The Smart Snacks Scheme is a multi-disclipinary approach aimed at improving the snacking habits of school-children in the Western Health & Social Services Board area of Northern Ireland

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Acknowledgements

The authors wish to thank all those who gave advice and support to this initiative and schools for their participation.

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Smart Snacks Scheme: A healthy breaks initiative in the school environment

Nearly 40% of primary schools have adopted the scheme leading to a significant improvement in nutrition and dental health, environmental and psychological issues.

Dental health was reported to be the main health problem in children living in Northern Ireland

Others mostly decide the diet of young children. Advertising, peer pressure and family diet however all influence food choices. Because of their role in shaping the habits and behaviours of pupils, schools are in a unique position to encourage and facilitate healthy eating.

However, the efforts of schools to encourage pupils to adopt a healthy balanced diet will be undermined if parents do not seek similarly to ensure that their children eat sensibly (Eating and Health, 1996).

The healthy eating messages are defined as eating less fat, sugar and salt and eating more fibre (National Advisory committee on Nutrition Education, 1983; Department of Health, 1991). The Health Education Authority (1995) have produced guidelines on snacking habits in school-children and stated that children eat more than the recommended amounts of fat and sugary foods.

The most detailed national survey of children aged 4-18 was published in June 2000 by the Food Standards Agency and the Department of Health. This report states that although there is no evidence of widespread malnourishment, there are specific areas of concern, in particular in relation to poor intakes of fruits and vegetables and low physical activity levels, both associated with increasing risks to health in later life (Gregory & Lowe, 2000). The survey indicates that British children are eating less than half the recommended "5-a-day" portions of fruit and vegetables.

Tooth decay

Frequent consumption of sugary foods and drinks have been implicated in the development of tooth decay. In the National Diet and Nutrition survey, three quarters of young people consumed standard carbonated soft drinks with approximately 45% consuming diet varieties (Gregory & Lowe, 2000).

In a recent health and lifestyle report in the EH&SSB of Northern Ireland, dental health was reported to be the main health problem in children (McErlain & Gaffney, 2000). Similarly, in the Western Health & Social Services Board area of Northern Ireland, dental health is a major health problem with numbers of decayed, missed and filled teeth (dmft) being one of the worst in Northern Ireland in relation to 5 year olds. The dmft for 5 year olds in the Western Area of Northern Ireland in 1997/98 was 2.91 compared with the UK mean of 1.68 (Pitts et al. 1999)

Snacking

Eating more frequently is a characteristic of modern living with snacking being a very

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common pattern of eating. Evidence suggests that a significant proportion of children's pocket money is spent on snack foods, sweets and soft drinks (McCrea, 1993). Snacks are important to children and may be especially beneficial to those with a small appetite. However, most of the snacks consumed are high in sugar and fat and can have a significant contribution to dental health and predispose children to chronic diseases such as heart disease in later life (Newman et al. 1986).

Eating habits that are established in early life are often maintained into adulthood when they can be more difficult to change (N.I Chest, Heart and Stroke Association, 1995; HEA, 1995). school-children can be encouraged to eat more healthily by the development of schools policies on healthy snacks. The Smart Snacks Scheme was therefore set up to benefit the schoolchild, the school and the environment in promoting healthy nutritional habits in school-children.

Smart Snacks Scheme

The Smart Snacks Scheme was set up in 1998 and is a joint initiative between Westcare Business Services Health Promotion Department, Western Education & Library Board (WELB), Health & Social Care Trusts and Environmental Health Department. Support is ongoing from local councils, businesses and the community. The Western Health and Social Services Board (WHSSB) area of Northern Ireland covers one quarter of Northern Ireland and has a population of approximately 280,000. It includes the counties of Derry, Tyrone and Fermanagh.

The WELB and the WH&SSB have a similar geographic spread and contain 11 nursery, 196 primary, approximately 190 playgroups and 10 special schools. The Smart Snacks Scheme targets school-children in the primary, special and nursery/playgroup sector.

Health promotion staff in conjunction with dietetic, dental, environmental health and education staff drew up the following criteria:

- ✓ During mid-morning breaktime, only milk/water and/or fruit/vegetables should be allowed unless individuals have special therapeutic dietary requirements
- ✓ There must be a written healthy snacks policy
- ✓ All parents must be informed in writing of the schools intention to adopt a healthy snacks policy and the benefits to the school

In 1998, 33 schools were involved in the initiative, ninety six additional schools came on board in 2000/2001 showing approximately a 300% increase in schools bringing the total schools involved to 129. The initiative has been growing from strength to strength and in 2002/03 has involved over 220 schools.

Evaluation

In the year 2000, a triangulation methodology was employed in the evaluation process.

