

Health-promoting schools: an opportunity for oral health promotion

Stella Y.L. Kwan,¹ Poul Erik Petersen,² Cynthia M. Pine,³ & Annerose Borutta⁴

Abstract Schools provide an important setting for promoting health, as they reach over 1 billion children worldwide and, through them, the school staff, families and the community as a whole. Health promotion messages can be reinforced throughout the most influential stages of children's lives, enabling them to develop lifelong sustainable attitudes and skills. Poor oral health can have a detrimental effect on children's quality of life, their performance at school and their success in later life. This paper examines the global need for promoting oral health through schools. The WHO Global School Health Initiative and the potential for setting up oral health programmes in schools using the health-promoting school framework are discussed. The challenges faced in promoting oral health in schools in both developed and developing countries are highlighted. The importance of using a validated framework and appropriate methodologies for the evaluation of school oral health projects is emphasized.

Keywords Oral health; Oral hygiene; Schools; School health services; Health education, Dental; Food services; Health behavior; Health promotion/methods; Health policy (*source: MeSH, NLM*).

Mots clés Hygiène buccale; Hygiène bucco-dentaire; Etablissement scolaire; Education sanitaire dentaire; Service hygiène scolaire; Restauration; Hygiène de vie; Promotion santé/méthodes; Politique sanitaire (*source: MeSH, INSERM*).

Palabras clave Salud bucal; Higiene bucal; Servicios de salud escolar; Escuelas; Educación en salud dental; Servicios de alimentación; Conducta de salud; Promoción de la salud/métodos; Política de salud (*fuentes: DeCS, BIREME*).

الكلمات المفتاحية: صحة الفم؛ نظافة الفم؛ المدارس؛ خدمات الصحة المدرسية؛ التثقيف بصحة الأسنان؛ الخدمات الغذائية؛ السلوك الصحي؛ تعزيز الصحة؛ أساليب تعزيز الصحة؛ السياسات الصحية (المصدر: رؤوس الموضوعات الطبية، المكتب الإقليمي لشرق المتوسط)

Bulletin of the World Health Organization 2005;83:677-685.

Voir page 684 le résumé en français. En la página 684 figura un resumen en español.

يمكن الاطلاع على الملخص بالعربية في صفحة 684.

Introduction

Oral health is fundamental to general health and well-being. A healthy mouth enables an individual to speak, eat and socialize without experiencing active disease, discomfort or embarrassment. Children who suffer from poor oral health are 12 times more likely to have restricted-activity days than those who do not (1). More than 50 million school hours are lost annually because of oral health problems which affect children's performance at school and success in later life (2).

Schools provide an effective platform for promoting oral health because they reach over 1 billion children worldwide. The health and well-being of school staff, families and community members can also be enhanced by programmes based in schools (3). Oral health messages can be reinforced throughout the school years, which are the most influential stages of children's lives, and during which lifelong beliefs, attitudes and skills are developed. This article examines the potential for promoting oral health through schools, based on the WHO Health-Promoting School (HPS) framework.

Need for oral health promotion in schools

Oral disease can lead to pain and tooth loss, a condition that af-

fects the appearance, quality of life, nutritional intake and, consequently, the growth and development of children. The burden of oral disease is considerable. Tooth decay and gum disease are among the most widespread conditions in human populations, affecting over 80% of schoolchildren in some countries (4-6). The prevalence of other oral disorders such as dental erosion and enamel defects is rising (5, 6). Many children have experienced oral trauma, a substantial proportion of whom are under the age of 5 years (7). Some tobacco-containing products are marketed directly at children and adolescents; people who start consuming these products at an early age may have an increased risk of oral cancer in later life (8). Noma, a devastating and potentially life-threatening condition, affects a large number of children in Africa, Asia and Latin America (9).

Oral disease is one of the most costly diet- and lifestyle-related diseases (10, 11). The cost of treating dental decay alone could easily exhaust a country's total health care budget for children (12). However, the cost of neglect is also high in terms of its financial, social and personal impacts (13).

Many oral health problems are preventable and their early onset reversible. However, in several countries a considerable number of children, their parents and teachers have limited knowledge of the causes and prevention of oral disease (14-17),

¹ Dental Public Health, Leeds Dental Institute, Clarendon Way, Leeds LS2 9LU, England. Correspondence should be sent to this author (email: s.kwan@leeds.ac.uk).

² Oral Health Programme, World Health Organization, Geneva, Switzerland.

³ Department of Clinical Dental Sciences, School of Dentistry, University of Liverpool, England.

⁴ Department of Preventive Dentistry, Dental School of Erfurt, Friedrich-Schiller University of Jena, Germany.

