritual, mental and emotional health and well-being of all pupils and staff and to work with others in identifying and meeting the health needs of the whole school and its wider community¹⁶.

‘Eating for Health – Meeting the Challenge’, published in 2004, is a strategic framework produced by the Scottish Executive which is being used to further develop food and health policy and to guide national and local health action plans¹⁷. It builds upon the key actions outlined in the action plan for health improvement, ‘Improving Health in Scotland – the Challenge’¹⁸. Eating for Health also announced new leadership for food and health policy in Scotland in the form of a Scottish Food and Health Council which will provide strategic direction and a Healthy Living Food and Health Alliance which will co-ordinate invigorated and focused efforts in relation to food and health initiatives and programmes.

In September 2005, the First Minister, Jack McConnell, announced a ‘Health Promotion, Nutrition and Schools (Scotland) Bill’ as part of the forthcoming legislative programme for the coming year. The background briefing states:

*“Our proposals will build on the excellent progress made through Hungry for Success in improving the quality, attractiveness and nutritional value of school meals. By putting Hungry for Success nutritional standards on a statutory footing, we will effectively restrict the food on sale in schools to healthy options.”*¹⁹

Glasgow City Council's revised food and health policy for schools makes a commitment to the provision and promotion of healthy food in schools at a strategic and operational level. It outlines proposed action in a number of key areas and calls on partners to assess the effects of their programmes on an ongoing basis²⁰.

3. Choice

Consumer choice is a term in vogue at present although choice is not a straightforward issue and does not necessarily lead to desired outcomes. It has been suggested that, when faced with a range of food options, young people will tend to select food of poorer nutrient quality¹³. This finding has been cited in a recent US study which found that middle school pupils with access to school snack bars consumed fewer healthy foods compared with the previous school year, when they were in elementary schools and had access to meals served at school with no snack bar²¹. This implies that the availability of unhealthy snacks and food products may limit the consumption of healthier foods. Glasgow City Council's revised food and health policy for schools comments:

*"To ensure that only a particular healthy option is available, choice may sometimes be restricted. The key partners know that children and young people need to be supported in managing choice and that further work must be undertaken to develop their capacity to do so."*²⁰

A recent survey by the West of Scotland Food Liaison Group on levels of fat and salt in foods sold at shops near schools found alarmingly high levels of both fat and salt in food being consumed by school children during lunch breaks²².

Food marketing and promotion to children and young people has been suggested as an important influence in food choice. In a recent systematic review, Hastings et al concluded that children's food promotion, which is focused on the 'big five' of pre-sugared breakfast cereals, soft-drinks, confectionery, savoury snacks and fast food restaurants, influences what children claim to like, what they buy, and what they eat²³. Thus the diet that is heavily promoted is one that is energy dense, high in fat, sugar and salt, and contrasts sharply with what is accepted as a healthy diet²⁴. As there is comparatively little promotion of healthier food products using similar methods, it is not possible to say whether or not children and young people's food choices would be different in the absence of food promotion in its current form.

With regard to the overall choice agenda and public health in England and Wales, a recent editorial expressed reservations around too much emphasis on individual choice and an absence of a stewardship role by governments. The author concluded:

*"There are limits to markets and to viewing individuals as consumers exercising unfettered choice. It is time we acknowledged these and acted accordingly."*²⁵

The Scottish Parliament's proposed legislation to ban the promotion of sugared, soft drinks in schools provides a clear example of a stewardship role in the curtailment of promotion of unhealthy products to Scottish children.

Market research published in 2002, which explored snacking after school, showed that the four most popular snacks eaten by British children after school were crisps, biscuits, chocolate bars and fruit as shown in Figure 3 below.

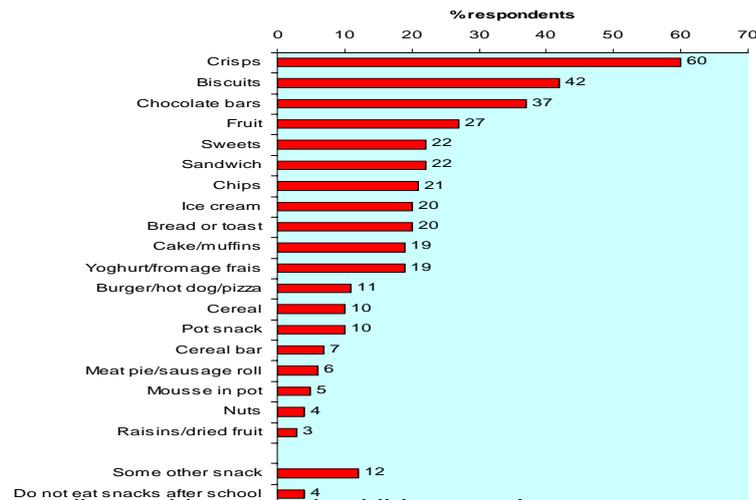


Figure 3: Most popular snacks eaten after school by children aged 7 – 16 years of age (n = 629) ¹

According to this research, children aged seven to ten years were most likely to snack after school. Across all age groups, crisps were identified as the most popular after school snack food. Fruit was the fourth most favourite snack ¹.

There is some evidence from the US suggesting that price reductions may be an effective strategy to increase the purchase of more healthy foods in community-based settings such as worksite and schools. One study found that a 50% price reduction on fresh fruit and baby carrots in two US secondary school cafeterias resulted in a four-fold increase in fresh fruit sales and a two-fold increase in baby carrot sales ²⁶. Another small US study found that focusing on the value and cost of low-fat foods may offer a key strategy for promoting low fat foods to young men specifically; young women were more interested in the availability and labelling of low fat foods ²⁷. Interventions that reduce the cost of healthy options may therefore help improve consumption of healthy foods in schools and workplaces.

A recent conference presentation on a review on food acceptability and choice examined 250 intervention studies in various settings ²⁸. Eighty five intervention studies in schools were included. Most UK studies reviewed had focused on fruit and vegetable intake; evaluations of school lunch provision were underway. The research team concluded that theory-based food education lessons alone were unlikely to alter eating behaviour. The most successful interventions were those perceived by children to be novel and fun, using cartoon characters, multi-media or the internet and were 'hands on' e.g. involving growing foods, or cooking classes. Covert canteen manipulations seemed to be most effective in reducing fat and salt but these measures did not provide education about healthier eating choices. Further research was recommended to evaluate the implementation of a whole school approach in UK schools; to compare single versus multi-component interventions; to assess the efficacy of culturally-tailored interventions, to identify ways to target adolescents (particularly girls) and to provide information about the cost-effectiveness of different approaches. Robust evaluations of school lunch (and related) initiatives were also identified as crucial.