Phase 1 involved a postal questionnaire being sent to primary schools (n=52) within the scheme, and to a control sample of schools (n=27) matched for socio-economic, geographic, demographic and religious belief. The questionnaire, containing 5 questions with sub-sections, was sent to the health education co-ordinator of the schools and a stamped addressed envelope enclosed for the response. The questionnaire contained questions on perception, effectiveness and attitudes to the scheme and how it could be supported and improved in the school environment.

Phase 2 involved one-to-one interviews with teaching staff and a sample of parents. Phase 3 involved undertaking focus groups with school-children. Data on phase 1 were analysed using the statistical package SPSS 10.0.

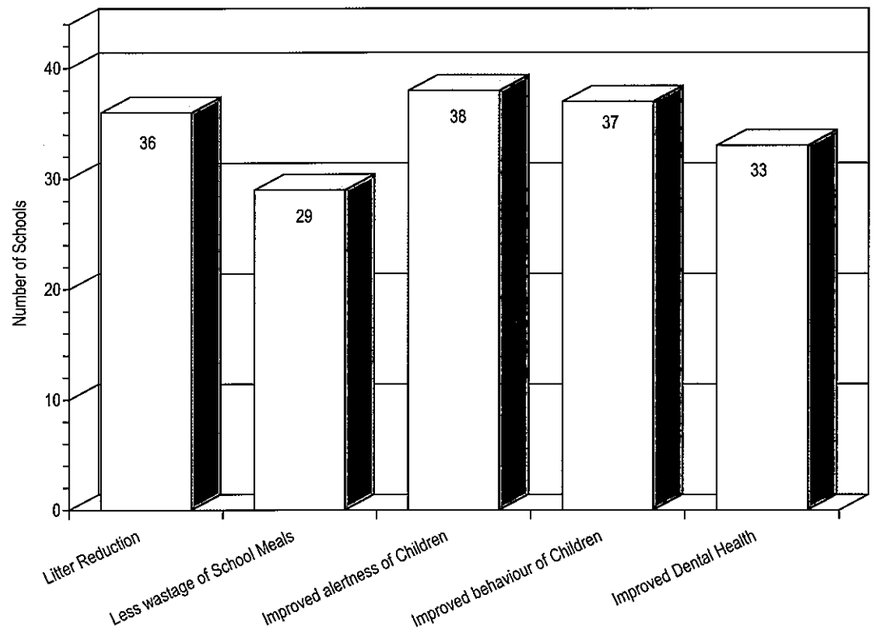
Results

Phase 1 (quantitative)

Graph 1 (below) shows the results from the evaluation questionnaire carried out on teachers in the study primary schools (n=52). The response rate from the study primary schools was 77% (n=44). Results show the number of schools stating perceived health improvements after the introduction of the Healthy Breaks Initiative. P value < 0.05 deemed as significant.

Results from the evaluation were very encouraging

Graph 1: Changes in schools after the introduction of the Healthy Breaks Initiative



Results from the evaluation were very encouraging. Schools perceived litter reduction (P.001), wastage of school meals (P.05), alertness and concentration of pupils (P.001), behaviour of children (P.001) and dental health (P.01) to be improved after the introduction of the scheme (non-parametric T-tests).

Schools reported that teachers have shown an excellent response and parents and pupils a good-excellent response to the implementation of the scheme. Seventy three percent and seventy one percent of schools respectively stated that they would find a resource pack and assistance with the provision of fruits and vegetables useful in helping them stay in the scheme.

Other areas identified from the evaluation were that teachers felt that children were more aware of the healthy eating messages as a result of the scheme in their schools (58%) and that the scheme was effective in all key stages of the primary school setting (98%).

Control sample

In the control sample (n=27), schools were asked to identify reasons why they haven't partaken in the scheme. The main reasons were that: (i) they were already involved in the WH&SSB health promoting schools award and felt this was inclusive of the Smart Snacks Scheme, and (ii) they felt the criteria were too restrictive.

Results

Phase 2 & 3 (qualitative)

Due to time constraints only a sample of the schools were visited (n=15) for phase 2 and 3 with minor modifications made to the questions used as in phase 1 of the triangulation process. Responses to phase 2 and 3 were as follow: -

- ▷ Both parents and children felt the Healthy Breaks Initiative was a good idea due to the reasons cited in phase 1, but also because children were more willing to eat their lunch and were less interested in sugary and fatty foods

- A small proportion of parents felt that the criteria were too strict and felt that the inclusion of sandwiches would be a useful addition. A small proportion of children cited that they would like one day a week where they could have "naughty" snacks
- Teachers stated that children were learning more about healthy eating as they brought different varieties of fruits and vegetables for break time and the scheme was being incorporated into the curriculum i.e. Science, Maths, English. Also, the scheme stimulated children to make healthier choices at lunchtime
- Of the children interviewed all were aware of the scheme being run in their school and were aware of the importance of healthy snacking for teeth and overall health
- Teachers and parents alike stated that they felt that if a child had arrived at school without breakfast, this would warrant additional snacks being taken at snack time.