Ref. No. 04-020305

(Submitted: 18 February 2005 – Final revised version received: 24 June 2005 – Accepted: 27 June 2005)

Table 1. Examples of oral health-related school health policies

Policy areas	Examples of issues for consideration
Healthy school environment	<ul style="list-style-type: none"> • Safe and well-designed school buildings and playgrounds to prevent injuries and avoid “sick building syndrome” • No smoking on the school premises • Fluoridation (e.g. of milk) • A ban on the sale of unhealthy or harmful foods and substances in the close vicinity of the school • Safe water and good sanitation facilities • A caring and respectful psychosocial environment • A protocol for dealing with bullying and violent behaviour, as well as interpersonal conflicts
Healthy eating	<ul style="list-style-type: none"> • Healthy foods must be made available in the school canteen, tuck shop, kiosks and vending machines • Only nutritious meals are served in the school canteen • Promotion of 5-a-day (fruit and vegetables)^a • Drinking-water fountains throughout the school • Training for cooks and food providers • Assessment and surveillance of nutritional status
No sugar	<ul style="list-style-type: none"> • A ban on sugary foods and drinks on the school premises
No alcohol	<ul style="list-style-type: none"> • A ban on alcohol consumption on the school premises
No smoking	<ul style="list-style-type: none"> • A ban on smoking on the school premises • Smoking cessation services and counselling
Oral health education	<ul style="list-style-type: none"> • Oral health education should form part of all subjects in the school curriculum • Daily supervised toothbrushing drills • Training for parents about good oral health and encouragement for them to take part in health promotion activities at school • Training for school staff
Oral health service	<ul style="list-style-type: none"> • Working closely with central or local oral health service providers • Dealing with dental emergencies • Role of teachers in oral health surveillance, screening and basic treatment, e.g. ART^b • Monitoring of oral health-related complaints and absenteeism. • Training for school staff
Oral injury	<ul style="list-style-type: none"> • Accident prevention • Clear protocol of vital actions to be taken without delay • Monitoring incidence of oral trauma
Physical exercise	<ul style="list-style-type: none"> • Commitment to provide safe facilities for training in sport and leisure activities • Exercise and physical education are a compulsory part of the school curriculum • A protocol on safe sport, e.g. use of mouth guards
Control of cross-infection	<ul style="list-style-type: none"> • Clear guidelines on how to control cross-infection • Training for school staff
Policy development	<ul style="list-style-type: none"> • Training for developing policies and action plans • Students, school staff, families and community members are to be involved in the planning, development and review process • School health team, community advisory committee, PTA^c and school governors should meet at least 4 times a year
Others e.g. school ethos	<ul style="list-style-type: none"> • Commitment to an integrated school community • The role of school in supporting local health issues, e.g. water fluoridation • Support for school- or community-based health promotion activities such as breakfast clubs

^a Programme to encourage consumption of at least five servings of fruit and vegetables per day.

^b ART, atraumatic restorative technique.

^c PTA, parent-teacher association.

compounded by a lack of affordable fluoride toothpaste and poor access to oral health care. The problems are exacerbated by the consumption of sugary snacks and carbonated drinks which is high among children and adolescents (18).

Given that many risk behaviours stem from the school-age years, schools have powerful influences on children's development and well-being (18–20). The need for the promotion of oral health in schools is evident and it can easily be integrated into general health promotion, school curricula and activities. Children can be provided with skills that enable them to make healthy decisions, to adopt a healthy lifestyle and to deal

with conflicts. Healthy behaviours and lifestyles developed at a young age are more sustainable. Messages can be reinforced throughout the school years.

Global School Health Initiative

Based on the guiding principles of the Ottawa Charter for Health Promotion and the recommendations of WHO's Expert Committee on Comprehensive School Health Education and Promotion, the WHO Global School Health Initiative was launched in 1995. The Initiative aims to foster health-promoting

schools (HPSs); these are schools that constantly strengthen their capacity as a healthy setting for living, learning and working (21). It seeks to mobilize and strengthen health promotion and education activities through schools to improve the health of students, school staff, families and the community.

The Initiative comprises four key strategies, namely, building capacity to advocate for improved school health programmes; creating networks and alliances for the development of HPSs; strengthening national capacity; and research to improve the effectiveness of school health programmes. The Initiative helps countries develop strategies and collaboration between health and education agencies as well as programmes to improve health through schools. Global, regional and local networks have been developed to enable schools to share their experiences. Numerous technical reports have been published by WHO since 1995 to help schools to become HPSs.

Setting up oral health programmes in schools

Using the structures and systems already in place, a school is an efficient setting for the promotion of oral health. Promotion of oral health can trigger the installation of vital facilities such as safe water and sanitation. Initiatives that adopt the HPS strategies are effective, leading to potential long-term cost savings (22). The key components of an HPS are healthy school environment, school health education, school health services, nutrition and food services, physical exercise and leisure activities, mental health and well-being, health promotion for staff and community relationships and collaboration. Each area offers many opportunities for addressing oral health issues either as a specific project or as part of a general health promotion strategy. It is crucial that these initiatives are supported by school health policies (Table 1). Although a specific policy can be developed to tackle a single issue, it may be useful to address several problems or a number of risk factors in a single policy.

Healthy school environment

Oral health can be promoted through initiatives that aim at providing a supportive school environment. Safe playgrounds and buildings together with a smoke-free and stress-free environment and the availability of healthy foods can help reduce the risk to oral and general health and promote sustainable healthy lifestyles. A ban on selling unhealthy snacks in schools could be a starting point. Safe water and sanitation facilities are essential for toothbrushing drills and for controlling cross-infection. Oral health promotion should also address the sale of unhealthy foods and drinks and of tobacco-containing products to students in the vicinity of school premises.