4. Inequalities in nutrition

Food poverty is a multi-dimensional concept and is still a feature of contemporary Britain although it is now more commonly nutritional rather than calorific²⁹. Research conducted in 2002 documented the circumstances of low-income consumers that limited their access to an adequate diet. The researchers concluded that achieving a nutritious diet on a low income requires extraordinary levels of persistence, flexibility and awareness²⁹. A food expenditure survey in the late 1990s showed that low income households spent a high proportion of their income on food of any group while spending less than high income households in absolute terms.³⁰ Research published in 2003 concluded that low income households in the UK may commonly experience 'food insecurity', defined as the "limited or uncertain availability of nutritionally adequate safe foods, or limited or uncertain ability to acquire foods in socially acceptable ways"^{31; 32}. Experiences of food insecurity that have been cited include running out of food, running out of money to buy food, skipping meals, experiencing hunger and being unable to buy food, or buying cheaper foods because of financial constraints³¹. A more recent working paper on food and inequalities concluded that people living in poverty had less access to a healthy diet than those who were more affluent, and increasing the proportion of their income available for food appeared to be the main factor in improving the nutritional content of their diet³³.

School nutrition appears to be especially important for children from more deprived households. Adamson et al found that 'low' social group children had intakes of a lower nutrient density than children from 'middle' or 'high' social groups¹³. The nutrient density of the food consumed at home varied across the social groups, with children in the lowest groups consuming food of a lower nutrient density. Away from home consumption was similar for all social groups – children appear to follow peer group food preferences outside the home rather than food habits taught at home. This suggested that parents have little control over the content of food purchases made by this age group (11 and 12 year olds). Differences in nutrient intake and nutrient density of the total diet therefore appeared to be due primarily to difference in the diet obtained at home. In their recommendations, Adamson et al called for schools, food manufacturers, and retailers to guide independent food choices and to make better alternative food choices both available and attractive to young people.¹³

Children from low income families are entitled to free school meals. In Glasgow, 42% of primary school pupils are eligible for free school meals. This is double the national figure and around five times the rate of East Dunbartonshire, which has the lowest eligibility rate across the West of Scotland³⁴. There is a significant gap between entitlement and uptake at a national level – it is estimated that around 20% of Scottish children entitled to free school meals do not take them though there is considerable variation across Scotland³⁵. Uptake of free school meals has been discussed at length in *Hungry for Success* and in the evidence submitted to the Expert Panel on School Meals¹⁵. Whilst stigma may be one factor influencing reduced uptake of free school meals, many others exist including the quality of the physical and social environment (see Section 6 for a discussion of this in more detail). *Hungry for Success* recommended that measures should be taken in all schools to maximise anonymity for free meal recipients. In secondary schools in Glasgow, a ticket-less system is now in place. In addition, six primary schools are piloting its use to measure effectiveness with younger pupils.

6. The impact of the physical and social environment

There is good evidence that both the physical and social environment play an important part in pupils' experience of healthy food provision and promotion in schools. Qualitative research conducted in 2002 to gather views of primary and secondary pupils on aspects of school meals found that most pupils appeared to care as much about being with their friends at lunchtime as they did about what or where they ate (although primary pupils were generally not able to exercise much choice about where to eat as these decisions were made on their behalf by parents)³⁶. Pupils were also keen not to waste time during their lunch-break, particularly in queuing, which was perceived as a major disincentive to eat school lunches. In some schools, dining areas were noted to be severely overcrowded and serveries inadequate resulting in queues, noise, mess and a shortage of places to sit. These issues had a negative effect on pupils' experience of lunch. On the subject of the dining environment the researchers concluded:

*"It is clear that the dining environment does matter to pupils and they often commented positively where dining areas had been redecorated or refurbished. Issues such as noise, mess and overcrowding, however, appear to be even more important. In other words, the extent to which the dining area functions is more important to them than how it looks."*³⁶

Developmental research conducted in a Glasgow primary school with primary seven classes in 1997 also found that most pupils regarded lunch-time as an opportunity for social interaction identifying chatting with friends, eating with friends and hanging around with friends as worthwhile ways to spend time³⁷.

'Being Well – Building Well: creating learning environments to promote health and well-being' has been published by the Scottish Health Promoting Schools Unit to help bring coherence to the building or refurbishment of school environments particularly with regard to health related needs of all school users and in relation to health promotion in schools. It states that *"well-designed school environments help to generate a positive school ethos, effective teaching and learning, good health and well-being in pupils and staff and supportive relationships with families and the surrounding community"*³⁸. 'Being Well – Building Well' follows and complements other key policy documents such as 'Being Well – Doing Well' (the national framework for health promoting schools in Scotland)¹⁶, 'The Health Promoting School' (a self-evaluation and development tool for schools progressing towards health promoting status),³⁹ and 'How good is our network?' (a self-evaluation tool for partnership and joint working)⁴⁰.

Two of the recommendations in Hungry for Success relate specifically to the physical and social environment (page 67).

"Recommendation 17: Improvements to the dining room to enhance its atmosphere and ambience and encourage its use as a social area should be considered as a priority by local authorities and should be taken into account in their wider school estate planning. It is desirable, wherever possible, that a separate dining area should be provided.

*Recommendation 18: Furniture design, layout and usage, along with other factors, such as décor and background music, should be considered by all schools, with significant pupil input and programmes for change drawn up."*¹⁵

5. Systematic reviews

Systematic reviews are immensely useful in the synthesis of previous published research. They provide information about the effectiveness of interventions by identifying, appraising and summarising the results of otherwise unmanageable quantities of research. They use systematic, transparent and explicit methods to identify, select and critically appraise research⁴¹.