Support

Teachers and parents were asked what support would be useful in the development and implementation of the scheme. Teachers stated that the following would be useful:

- suggestions on how to deal with class parties and rewards
- assistance with providing fruits and vegetables in the school at a cost price
- a local contact person who they could identify as the link person for the Healthy Breaks Initiative
- resources and support materials for teaching

For school personnel, the strongest justification for programmes and services in schools is the effect on students cognition performance and thus their educational achievement.

The majority of parents stated that they were happy with the running of the Healthy Breaks Initiative by the school.

Discussion

The dual function of health promotion is to empower individual choices and raise consciousness about social health issues so that hopefully healthy public policy may be implemented (Tones et al. 1991). This is the ethos of the Smart Snacks Scheme. The scheme seeks incremental improvements by integrating small-scale changes into the sociocultural fabric of community life.

Over the past 20 years, mainly due to the exposure to fluoride, a significant reduction in dental caries has been observed despite the fact that sugar consumption has remained stable (Bratthall et al. 1996). The local population of the WH&SSB Area of Northern Ireland do not benefit from the addition of fluoride to their water supply, therefore the frequency of consumption of fermentable carbohydrates, particularly between meals becomes an importance risk factor for dental decay. Recommendations made by the British Dental Association to restrict the consumption of sugary foods and drinks to meal times given in line with general healthy eating advice (Kandelman, 1997) would support the need for a Healthy Breaks Initiative where there is a high risk of dental decay.

Improved health

Within the Smart Snacks Scheme, the evaluation would suggest that the study primary schools showed an improvement in dental health. This improvement was illustrated in a comparative study from dental school screenings carried out prior (1996/7) and after the schools had taken part in the award scheme for 3 years (2000/1). The study primary schools showed a significant improvement in the percentage of those 'caries free' (P 0.05, n = 17) after the three year period (WHSSB, unpublished data).

Also, as illustrated in Graph 1 (page 11), teachers in 33 out of the 44 schools perceived that dental health was improved as a result of the introduction of the Smart Snacks Scheme in their schools. This increase can in part be attributed to the introduction of the scheme and possibly also to other oral health campaigns ongoing in schools such as the toothbrushing scheme and oral health education programmes within the WHSSB area.

Educational achievement

For school personnel, the strongest justification for programmes and services in schools is the effect on students cognition performance and thus their educational achievement (ADA, 1995). The evaluation procedure of the scheme showed that a statistically significant proportion of teachers citing that behaviour and cognition of school-children were improved after introduction of the Smart Snacks Scheme. A recent meta-analysis on the effect of sugar on behaviour and cognition on 16 studies concluded that sugar does not affect behaviour or cognitive performance of children, however, a small effect of sugar on subsets of children couldn't be ruled out (Wolraich et al. 1995). Another more recent publication however reported that, similar to the Smart Snacks Scheme, by banning high-sugar and high-fat snacks the conduct and academic performance of pupils was improved (Welford, 1999).

Environmental issues

Environmental issues were highlighted in the Smart Snacks Scheme evaluation where litter was decreased in schools partaking in the award scheme. Another study in Northern Ireland cited that schools reported less litter problems in school playgrounds when a Healthy Breaks Initiative was introduced into their schools (Mc Kinley et al. 1995).

Fruits and vegetables

Research indicates that higher intake of fruits and vegetables are associated with lower risk of cancers and coronary heart disease (Department of Health, 1994; Department of Health, 1998). Several studies have shown that schools interventions have shown improvements in nutritional knowledge and intake of fruits and vegetables in the diet (Crawford et al. 1999; Perry et al. 1998; Reynolds et al. 2000).

Teachers and parents alike stated that in this Healthy Breaks Initiative children's knowledge and attitude to healthy eating had improved. The direct nutritional effects of school meal programs have been demonstrated (Lytle et al. 1993; Meyer et al. 1989). Within this Smart Snacks Scheme there was less wastage of school meals suggesting that the nutritional value of these meals were being achieved.

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A crucial time

Overall, improvements in school-children health cannot be attributed alone to the introduction of the Smart Snacks Scheme but possibly can in part contribute to the overall improvement. Many lifelong health behaviours are formed in the early years of life, suggesting that the primary school years are a crucial time to intervene.

References

American Dietetic Association (1995). School-based nutrition programs and services - position of ADA, SNE and ASFSA. *Journal of the American Dietetic Association*, 95: 367-369.