School health education

Providing education on oral health in schools helps children to develop personal skills, provides knowledge about oral health and promotes positive attitudes and healthy behaviours. Oral health education can be taught as a specific subject or as part of other subjects, addressing the underlying physical, psychological, cultural and social determinants of oral and general health. Integrated approaches with active participation promote sustainable changes in behaviour (22). Oral health issues can be incorporated effectively into the curriculum (Table 2) (6, 23). Appropriate training of teachers and peer educators is critical. In some countries, oral health education is provided by municipal dental health services (Table 3).

Table 2. Oral health topics that can be integrated into other subject areas in the school curriculum

Subjects	Oral health topics or related activities
Science Biology Chemistry Food science Nutrition Water	<ul style="list-style-type: none"> • The body, mouth and teeth; body hygiene and oral hygiene • Diseases of the mouth, body and mind • Food and the body, mouth and teeth • Nutrition and food choice • Tobacco, alcohol and oral health • Laboratory experiments of the effect of food and drinks on teeth • Germs • Fluoride
Sociology Social sciences Humanities Personal development and lifestyles	<ul style="list-style-type: none"> • The family, society • Race, culture and ethnicity • Health and social care; health care system • The dental team and other health care professionals • Costs of health care • Disease burdens and the society • Lifestyles and oral health • Interpersonal relationships • Conflict management • Bullying and antisocial behaviour • Accident prevention • Responsibility at home and in the society • Care for others • Conducting simple oral health investigations and surveys (classroom- or school-based)
Mathematics	<ul style="list-style-type: none"> • Counting the number of teeth • The sugar clock • Presenting results using graphs • Oral health statistics on the family, school and society • Charting growth and development including tooth eruption
Language	<ul style="list-style-type: none"> • Story writing • Poetry about oral health
IT^a and computer studies	<ul style="list-style-type: none"> • Searching oral health information • Presenting findings
Arts and crafts	<ul style="list-style-type: none"> • Designing visual aids • Drawing and painting • Making costumes and games • Exhibitions in the school and the community
Music and drama	<ul style="list-style-type: none"> • Role playing • Oral health songs
Sport science and physical education	<ul style="list-style-type: none"> • Sport safety; use of mouth guards • First aid • Substance abuse • Awareness effects of performance-enhancing drinks on teeth

^a IT, Information technology.

School health services

In addition to offering training and expertise and supplying oral health materials, the school health team works with the primary health care team to provide oral health education, screening, diagnosis, needs assessment, preventive care, treatment, regular monitoring and, for more complicated conditions, referral to other dental or medical specialists and secondary care. Models for delivering such services vary immensely between countries.

Whereas there are comprehensive on-site oral health facilities in schools in some industrialized countries, many schools in developing countries do not have adequate infrastructure and resources to provide these services. In some developing countries, the provision of emergency care, tooth extraction and basic restorative and preventive oral care may prove very important. Schools may be the only place for children, who are at the highest risk of dental disease, to gain access to oral health services.

Nutrition and food services

Healthy eating programmes should be developed to ensure that the canteens, tuck shops, kiosks and vending machines in schools are providing nutritious meals and healthy snacks. Children can be empowered to develop healthy dietary habits from an early age through school health education. Oral health can form part of schemes for the promotion of general health, as with the breakfast clubs that have been set up to support healthy eating, and be incorporated into the assessment and surveillance of nutritional status. Outside caterers and suppliers should be encouraged to support healthy eating initiatives in schools.

Physical exercise and leisure activities

Although sports and physical activities are beneficial to health, students should be educated about the harmful effects of isotonic drinks with high acidity and sugar content that can lead to dental caries and erosion (24). To reduce the risk of oral trauma, the use of mouth guards should be encouraged in high-risk contact sports (25).

Mental health and well-being

Stress may lead to poor diet, smoking and violent behaviours that are detrimental to health (26, 27). School programmes

that help children develop self-esteem and confidence as well as reducing stress and conflicts in schools should form part of the curriculum. Children and school staff should be equipped with the skills that help them prevent and, if unavoidable, deal with interpersonal conflicts, stress, peer pressure and other social forces. The provision of counselling and support services for students and staff would be invaluable.

Health promotion for school staff

Healthy and tobacco-free school environments, together with supportive organizational and management structures, help reduce stress and promote healthy living. It is essential for the school to provide health-promoting facilities such as well-designed and health-oriented classrooms, offices, staffrooms and canteens, and to make provision for exercise, relaxation and support services. Oral health should form an integral component of these initiatives. A well-designed oral health training programme that is responsive to their needs should be provided regularly to staff as part of in-service development. It should enable staff members to acquire skills and sustain healthy lifestyles, and to integrate their knowledge and skills into their teaching. Working with the school health team, parents and the local community, they can identify essential policies and practices that promote oral health and general well-being in school and the community.