A number of systematic reviews were identified with relevance for school-based interventions that involve provision and promotion of healthy food (as a primary or subsidiary component). These are summarised below:

(i) *Health promotion interventions to promote healthy eating in the general population: a review*⁴²

The NHS Centre for Reviews and Dissemination, University of York, conducted this systematic review in 2005. It aimed to identify research studies on the effectiveness of interventions to promote healthy eating in adults, adolescents and school aged children in a number of settings including schools. The authors concluded that there was clear evidence that healthy eating interventions were effective in a variety of settings and populations. They were able to demonstrate that good quality studies in the settings of schools, workplaces and primary care achieved a reduction in blood cholesterol ranging from two percent to ten percent among children and adolescents. Community based interventions were not able to demonstrate any effects on blood cholesterol. The authors recommended that there should be further development and evaluation of healthy eating interventions aimed at increasing dietary intake of starchy foods and fruit and vegetables accompanied by validated dietary and biochemical methods of measuring dietary change as there is a lack of well evaluated interventions. They also suggested that interventions directed at healthy eating should address one related outcome rather than several.

(ii) *Health promoting schools and health promotion in schools: two systematic reviews*⁴³

The NHS Centre for Reviews and Dissemination also conducted this systematic review in 2005. It focused on school-based interventions involving health promoting activity where there was evidence of active participation by the school in three main areas: the school ethos and/or environment, the curriculum, and the family and/or community. The authors of the review expressed reservations about the descriptions and methodological quality of included studies and commented that the evidence available to support the health promoting schools approach was limited but promising. In terms of the food and nutrition studies some benefits were seen in terms of healthier food choices at school lunch-time and breaks as a result of healthy eating policies although improvements were not seen outside school. Conclusions were that the health promoting schools initiative is a new, complex, developing initiative which appears to have potential but that appropriate methods of evaluation are needed. There is also good evidence that with regard to provision and promotion of healthy food, schools should continue to improve the content of school meals and promote healthy options.

(iii) *The effectiveness of community interventions to increase fruit and vegetable consumption in people four years of age and older*⁴⁴

The Ontario Ministry of Health (Canada) conducted this systematic review in 1999, reviewing 60 relevant studies. It included six interventions that aimed to increase fruit and vegetable consumption in school children. Of the six studies reviewed, three were successful in increasing fruit and vegetable consumption, two were unsuccessful and one had short-term success which was not maintained at three months. The review concluded that the most effective interventions gave clear messages about increasing fruit and vegetable consumption; incorporated multiple strategies that reinforced the messages; involved the family; were more intensive; were provided over a longer period of time, rather than one or two contacts; and were based on a theoretical framework. Recommendations were that priority should be given to interventions that are multi-pronged, flexible, open to input from target groups and theoretically based. Careful and co-operative, multi-site evaluation was also recommended to inform future programmes.

(iv) *Interventions to improve nutritional intake in children and youth*⁴⁵

A more recent systematic review, also conducted by the Ontario Ministry of Health and published in 2004 included a review of studies targeting improved nutrition in primary and secondary school students. Outcomes of interest were body weight or BMI, food intake via calorie consumption, fat intake and fruit/vegetable intake. Conclusions and implications for practice were:

- a. For primary school and high school students, multifaceted interventions such as school curricula, mass media, parent mailings, cafeteria changes over a minimum of eight to ten weeks show the most potential for altering food intake. Multifaceted interventions require considerable planning and cooperation across many levels and should include teachers, cafeteria workers, parents and the media.
- b. Educational messages that target behaviour change (as opposed to knowledge acquisition) and specific behaviours (such as increased fruit intake, reduced fat intake as opposed to general nutritional changes) are more successful in changing food behaviours). Educational interventions should identify and promote specific behaviour changes rather than aim to increase knowledge of nutrition.

(v) *Do multi-component school-based nutritional interventions improve the nutritional behaviour and nutritional status of children and adolescents?*⁴⁶

The US Task Force on Community Preventive Services commissioned a systematic review in 2003/2004, to determine the effectiveness of interventions to promote healthy nutritional attitudes, knowledge and behaviour among school-aged children and adolescents. The interventions involved educational components, environmental components and/or other components such as family/community involvement, physical activity. A wide variation was seen in combinations of components; length of studies varied from less than three months to five years; and longer follow up was unusual. On balance, the Task Force concluded that more evidence was needed to determine the effectiveness of school-based programmes to improve the nutritional status of children and adolescents.

The Evidence for Policy and Practice Information and Co-coordinating Centre (EPPI-Centre) in London has conducted three relevant systematic reviews which provide important insights and which will be reported in detail:

(vi) *Young people and healthy eating: a systematic review of research on barriers and facilitators*⁴⁷

This EPPI-Centre review in 2001 concluded that there was insufficient good quality research evaluating the effectiveness of interventions to promote healthy eating, amongst young people, particularly in the UK. Only seven rigorous outcome evaluations were identified and these showed some effect on increasing healthy eating, particularly for young women. There was a similar lack of research examining the views of young people on barriers and facilitators to healthy eating. The reviewers made a number of observations and recommendations:

- Current well evaluated interventions do not always address young people's perceived barriers to healthy eating or build on perceived facilitators.
- Although practical and material resources are seen by young people as being an important influence on their eating behaviour, there are few evaluated interventions which have targeted such structural factors at a community or societal level.
- There is currently little soundly evaluated research on the promotion of healthy eating amongst socially excluded groups.
- A 'whole school' approach can be effective in promoting healthy eating. Classroom based initiatives to promote healthy eating (e.g. small group discussions, peer-led activities) complemented by analysis of environmental influences on food have been judged effective for reported healthy eating, particularly among young women.
- Future initiatives to promote healthy eating among young people should take account of their views as a starting point.

(vii) *Barriers to, and Facilitators of, the Health of Young People: a systematic review of evidence on young people's views and on interventions in mental health, physical activity and healthy eating. Volume 1: Overview*⁴⁸

This composite report brought together main findings and issues from a series of three systematic reviews including the review on young people and healthy eating reported above. Barriers and facilitators in this series of reviews were categorised according to whether they resided at individual, community or societal levels. Common trends were identified in the effectiveness of interventions and in the views of young people in order to establish some of the key barriers to and facilitators of, the health of young people and the core approaches which have successfully addressed them. This synthesis, which integrated young people's views and evaluated health promotion interventions across the areas of mental health, physical activity and healthy eating, was framed around four areas: the school; family and friends; the self; and material and physical resources.