Bratthall, D. (1996). Dental caries: intervened-interrupted-interpreted. Concluding remarks and cariography. *Eur. J. Oral Science*, 104: 486-491.

Crawford, A., Topping, C. & Carpenter, J. (1999). Providing a healthy snack food in school - a pilot project in Manchester. *Int. J. Health Prom. & Educ*, 37(3): 110-1.

Department of Health. (1991). *Dietary Reference Values for Food Energy and Nutrients for the United Kingdom.* Report of the panel on Dietary Reference Values of the Committee on Medical Aspects of Food Policy. Report on Health and Social Services, 41. London, HMSO.

Department of Health. (1998). *Nutritional Aspects of the Development of Cancer.* Report of the working group on diet and cancer of the Committee on Medical Aspects of Food Policy. Report on Health and Social Services, 48. London, The Stationery Office.

Department of Health. (1994). *Nutritional Aspects of Cardiovascular Disease.* Report of the Cardiovascular Review Group of the Committee on Medical Aspects of Food Policy. Report on Health and Social Services, 46. London, HMSO.

Department of Health & Social Services. (1996). *Eating and Health, A food and nutrition strategy for Northern Ireland.* Belfast: HPANI.

Gregory, J. & Lowe, S et al. (2000). *National diet and nutritional survey: young people aged 4-18 years.* Volume 1. A survey carried out by the MAFF and the Departments of Health by the Offices of National Statistics and the Medical Research Council. London: The Stationery Office.

Health Education Authority (1995). *Diet and Health in School age children: Nutrition briefing paper.* London: Health Education Authority.

Kandelman, D (1997). Sugar, alternative sweetners and meal frequency in relation to caries protection: new perspectives. *Brit. J. Nutr.* s121-s128.

Lytle, LA., Kelder, SH., Synder, MP (1993). A review of school food service research. *Sch. Food Serv. Res. Rev.* 17: 7-14.

Meyer, AF., Sampson, AE., Weitzman, M., Rogers, BL., Kayne, H (1989). School breakfast program and school performance. *Am J Dis Child.* 143: 1234-1239.

Moynihan, P.J. (1995). The relationship between diet, nutrition and dental health: an overview and update for the 90's. *Nutr. Res. Rev.* 8: 193-224.

Mc Crea, D. (1993). *"Marketing food to children"* In: Food for children - influencing choice and investing in health. National Forum for Coronary Heart Disease Prevention, London.

McErlain & Gaffney, B. (2000). *The health and lifestyle of children and their families.* A survey carried out for the Department of Social Medicine and the Health Promotion Agency for Northern Ireland. Belfast: HPANI.

McKinley, M., Oliver, M. & Livingston, M. (1995). Boosting Better Break-times for children: an inspiring start. *Nutrition & Food Science*, 5: 5-9.

National Advisory Committee on Nutrition Education. (1983). *A Discussion Paper on Proposals for Nutritional Guidelines for Health Education in Britain.* London: Health Education Authority.

Newman, W.P., Freedman, D.S., Voors, A.E. et al. (1986). Relation of serum lipoprotein levels and systolic blood pressure to early atherosclerosis. *New England Journal of Medicine*, 314: 138-144.

Northern Ireland Chest, Heart and Stroke Association (1995). *An investigation into the nutritional quality of school meals in Northern Ireland.* Belfast: Northern Ireland Chest, Heart and Stroke Association.

Perry, C.L., Bishop, D.B., Taylor, G., Murray, D.M., Mays, R.W., Dudovitz, B.S., Smyth, M., Story, M (1998). Changing fruit and vegetable consumption among children: the 5-a-day power plus program in St Paul, Minnesota. *American Journal of Public Health*, 88(4): 603-9.

Pitts, N.B., Evans, D.J. Nugent, Z.T. (1999). The dental caries experience of 5-year old children in Great Britain. Surveys co-ordinated by the British Association for the Study of Community Dentistry in 1997/1998. *Community Dental Health.* 16:50-56.

Reynolds, KD., Franklin, FA., Binkley, D., Raczynski, JM., Harrington, KF., Kirk, KA., Person, S. (2000). Increasing the fruit and vegetable consumption of fourth-graders: results from the high 5 project. *Preventive Medicine*, 30(4): 309-19.

Tones, K., Tilford, S., & Robinson, Y. (1991). *School health education.* In: Health education, effectivness and efficiency. Chapman & Hall: London.

Welford, H. (1999). Food for thought. *Community Practitioner.* 72: 241-2.

Wolraich, M.L., Wilson, D.B., & White, J.W (1995). The effect of sugar on behaviour or cognition in children. *JAMA.* 274(20): 1617-21.