Relationships and collaboration between the school and the community

Parents can be trained to reinforce oral health messages at home and act as facilitators in outreach programmes for children who do not attend schools. Such programmes can help promote oral health to these families and may encourage them to become part of the school community. Through the students,

Table 3. Examples of oral health programmes and activities used with schoolchildren in Denmark

Age (years)	Oral health topics	Materials and visual aids	Settings
0–2.5	Information to parents about oral health, teething, toothbrushing, breastfeeding, dummies/bottles, nutrition, caries, medicine, dental trauma	Picture books, posters, slides, video, models, food	Day-care centres Mothers' groups Library
2.5–5	Same as above	Leaflets, models, drawing and colouring sheets, puppet shows, role-playing, songs	Dental clinics Play meetings in clinics
6	6-year-old teeth, oral hygiene, nutrition/food pyramid, shape and function of different teeth	Picture books, slides, video, puppet shows, models, fishing games, food, jigsaws, puzzles, drawing/exercise sheets	Classroom
7–9	Dentitions, function and structure of teeth, caries process. Body/oral consciousness, hygiene, trauma	Slides, videos, fishing games, food, leaflets on nutrition, models	Classroom
10–12	Body, nutrition, hidden sugar and types of sweet, caries process, dental plaque, bacteria, caries registration, self-examination	Slides, videos, overhead projections, picture books, role-playing, cultivation of bacteria, worksheets, recipes, models	Classroom
13–15	Health and well-being and oral health in general, structure of the tooth and its supporting tissues, initial caries and oral hygiene, approximal caries, healthy lifestyles, tobacco and nutrition, sweet drinks, hidden sugar	Overhead projections, slides, videos, leaflets, X-rays, newspaper articles, worksheets, music, dental floss, nutrition, computer programmes, statistics	Classroom Collaboration with health nurse and teachers
16–17	Gingivitis/periodontitis, change to adult dental health care	Slides, videos, leaflets, newspaper articles, quality-of-life game, computer program	Classroom Dental clinics

other members of the family can benefit from an oral health promotion programme initiated by the school.

The interaction between the school, the home and the community is critical (28). Family and community members can be involved in the planning and decision-making process, for example, by being part of the school health team or community advisory committee. They can take part in school-led oral health activities at school and in the community, such as breakfast clubs, oral health days, exhibitions and health fairs. Community support is crucial in lobbying for a healthy environment, clear food labelling and water fluoridation. The media offer a powerful channel for the delivery of oral health messages (29). The media should be educated to refrain from targeting children and adolescents in tobacco advertising campaigns and from the promotion of foods and drinks that are high in sugar, salt and fat.

Examples of health-promoting schools from China and Denmark

Depending on local circumstances, various approaches have been adopted by schools. Whereas some schools may attempt to incorporate a number of components simultaneously, others may build on existing good practice and initiatives on a project-by-project basis. Schools in different countries may place a different emphasis on the various components of an HPS, taking into account the local infrastructure and available resources. Examples from China (30) and Denmark (31) are illustrated in Fig. 1 and Fig. 2, respectively.

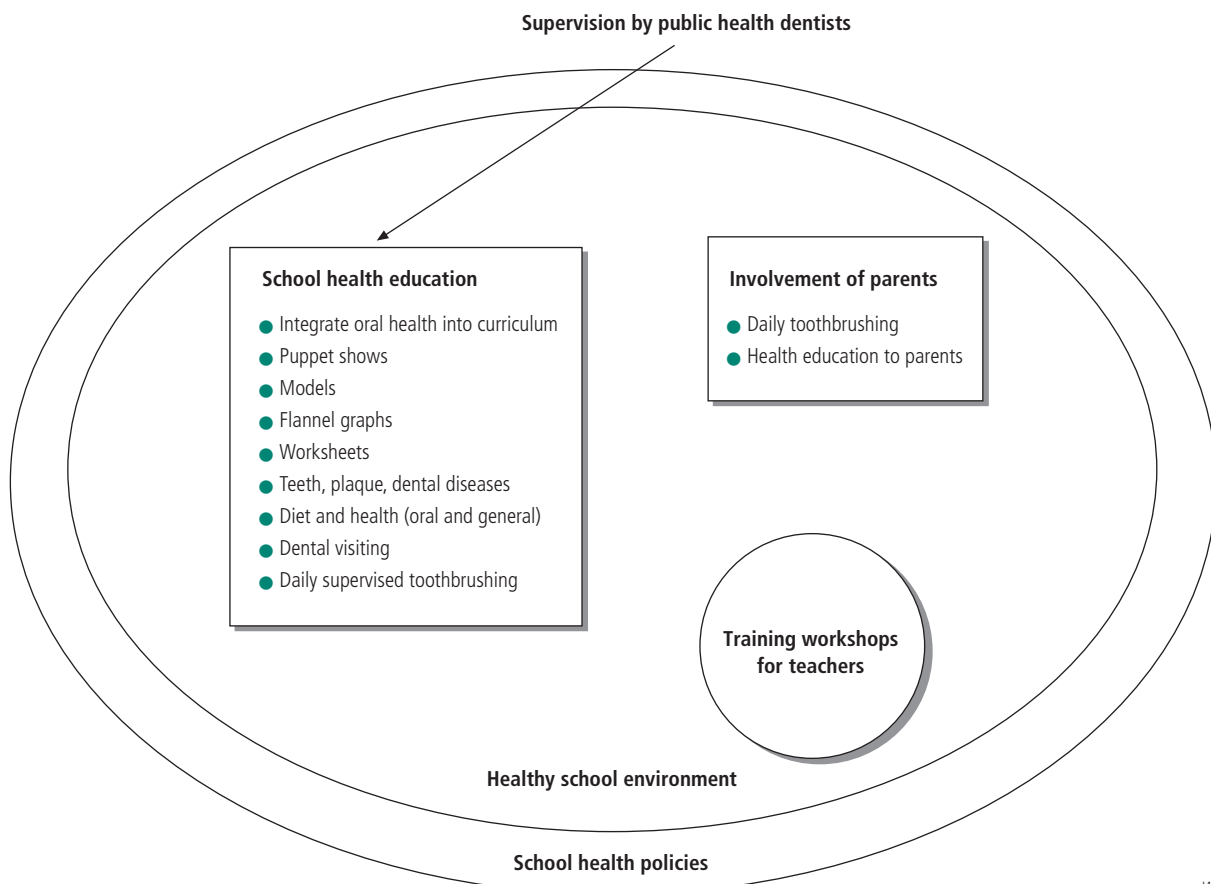
Cost of implementing health-promoting school policies