Issues identified in relation to healthy eating were:

- At the level of the school, healthy eating was increased by the presence of a good selection of healthy options in the canteen.
- With regard to family and friends, there was some evidence that young people acting as peer educators could promote healthy eating. Young people regarded parents as supportive of healthy eating, particularly in the home but it seemed to be more difficult to involve parents in school based interventions.
- In relation to the theme of the self, issues raised by young people were complex. Initiatives to motivate young people to achieve personal goals were generally lacking and some young people expressed apathy in relation to leading healthy lifestyles. Young women were concerned about their appearance and body image which had implications for diet in terms of dieting and eating disorders.

- 'Fast foods' were relatively cheap and easy to access whereas healthy food was sometimes less accessible. When given responsibility for preparing their own food, young people often relied on convenience foods, valuing their spare time for socialising and leisure pursuits.

Cross cutting recommendations from this systematic review were firstly, that separate interventions for young men and young women should be developed and evaluated given the difference in effectiveness between genders in some of the interventions included in the reviews. Secondly, multi-component interventions were recommended wherever possible to promote young people's health. This resonates with the whole school approach underway in Scotland.

Recommendations specific to the promotion of healthy eating also called for interventions supporting a holistic approach i.e. involving all members of the school community in developing and implementing health promoting changes in school organisation and structure. Reviewers felt that this would be particularly effective for young women.

Other recommendations were as follows:

- multi-component school-based initiatives for young people promoting healthy eating and physical activity involving classroom activities and parental involvement;
- increasing the availability of healthy foods in the school along with classroom activities and media campaigns;
- peer-led interventions which involve young people educating each other and lobbying for environmental changes in the school (may be beneficial, particularly for young women in the promotion of healthy eating); and
- more rigorous evaluation of interventions and programmes that make healthy foods more affordable and accessible to young people as they seemed to find it easy to access fast foods in their social environment.

With regard to outcome evaluation research, the reviewers recommended the following:

- The use of randomised controlled trials where possible with individuals, families, schools, geographical areas or local authorities as units of allocation.
- Outcome evaluations should assess the impact of interventions in the long term, if possible following up young people as they enter adulthood.
- Key aspects of the methodology and results of outcome evaluations should be reported in a detailed and consistent manner to promote confidence in their rigour. Socio-demographic characteristics of young people taking part in studies were often poorly reported, making it difficult to judge the relevance and generalisability of the study findings.

(viii) *Children and healthy eating: a systematic review of barriers and facilitators*⁴⁹

This more recent review focused on children aged four to ten years old and was restricted to a synthesis of in-depth intervention studies that had measured fruit and vegetable outcomes and studies that had examined children's own perspectives on food and eating to assess how these might illuminate barriers or facilitators to fruit and vegetable consumption. School based interventions often combined learning about the health benefits of fruit and vegetables with 'hands on' experience in the form of food preparation and tasting. Most of these targeted parents and/or involved them in intervention delivery alongside teachers and health promotion workers. Some included environmental modification involving, for example, changes to the foods provided at school. Results indicated that interventions of this type have a small but significant positive effect. However, different interventions produced different effects. Bigger effects were associated with targeted interventions for parents with risk factors for cardiovascular disease and with those interventions that did not 'dilute' their focus on fruit and vegetables by trying to promote physical activity or other forms of healthy eating in the same intervention. Single component interventions, such as classroom lessons alone or providing fruit only tuck shops were not effective.

Findings from studies that conducted integral process evaluations generated two main messages:

- Promoting healthy eating can be an integral and acceptable component of the school curriculum.
- Effective implementation in schools requires skills, time and support from a wide range of people.

Results also indicated that it is easier to increase children's consumption of fruit than vegetables although it appears to be possible to get children to try new or previously disliked vegetables, particularly if they are given a choice rather than enforcing or rewarding vegetable consumption. It is unclear how these strategies would lead to increases in children's everyday consumption of vegetables.

Children themselves provided valuable insights into their perspectives on food, eating and healthy eating. Six contextual themes emerged:

- Children do not see it as their role to be interested in health.
- Children do not see messages about future health as personally relevant or credible.
- Fruit, vegetables and confectionery have very different meanings for children.
- Children actively seek ways to exercise their own choices with regard to food.
- Children value eating as a social occasion.
- Children see the contradiction between what is promoted in theory and what adults provide in practice.

Implications for practice derived from these themes include simple strategies such as 'branding fruit and vegetables as tasty rather than healthy' 'avoiding promoting fruit and vegetables in the same way' and more complex strategies such as 'make health messages relevant and credible to children' and 'create situations for children to have ownership over their food choices.' Future evaluations should involve researchers, practitioners, children and their parents working in partnership and should employ rigorous evaluation methods.

The reviewers identified a gap in the evidence base in this area with regard to inequalities in health. No studies set out to evaluate the impact of interventions in reducing inequalities in this area, or reported their data in such a way as to enable others to evaluate this (i.e. results were not reported according to different sub-groups of children). Future research should address this gap.

A literature review commissioned in April 2002 by the Expert Panel on School Meals regarding school meal take up and healthy eating among young people provided a number of important pointers for ways to increase the uptake of school meals and to encourage children to select healthier school lunch choices. Some of the key factors identified were as follows:

- Quality of food, availability of choices, nutritional value and price were important to both parents and pupils.
- Recent research evidence indicated that school lunches in Scotland were nutritionally poor.
- School meals were unpopular where there was overcrowding, unappealing dining rooms, long queues and separation from friends (bringing pack lunches or eating out with the school).
- School meals providers felt they were competing with many local shops and takeaways which compromised their efforts.
- The promotion of healthy eating was not seen as a priority by pupils, parents and teachers and there were also concerns around mixed messages generated through the availability of vending machines providing unhealthy snacks and fizzy drinks.
- The provision of adequate nutritional information did not necessarily influence pupils' behaviour in the desired direction.
- The most successful interventions to promote school-based healthy eating appeared to use a whole-school approach where curricular messages were reinforced by provision of a choice of appealing, healthy alternatives for snacks as well as meals.

- However, where conflicting external messages were identified, these undermined the efforts of the school.