The costs of implementing HPS policies should be considered at several levels, namely, at the global, geo-political, national levels, and, within a country, at the regional and the local health and education authority levels, and finally, at the school level. At the higher levels, costs relate to policy development and maintenance of up-to-date advice including regular reviews of the evidence base. WHO has taken a lead role in the area of policy development related to HPSs.

The reality and costs of implementation vary between countries, and, at regional levels, may be difficult to identify and apportion separately. At the local level, costs depend on the existing infrastructure, and on the funding and support available from government and other organizations. At the school level, costs include the initial training for policy development and review, modification to the school environment, provision of healthier alternatives, health education activities and continuing support for school staff, children and parents.

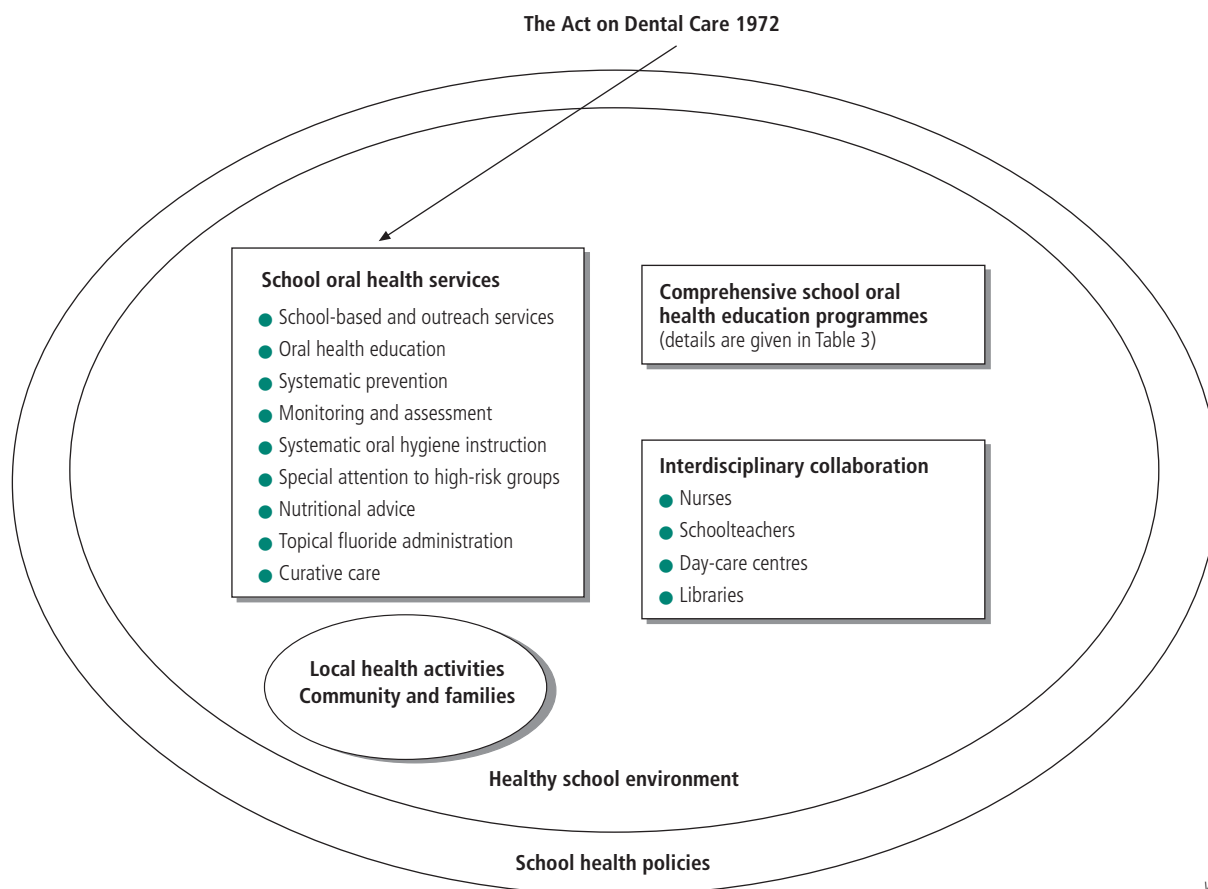
A differential pricing policy for healthier snacks has been found to increase their selection by children (32). In Norway (33), providing a free piece of fruit or a vegetable has been found to be an effective strategy to increase schoolchildren's intake of fruit and vegetables and a similar free fruit scheme has been set up in schools in the United Kingdom. Subsidizing the cost of healthier snacks to reduce their price has clear resource implications, but may be more appropriate in

Fig. 1. Integration of oral health in health-promoting schools: an example from China



WHO 05.109

Fig. 2. Integration of oral health in health-promoting schools: an example from Denmark



WHO 05.110

communities where maintenance of food choice is regarded as a practical alternative to banning the sale in school of less healthy options.