The review concluded that initiatives to promote healthy eating among young people should have a clearly stated theoretical basis incorporating effective models of communication and behavioural change and should adopt a behaviour-based approach which includes active involvement of individuals.

7. School-based healthy eating initiatives

Finland and Sweden currently provide free cooked school meals to all pupils. In Finland, according to a law passed in 1943, students in comprehensive schools, upper secondary schools and vocational institutions must be provided with a free nutritious school meal every school day. Recommendations for catering services have been issued for various sectors, including school meal services. The recommendations state that the school lunch should meet one third of the student's daily nutritional requirements, though menus are drawn up locally in municipalities and schools. Recent research, however, has shown that the majority of young people do not eat the full planned meal. Instead, while few skip lunch completely, only a few of them eat a varied, balanced lunch: boys more often eat the main course and drink the milk, while girls more often eat the salad and bread. Pupils see the planned lunch as a selection from which to make their own choices rather than a complete and balanced meal as is intended⁵⁰.

In Sweden, universal provision of free school meals has been in place since the mid 1940s, when municipalities voluntarily took on the responsibility to serve free school meals in schools. During the 1990s, as a reflection of economic constraints, some municipalities proposed to set a fee for school lunches. However, in the late 1990s, legislation was passed, enforcing the responsibility of all municipalities to serve free school meals for all pupils between the ages of seven and fifteen⁵⁰. Neither Finland nor Sweden appears to have evaluated the health effects of the provision of free school meals. Representatives from each country appear to be of the view that free school meals have been in existence for so many years that it would be difficult to find anything to evaluate them against⁵⁰.

A Welsh study conducted in 2002 warned against assuming that provision of healthier school meals automatically results in dietary improvements⁵¹. The Food Standards Agency (FSA) examined school meals in Wales before and after the adoption of nutritional standards and found that, faced with an increased variety of healthier options, many children just ate more chips. Indeed, many pupils ate nothing but chips. Fruit and vegetable consumption also changed very little following implementation of nutritional standards. Further research is needed, but these findings show the importance of ensuring comprehensive evaluation of changes to school food programmes. These results also indicate that changing food culture outside school may be important, given that the home is a major factor in determining food culture.

Some school-based interventions in the UK are showing promising results in encouraging healthier eating in students and their families. The School Fruit and Vegetable Scheme (SFVS), formerly known as the National School Fruit Scheme (NSFS), has been operating across England as a national programme since 2004⁵².

A study into parents' and teachers' views of the NSFS during the pilot phase found that:

- 97% of parents and teachers were satisfied or very satisfied with the scheme.
- 48% of parents thought that the NSFS had made them more aware of the importance of eating fruit.
- 35% of parents said the scheme had increased their awareness of the importance of vegetables.
- 95% of parents said their child 'always', 'often' or 'sometimes' ate the fruit served at school.
- 26% of parents thought that their children and their family overall ate more fruit at home as a direct result of the scheme.
- 13% of parents thought that the levels of vegetables consumed in their homes had increased as a result of the scheme.
- The scheme had the most positive impact on younger parents (under 24 years), parents from lower social grades and parents from the North West.
- Parents from lower social grades reported significantly higher levels of family fruit and vegetable consumption in the home as a result of the scheme than did those from higher social grades and were significantly more likely to say the scheme made them more aware of the importance of fruit and vegetables.⁵³

A more recent evaluation of the SFVS was commissioned by the Big Lottery Fund and published in 2005⁵⁴. The researchers monitored changes in consumption, nutrient intake and attitudes to healthy eating in children from one region before and after they became involved in the scheme. A quasi-experimental approach was used, selecting a stratified random sample of 55 schools in the North East, and a comparison group of 45 schools in Yorkshire and Humber, with the same distribution in terms of school type, performance and percentage of children eligible for free school meals. The study conclusions were that the scheme:

- increased children's awareness of fruit by enabling them to try previously unfamiliar items;
- significantly improved children's consumption of fruit, but appeared not to have any wider impact on diet;
- did not sustain an increased consumption of fruit when children's participation in the scheme came to an end; and
- appeared to increase knowledge of healthy eating, particularly in children from deprived areas.

The researchers speculated that the SFVS may have a longer-term impact on children who are exposed to the scheme for a greater period of time. Also they commented that the potential of the SFVS to positively impact on children's overall diet might be enhanced, if implemented in the context of a whole-school policy designed to promote healthy eating.

Hull City Council has been offering a universal free school meal service across its local authority area since April 2004. This is a pilot programme which will initially run for a period of three years. The strategic aim of the scheme is to raise educational achievement and to contribute to the reduction of health inequalities across the local authority area. A team of researchers from the Educational Studies in the Institute of Learning, University of Hull, is conducting an evaluation to determine the extent to which strategic aims have been achieved and to investigate the relationship between school meal provision and 3 areas: health, education, social capital (<http://www.hull.ac.uk/ces/researchandconsultancy/FreeHealthySchoolMeals.html>).

A novel primary school based intervention in Dundee tested a 'whole school approach' to increase fruit and vegetable intake in children using a range of methods including the adoption of Bash Street Kids cartoon characters as a brand⁵⁵. This initiative was evaluated by a research team led by the University of Dundee and reported in 2000. The researchers concluded that a whole school approach to increasing fruit and vegetable consumption had a modest but significant positive effect on pupils' understanding and knowledge regarding fruit and vegetables as well as on food selection.

8. Healthy eating initiatives in Glasgow

Glasgow City Council currently provides a spectrum of initiatives designed to provide and promote healthy food and drinks throughout Glasgow schools.

(i) *Glasgow's 'Big Breakfast'*

In Scotland, 42% of 11-15 year old school children do not eat breakfast on a daily basis; children from low-income families are more likely to go to school without having had a nutritious breakfast⁵⁶. There is some evidence that as many as 60% of children in deprived areas in England arrive at school having had no breakfast at all or a snack food such as crisps or sweets⁵⁷.

The 'Big Breakfast' service operates in all of Glasgow's primary schools, providing a free breakfast for all primary school pupils. It is part of a multi-strand approach which aims to improve nutritional intake of primary school children, improve their attendance and punctuality and contribute towards higher educational attainment. The service currently provides approximately 7500 breakfasts on each school day. Uptake in all areas of Glasgow during 2004/2005 was 20%, compared to 22% in SIP areas.