The costs of implementing HPS programmes should be considered alongside the health benefits. This is a considerable challenge as costs are immediate and relatively easily measured, but benefits in terms of changed behaviour and increased life chances are long-term and may be difficult to attribute to a single intervention. Hence there is a need for a structured approach to evaluation.

Evaluation

According to WHO, at least 10% of programme resources should be allocated to evaluation (34). Evaluation helps inform and strengthen school health programmes and determines the extent to which the programme is being implemented as planned; it assesses processes and outputs, impact and effectiveness of the programme and, if any aspects have not worked well, identifies the key lessons learned. It is important to provide feedback to policy-makers, sponsors and those who have been involved in the planning, development and delivery of programmes. Evaluation can be used to reward the efforts of schools, students, teachers, parents and the community and, by demonstrating the benefits, to encourage others to help more schools to become HPSs. Quality evidence can be used by schools to convince policy-makers, sponsors and other stakeholders to provide continued support to, and to become involved in, HPS programmes.

Process and outcome measures can be set for each component of an HPS (Box 1) (6). They include the assessment of the school environment such as the provision of healthy foods and drinks, sufficient sanitation and safe water for oral health activities. The targets for policy development to address the key components of an HPS can be set for short-term evaluation, followed by evaluation of the effectiveness of various interventions, such as oral health education in the classroom, exposure to fluoride, changes in knowledge about oral health, attitudes, behaviours and lifestyles, as well as clinical outcomes and impact of interventions. The sustainability of an HPS and its relationship with the wider community, partnerships and networks should be considered in long-term evaluations. However, it is important to employ appropriate evaluation strategies. Although the scientific merits of randomized controlled trials are well-recognized, they may not always be suitable for the evaluation of oral health promotion (35). Both qualitative and quantitative methodologies have a role to play. A pluralistic approach to evaluation can strengthen its validity and help circumvent the limitations of the individual evaluation approaches (36).

Challenges faced in promoting oral health in schools

A lack of sustainable funding, resources and trained personnel (professionals and volunteers) has been identified (37). The conflicting priorities and agenda of the school, health, education and local authorities, may mean that the implementation

Box 1. Examples of possible evaluation questions for health-promoting schools

School health service

What are the types and extent of oral health services provided?
Are the school and students satisfied with the services provided?
How well and to what extent do the school dental services work with their collaborators?

School health education

How well is oral health integrated into the school curriculum?
Are all learning activities implemented as planned?
Are these activities effective in promoting oral health and healthy behaviours and, if so, to what extent?
Is training provided to staff as planned?
What do teachers and others think of the curriculum? Do they feel comfortable and competent implementing the curriculum?

Healthy school environment

To what extent are healthy food choices offered in the canteens, tuck shops and vending machines?
Are there adequate facilities to support oral health activities?
Does the school environment comply with health and safety requirements?
To what extent is the school environment conducive to oral health?
What do the students and school staff think of the school environment?

Health promotion for school staff

Are there any tailor-made oral health promotion programmes for staff?
If yes, what do the staff members think of them?
Have they been effective?

School and community relationships and collaboration

To what extent is the community involved in interventions for the promotion of oral health?
Does the school provide any oral health training courses for parents and members of the community? If so, have they been effective in promoting oral health at home?
What do parents and the community think of the oral health promotion efforts?

Nutrition and food services

How well is oral health integrated into the healthy nutrition interventions in school and the community?
Are the food service providers aware of their role in promoting oral health?

Physical education and leisure activities

How frequently do students, school staff and parents take part in physical exercise programmes?
Are physical exercises and oral health promotion adequately coordinated?
Are oral health issues considered in these programmes?

Mental health and well-being

Are all mental health and wellness issues adequately addressed in the school?
Are there any counselling services and support available?
Are oral health issues considered in promoting mental health and well-being?
What do the students and school staff think of the services provided?

Policy

Does the school have a comprehensive oral health policy or, if not, policies that relate to oral health?
Is/are the policy or policies implemented and enforced as written?
Are resources and responsible people designated to support oral health promotion interventions?
What do the students, teachers and parents think of the policy or policies?
Are students, parents, school staff and members of the community involved in the planning, development and implementation of policies?

Goals and objectives

Are goals and objectives well-defined and do they establish the criteria against which to assess interventions and outcomes?
Are the objectives specific, measurable and realistic?
Do they cover all important areas?

of oral health activities within a programme for general health promotion and the school curriculum proves too challenging. Health and safety constraints and fear of litigation may be a deterrent. Tuck shops, vending machines and sponsorship from industry may be an important means of income generation, a consideration that can influence food policies in schools. Given the competing demands of an already full curriculum, teachers may be reluctant to include oral health in their teaching, because they wish to avoid disruption to other school activities. Training and effective communication between health professionals and teachers are crucial, as is support from parents (38). Providing

school oral health services, particularly on the school premises, may not be feasible. All components of an HPS may not be encompassed in all HPSs (39), and it is particularly challenging to create a coherent, complementary and integrated approach within the local constraints.