The breakfast service across Glasgow was initially piloted in 2002 using four different models of delivery, including new and previously established approaches. Strengths and weaknesses of different models were evaluated and results published in 2004⁵⁸. Conclusions of the evaluation were that the service should continue with some adaptations as perceived benefits seemed to outweigh disadvantages. Four main recommendations were made:

- Supervision: there should be increased staffing provision and recruitment of volunteers/parent helpers.
- Targeting vulnerable children: some of these children did not appear to be accessing the service even though they were a primary target audience. Sensitive and non-patronising targeting of families by schools was called for with appropriate liaison with Social Services.
- Activities after breakfast were identified as important such as the provision of games and equipment and establishment of more widespread tooth brushing schemes.
- Maintaining significant uptake was highlighted as an issue with active promotion to pupils and parents/incentive schemes and rewards for regular attendees.

These recommendations have been addressed in part by Glasgow City Council. Various games, entertainment systems and art materials have been provided for pupils; a greater choice of healthy foods and hot items has been introduced within approximately half of the schools in the scheme. Tooth brushing has been introduced in 31 schools; this number is predicted to rise as volunteers continue to assist in the managing of tooth brushing programmes in the city. Direct and Care Services continue to work towards increased uptake levels a number of approaches including local radio promotions, advertisements and promotional newsletters. However, uptake levels continue to be lower than originally estimated.

(ii) *'Fruit Plus'*

'Fruit Plus' is the largest healthy eating initiative of its kind ever launched in the UK and pre-dates the English National Fruit and Vegetable Scheme. It provides pre-school children, primary school children and children attending special schools with free fruit five times a week during the school year. The main aim of Fruit Plus is to encourage a fruit eating habit amongst pupils that will continue into their adult and home lives. The project places heavy emphasis on integrating the principles of healthy eating into various areas of the school curriculum with the aim of improving health and attainment levels and bringing long-term health benefits. The initiative is part of the Food and Health Framework, developed by Glasgow Healthy City Partnership⁵⁹. It complements other initiatives such as the 'Big Breakfast', 'Hungry for Success' and 'Refresh.' 'Fruit Plus' was built up into a city wide initiative following a pilot study in 2000⁶⁰. The pilot study compared two approaches – 'Fruit Plus' and 'Food Dudes'. 'Food Dudes' was adapted from a project already well developed and evaluated by the University of Bangor, Wales, in schools in England. Findings from the pilot study were positive on a number of dimensions.

- There was a positive change in attitudes, awareness and behaviour amongst pupils in both pilot projects.
- Overall enjoyment of fruit increased.
- There was an increase in fruit consumption by pupils and awareness of recommended amounts of fruit and vegetables increased.
- Marginal increases were reported in the home although at least half of parents surveyed in the pilot study areas felt that the project had positively impacted on their fruit consumption.
- Teachers preferred the 'Fruit Plus' model on the basis of compatibility with the curriculum and less disruption to the timetable.
- There appeared to be little wastage of fruit although some problems in sourcing, delivery and storage were apparent.

On the basis of the findings of the pilot study, 'Fruit Plus' was developed as the 'brand' for Glasgow and established as a city wide initiative, with adoption of the best features of both approaches and using incentives such as bookmarks, badges and certificates. Glasgow City Council currently funds an enhanced provision of fruit to all primary school children from Monday to Friday, augmenting the Scottish Executive's financial support for provision for primary one and two pupils three times per week.

(iii) *Fuel Zones*

In 1997, Glasgow City Council radically redeveloped its school catering service in secondary schools under the banner 'Fuel Zone'. This effectively revolutionised the secondary school catering service in Glasgow, replacing a traditional counter in school dining rooms with a 'high street' style fast food service with a queuing system. The aim of this approach was to create a bright, informal and encouraging atmosphere where pupils could enjoy a tasty, healthier lunch. Fuel Zone menus were developed in a phased approach with the aim of attracting and retaining pupils in the first phase and of influencing food choices and diet during subsequent phases. The Fuel Zone approach was subsequently introduced into primary schools.

A conference presentation by the Director of Direct and Care Services (DACs) of Glasgow City Council in January 2001 demonstrated a marked increase in uptake of school lunches by pupils in secondary schools from 32 % in 1996, prior to the establishment of Fuel Zones, to 72% in 2001, following the implementation of phase two of Fuel Zones⁶¹. Given that Scottish Executive figures for 2001 showed school meal uptake by pupils to be around 50%, these increased rates were higher than the Scottish average⁶². Encouraging upward trends in healthy eating were also presented indicating a 25% increase in selection of healthier options by pupils in Glasgow secondary schools between 1996 and 2001.

In January 2002, an expert panel on schools meals convened with a remit to consider how best to establish standards for school meals, improve the presentation of school meals to improve general take-up and to eliminate any stigma attached to taking free school meals. Their final report, 'Hungry for Success: a whole school approach to school meals in Scotland', presented a range of far reaching and holistic recommendations in relation to the establishment of nutrient standards; links between the curriculum and food provision in schools; elimination of stigma for free meal recipients; partnership working; and improvements to the social and physical environment in schools¹⁵.

The target date for implementation of Hungry for Success (HFS) recommendations was December 2004 for primary and SEN schools and 2006 for secondary schools. A phased implementation has been adopted in Glasgow, retaining the Fuel Zone approach, with initial menus offered in 2004 in primary and SEN schools, then further adaptation and release of new menus scheduled for January 2006. DACS' rationale for this phased approach is to gradually reduce the presence of processed foods on the menu without alienating pupils (and parents). This has been a difficult task as menus were not initially well received by pupils and parents but persistence, good communication and partnership working between DACS staff, teachers and health board colleagues has helped (personal communication from Helena Hailstone).

Information leaflets for parents and pupils have been distributed providing general information about HFS, DACS' 'Eat Well to Live Well' initiatives and parental roles within HFS. In addition, a promotional events calendar has been developed to promote all services operating within 'Eat Well to Live Well' i.e. Glasgow's 'Big Breakfast', 'Refresh', 'Fruit Plus' and 'Fuel Zone'. One of the main promotional tools used this year has been a specially commissioned theatre production "Nutritional Alley" used to inform and engage pupils in all primary and SEN schools with regard to 'Eat Well to Live Well' initiatives. Quarterly pupil/parent newsletters have been distributed to all primary and SEN schools providing an update on current initiatives and detailing the latest Fuel Zone menu. Catering staff in all primary and SEN schools are issued with a standard manual detailing menus and recipes for all catering services including school lunches, tuck shops and additional sales items to ensure that nutrient standards are maintained and opportunities for the selection of healthy options by pupils are maximised. This manual is supported by HFS co-ordinators who provide on site training to all staff and ensure standards are maintained through regular audits.

(iv) *Glasgow's 'Refresh'*

The health benefits of drinking fresh, clean water are well known. Many adults and children do not drink enough water on a daily basis. 'Hungry for Success' recommended that children should have access to adequate amounts of fluids within the school day and that they should be provided with fresh, free, chilled drinking water accompanied by drinking cups or glasses within dining rooms¹⁵.

Between February and August 2003, approximately 600 water coolers were installed in pre-five, SEN, primary and secondary schools effectively giving all pupils in Glasgow schools access to free drinking water throughout the school day, ahead of the HFS recommendation. Free sports bottles were also issued to pupils for them to take to school and refill during the school day as necessary. Feedback obtained during consultation exercises indicates that 77 % of pupils use the coolers to drink water at school and that 89 % of parents are aware of the water in schools project. However, anecdotal feedback indicates some variation in the location of water coolers and their accessibility to pupils. Future consultations could usefully investigate exact location of water coolers including whether or not they are sited in all school dining rooms and how accessible they are to pupils with regard to permission to use them.

9. Monitoring and evaluation

Glasgow's 'Big Breakfast'

A consultation exercise was carried out by Direct and Care Services in June 2004 to examine the efficiency and quality of the Fruit Plus Initiative and the Big Breakfast service and to obtain feedback from stakeholders⁶³. This exercise found that approximately two thirds of P1-P3 pupils and over half of P4-P7 pupils stated that they did not consume breakfast at school – most of these pupils stated that they had breakfast at home, prior to going to school as they preferred to do this. This view was echoed by the majority of parents. Conclusions drawn from this finding were that Direct and Care Services needed to target pupils who stated that do not eat breakfast at home if they wanted to improve uptake. No information appeared to be gathered on the reasons why children did attend the 'Big Breakfast' and it would be useful to ascertain this in future evaluations. Some anecdotal feedback from Direct and Care Services staff indicates that breakfast clubs are used as a pre-school child care facility by working parents as well as providing a service for children from vulnerable families. Also, feedback on tooth brushing amongst those pupils using the breakfast service suggested a significant shortfall in relation to the provision of tooth brushing after eating breakfast in school, despite the fact that half of pupils consulted stated that they would like to brush their teeth after breakfast. In response to this DACS has approached Greater Glasgow NHS Board for additional funding to provide further programmes.

Feedback from some teachers suggested that they felt that the 'Big Breakfast' had impacted positively on various aspects of pupils' lifestyles and behaviour citing positive changes in healthy eating, physical activity, attendance, concentration and social interaction. Further research is required to test the reliability and validity of these findings as there is conflicting evidence in this area.

If further research is to be carried out on the impact and reach of breakfast club services, it may be useful to collect primary data on pupils' actual consumption of foods at breakfast as well as wastage. Further qualitative exploration of pupils' attitudes, beliefs and behaviour in addition to teachers' and parents' views regarding impacts would be an important dimension. A socio-demographic breakdown of pupils attending breakfast clubs would provide valuable data on which pupils are accessing the service, particularly given that the target population is pupils from vulnerable families.

Fruit Plus

Direct and Care Services conducted a consultation exercise in June 2004 to examine the efficiency and quality of the Fruit Plus Initiative and the 'Big Breakfast'⁶³. Findings were as follows:

- Ninety six percent of head teachers who responded felt that children ate and enjoyed fruit given out in class; 70% considered that children ate more fruit at break than they did prior to Fruit Plus but this finding was contradicted by feedback from pupils surveyed, over half of whom stated that they brought sweets, crisps and biscuits for their snack at break rather than fruit.
- Only 57% of head teachers were happy with the variety of fruit offered. Direct and Care Services noted that levels of satisfaction by head teachers around the variety of fruit offered had dropped in comparison to previous consultations and indicated that they would work towards improving performance in this area. The Consultation Action Plan of March 2004 reported that the variety of fruit distributed had been successfully increased⁶⁴.
- Seventy five percent of parents surveyed appeared to be aware of the project and 55% felt that Fruit Plus had encouraged children to ask for more fruit at home. However, only 45% of parents indicated that they are now buying more fruit as a result of the project.

- Sixty nine percent of pupils said they ate more fruit at home since the introduction of Fruit Plus, 50% said they would choose fruit as a snack and 48% considered that their family was eating more fruit at home since the introduction of Fruit Plus. However, the majority of pupils surveyed did not eat the recommended five pieces of fruit per day and only half of pupil respondents indicated that they would choose fruit as a snack.
- No monitoring systems have been established as yet, to measure actual consumption of distributed fruit by pupils and wastage of fruit. This was highlighted in the Consultation Action Plan of March 2004 as a priority for action ⁶⁴. DACS are currently consulting with teachers and head teachers through the use of questionnaires to ascertain their views on the actual consumption of fruit levels in the classroom (personal communication from Sharon Carton).
- With regard to the curricular pack, just under half of teaching staff surveyed found it helpful. This finding was reinforced by feedback from pupils, half of whom indicated that they do not receive lessons on fruit in class.

Further research could examine actual fruit consumption by pupils during the school day (and wastage) as there appears to be some discrepancy between statements regarding purchase of fruit and fruit consumption by pupils and parents and what is happening in reality. Quantitative and qualitative methods could be used to further explore perceived and actual impacts of Fruit Plus.

Fuel Zones

National monitoring with regard to school meals reflects the approach used by the School Improvement Framework which is the current mechanism for monitoring delivery of the National Priorities for Education ⁶⁵. Each National Priority has been translated into an outcome with related performance measures and quality indicators (<http://www.nationalpriorities.org.uk/>). National Priorities Two and Three are particularly relevant to the monitoring of the implementation of 'Hungry for Success' ¹⁵.