These problems are more acute in developing countries where they may be compounded by poverty, gender inequality and political instability (3). Many children, particularly girls, have limited access to education. Some schools are located in polluted areas with dangerous traffic and lack safe drinking-water and sanitation (40). Affordable toothbrushes, toothpaste

and other oral health education materials are not readily available (41, 42). Industrial partners and manufacturers have an important role to play in improving this situation. A shortage of trained dental personnel means that teachers are often expected to teach as well as to provide basic dental treatment and oral health education, responsibilities that teachers are considered ill-equipped to carry out (43). Without supportive policies, infrastructure, budget and commitment from various government departments, the obstacles faced by schools and teachers in promoting oral health may remain insurmountable. Support from global, regional, national and local HPS alliances and networks can prove invaluable in helping schools to overcome some of these barriers. Funding may be available for specific projects from central and local governments, as well as from nongovernmental organizations and other bodies such as Education International, the Education Development Centre,

the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Joint United Nations Programme on HIV/AIDS (UNAIDS). Again, effective collaboration with other sectors and programmes is fundamental.

In conclusion, there is a pressing need for oral health to be promoted in schools worldwide. The potential for developing a comprehensive programme using the HPS approach is considerable. Commitment from central and local government, schools, families and the community is critical. It is imperative for public health authorities and health professionals to provide sustainable support, in terms of technical assistance, funding and/or learning materials to facilitate schools becoming HPSs. ■

Competing interests: none declared.

Résumé

Promotion de la santé dans les écoles : une opportunité de promouvoir la santé bucco-dentaire

Les écoles offrent un cadre important pour la promotion de la santé, dans la mesure où elles permettent de toucher plus d'un milliard d'enfants dans le monde et, à travers eux, le personnel enseignant, les familles et la communauté dans son ensemble. Il est possible de renforcer les messages de promotion de la santé à mesure que les enfants traversent les stades les plus influençables de la vie, ce qui les conduit à développer des attitudes et des compétences qu'ils conserveront durant toute leur existence. Une mauvaise santé bucco-dentaire peut être préjudiciable pour la qualité de vie, les performances scolaires et la réussite ultérieure des enfants. Le présent article examine les besoins mondiaux en

matière de promotion de la santé bucco-dentaire à travers les établissements scolaires. Il présente l'Initiative mondiale pour la santé à l'école de l'OMS et les possibilités de mettre sur pied des programmes de santé bucco-dentaire dans les établissements scolaires à l'aide du cadre de promotion de la santé à l'école. Il met en lumière les difficultés rencontrées par la promotion de la santé bucco-dentaire à l'école dans les pays développés, comme dans ceux en développement. Il souligne l'importance d'utiliser un cadre validé et des méthodes appropriées pour évaluer les projets de promotion de la santé bucco-dentaire en milieu scolaire.

Resumen

Escuelas promotoras de la salud: una oportunidad para promover la salud bucodental

Las escuelas brindan un entorno interesante para promover la salud, pues permiten alcanzar a mil millones de niños en todo el mundo y, a través de ellos, al personal escolar, a las familias y al conjunto de la comunidad. Los mensajes de promoción de la salud pueden reforzarse a lo largo de las etapas más determinantes de la vida de los niños, capacitando así a éstos para desarrollar actitudes y aptitudes permanentes. Una salud bucodental deficiente puede repercutir gravemente en la calidad de vida de los niños, en su rendimiento escolar y en sus logros en etapas posteriores de la vida. En este artículo se analiza la necesidad mundial de fomentar

la salud bucodental a través de las escuelas. Se examinan la Iniciativa Mundial de Salud Escolar de la OMS y las posibilidades de poner en marcha programas de salud bucodental en las escuelas utilizando el marco escolar de promoción de la salud. Se ponen de relieve los retos que deben afrontarse para promover la salud bucodental en las escuelas tanto en los países desarrollados como en los países en desarrollo, y se subraya la importancia de usar un marco validado y metodologías apropiadas para evaluar los proyectos de salud bucodental en las escuelas.

ملخص

المدارس المعززة للصحة: فرصة لتعزيز صحة الفم

صحة الفم في العالم من خلال المدارس، كما تناقش المبادرة العالمية لمنظمة الصحة العالمية للصحة المدرسية، وإمكانية وضع برامج لتعزيز صحة الفم في المدارس، باستخدام الإطار المدرسي لتعزيز الصحة. وتبرز هذه الورقة أيضاً التحديات التي تعترض تعزيز صحة الفم في المدارس في البلدان النامية والمتقدمة على السواء. وتؤكد الورقة على أهمية تقييم مشروعات صحة الفم في المدارس باستخدام إطار تقييم معتمد، ومنهجيات مناسبة لتقييم هذه المشروعات.