For National Priority Two (a framework for learning), the desired outcome is enhanced school environments which are more conducive to teaching and learning with performance measures and quality indicators for local authorities including number and percentage of schools with Health Promoting School status.

For National Priority Three (inclusion and equality), the desired outcome is that every pupil should benefit equally from education with performance measures and quality indicators including, for education authorities, percentage of pupils who are entitled to free school meals and the percentage who take them up.

In addition to these quantitative measures, quality indicators have been included, taken from 'How good is our school?' which can be used by schools as a self-evaluation tool and which are also used by HMIE in their school inspections ⁶⁶.

Hungry for Success sets out four different levels of monitoring ¹⁵:

1. Annual reporting by each school and education authority of number and percentage of schools with Health Promoting School status, percentage of pupils entitled to free school meals and percentage uptake; measures taken to reduce stigma attached to taking free school meals, measures to improve general uptake of school meals. In addition the implementation of nutrient standards is to be monitored using appropriate recording and formal arrangements established to secure dietetic advice and make recommended improvements.

2. As part of the HMIE inspection cycle, to include data on free meal entitlement and uptake, general uptake of meals, trends over time, and quality of dining room facilities. In a sample of inspections include methods for pupil consultation with regard to evaluating the quality of climate and relationships, provide information on school meal provision for pupils from BME backgrounds to evaluate equality and fairness, include a commentary on the promotion of healthy eating habits when evaluating the quality of pastoral care. In addition, a sample of inspections will conduct a more detailed evaluation of school meals provision including accessibility and health promoting environments.
3. A more detailed evaluation of school meals provision will be carried out in a selected sample of schools by HMIE with the help of Nutrition Associate Assessors.
4. The Scottish Executive will commission independent research in 2007 to assess the implementation and impact of recommendations of 'Hungry for Success'.

As part of level three monitoring described above, a sample of schools was inspected by the HMIE, working with Specialist Nutrition Associate Assessors by the end of June 2005 and a progress report published in October 2005⁶⁷. The report concluded that good progress overall was being made to implement the recommendations to improve school meals and other aspects of food in schools but that there were variations in how effectively schools within local authorities had implemented 'Hungry for Success'. A number of general and specific issues were highlighted in the report.

At a local level, in Glasgow, a number of mechanisms are in place to implement, monitor and evaluate school meals provision as part of the implementation of 'Hungry for Success'. There are two 'Hungry for Success' area operations managers – one with responsibility for primary and SEN schools and one for secondary schools. With regard to primary and SEN schools, ten Hungry for Success co-coordinators are employed, each responsible for a geographical cluster of schools.

Monitoring and evaluation of the primary and SEN school meals service includes the following:

- Catering managers in individual schools complete 'product control' sheets on a daily basis which detail amounts of all items sold and quantities left following the distribution of each school meal. No data on actual consumption and wastage are gathered.
- Audits on quality of meals are also conducted on a regular basis and following the introduction of new menus.
- Short focused postal questionnaires with scope for additional comments are distributed to all head teachers on a regular basis. Response rates are generally over 90 %. Questionnaires are collated and analysed by DACS and are used to inform action plans. Data are also triangulated through face to face interviews with head teachers and other teaching staff, phone calls and informal discussions with head teachers, HFS coordinators and catering managers (personal communication from Helena Hailstone).
- Parents are able to sample food from current menus during regular 'taster sessions' at parents' nights in individual schools. Parents' nights provide an important opportunity for DACS to engage with and involve parents regarding the provision and promotion of healthy food in schools although more motivated parents are likely to be represented at these events and the challenge for DACS is to engage with harder to reach groups.
- Quarterly Pupil Forums are utilised to consult on proposed developments in all 'Eat Well to Live Well' initiatives prior to implementation to ensure pupils' views are included.
- Individual Pupil Councils are used to obtain feedback and ideas from pupils. Again, although this is a valuable method of obtaining feedback, views may not be representative of pupils generally. A pupil survey was carried out in all primary schools before the implementation of the first menu.

Other planned research/evaluation

- Greater Glasgow NHS Board intends to conduct a postal health survey in all secondary schools within its health board area in early **2005**. One section of this survey will explore aspects of pupils' dietary intake including breakfast/lunch consumption.
- A home learning pilot project on fruit consumption, involving primary school pupils and their parents is also scheduled to take place. This should provide important insights around the potential of home/family involvement in fruit consumption by children and their families

10. Conclusions

Schools are a key setting for the implementation of food and health policy in Scotland. There is a clear evidence base for the provision and promotion of healthy food and drinks in schools to be part of a whole-school, health promoting approach. Many innovative interventions in schools have taken place and many more are underway. The challenge is to evaluate interventions robustly and effectively in order to be able to assess their impacts, particularly over longer periods and between different groups of children and young people.

In many respects, Glasgow appears to be leading the way in its approach to healthy eating in schools – further research and evaluation, particularly using observational methods, will provide useful and relevant insights for future planning of the service.

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12. Appendix: search strategy

The literature review was conducted to take account of the diverse sources of evidence available regarding the provision and promotion of healthy food and drinks in a school setting. A search was conducted for published journal articles and reports, systematic reviews, documents/reports outlining policy and practice and any other relevant unpublished material such as local evaluation reports.

Search terms included: 'food policy' 'schools' 'healthy eating' 'children' 'fruit' 'nutrition' 'choice' 'health promotion' 'breakfast-club' 'curriculum' 'pupils' 'education' 'behaviour change' 'physical environment' 'social environment' 'inequalities' 'healthy food provision.' Search terms were combined in a variety of ways and where appropriate, were expanded or truncated.

Academic databases searched for published journal articles included EBSCO, OVID, Science Direct, BMJ and PHeL.

The following sites were searched for systematic reviews:

- The Campbell Collaboration
- The Cochrane Library
- The EPPI Centre
- Health Evidence Canada
- The York NHS Centre for Reviews and Dissemination (including DARE)
- The US Center for Disease Control and Prevention (CDC).

Other on-line sites searched were:

- The Scottish Executive
- NICE
- NOF
- FSA
- Health Scotland
- HMIE
- The Health Promoting Schools Unit.

In addition, members of the advisory group provided relevant documents/reports and suggested further contacts to obtain useful information.