الملخص: تعتبر المدارس موقعا مهماً لتعزيز الصحة، إذ يمكن من خلالها الوصول إلى أكثر من بليون طفل في شتى أنحاء العالم، إضافة إلى العاملين بالمدارس، وأسر التلاميذ، والمجتمع بأسره. ويمكن دعم رسالات تعزيز الصحة من خلال المراحل الأكثر تأثيراً في حياة الأطفال، بما يمكنهم من اكتساب أساليب ومهارات صحية مضمونة الاستمرار طوال حياتهم. ومن الممكن أن يؤدي سوء صحة الفم إلى تأثيرات تضر بنوعية حياة الأطفال، وأدائهم الدراسي، ونجاحهم في مستقبل الحياة. وتتناول هذه الورقة ضرورة تعزيز

References

- US General Accounting Offices. *Oral health: dental disease is a chronic problem among low-income populations*. Washington, DC: Report to Congressional Requesters; 2000.
- Gift HC, Reisine ST, Larach DC. The social impact of dental problems and visits. *American Journal of Public Health* 1992;82:1663-8.
- The status of school health. Report of the School Health Working Group and the WHO Expert Committee on Comprehensive School Health Education and Promotion*. Geneva: World Health Organization; 1996.
- Global Oral Health Data Bank*. Geneva: World Health Organization; 2004.
- The World Oral Health Report 2003. Continuous improvement of oral health in the 21st century — the approach of the WHO Global Oral Health Programme*. Geneva: World Health Organization; 2003.
- Oral health promotion: an essential element of a health-promoting school*. Geneva: World Health Organization; 2003. WHO Information Series on School Health. Document 11.
- Department of Human Services. *Promoting oral health 2000–2004: strategic directions and framework for action*. Melbourne: Department of Human Services; 1999.
- Tomar SL, Winn DM, Swango PA, Giovino GA, Kleinman DV. Oral mucosal smokeless tobacco lesions among adolescents in the United States. *Journal of Dental Research* 1997;76:1277-86.
- Enwanwu CO. Noma: a neglected scourge of children in sub-Saharan Africa. *Bulletin of the World Health Organization* 1995;73:541-5.
- Sheiham A. Dietary effects on dental diseases. *Public Health Nutrition* 2001;4:569-91.
- Australian Institute of Health and Welfare. *Australia's Health 1998: the sixth biennial report of the Australian Institute of Health and Welfare*. Canberra: Australian Institute of Health and Welfare; 1998.
- Yee R, Sheiham A. The burden of restorative dental treatment for children in third world countries. *International Dental Journal* 2002;52:1-9.
- Mouradian WE, Wehr E, Crall JJ. Disparities in children's oral health and access to dental care. *JAMA* 2000;284:2625-31.
- Al-Tamimi, Petersen PE. Oral health situation of schoolchildren, mothers and schoolteachers in Saudi Arabia. *International Dental Journal* 1998;48:180-6.
- Petersen PE, Zhou E. Dental caries and oral health behaviour situation of children, mothers and schoolteachers in Wuhan, People's Republic of China. *International Dental Journal* 1998;48:210-6.
- Rajab LD, Petersen PE, Bakaeen G, Hamdan MA. Oral health behaviour of schoolchildren and parents in Jordan. *International Journal of Paediatric Dentistry* 2002;12:168-76.
- Petersen PE, Danila I, Samoila A. Oral health behaviour, knowledge, and attitudes of children, mothers and schoolteachers in Romania in 1993. *Acta Odontologica Scandinavica* 1995;53:363-8.
- Currie C, Hurrelmann K, Settertobulte W, Smith R, Todd J, editors. *Health and health behaviour among young people*. Copenhagen: WHO Regional Office for Europe; 2000. WHO Policy Series: Health policy for children and adolescents. Issue 1. International Report.
- Centers for Disease Control and Prevention. Guidelines for school health programs to prevent tobacco use and addiction. *MMWR Morbidity and Mortality Weekly Report* 1994;43(RR-2):1-18.
- Cariño KMG, Shinada K, Kawaguchi Y. Early childhood caries in northern Philippines. *Community Dentistry and Oral Epidemiology* 2003;31:81-9.
- WHO's Global School Health Initiative. Health-promoting Schools. A healthy setting for living, learning and working*. Geneva: World Health Organization; 1998.
- Research to improve implementation and effectiveness of school health programmes. In: *Report of the School Working Group and the WHO Expert Committee on Comprehensive School Health Education and Promotion*. Geneva: World Health Organization; 1996.
- Petersen PE, Christensen LB. *Oral health promotion: health promoting schools project*. Copenhagen: WHO Regional Office for Europe; 1995.
- Diet, nutrition and the prevention of chronic diseases*. Geneva: World Health Organization; 2003. WHO Technical Report Series, No. 916.
- US Department of Health and Human Services. *Oral health in America: a report of the Surgeon General*. Rockville, MD: US Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institute of Health; 2000.
- Coleman CA, Friedman AG, Burrig RG. The relationship of daily stress and health-related behaviors to adolescents' cholesterol levels. *Adolescence* 1998;33:447-60.
- Simon AE, Wardle J, Jarvis MJ, Steggle N, Cartwright M. Examining the relationship between pubertal stage, adolescent health behaviours and stress. *Psychological Medicine* 2003;33:1369-79.
- Booth ML, Samdal O. Health-promoting schools in Australia: models and measurement. *Australia and New Zealand Journal of Public Health* 1997;21:365-70.
- Friel S, Hope A, Kelleher C, Comer S, Sadlier D. Impact evaluation of an oral health intervention amongst primary school children in Ireland. *Health Promotion International* 2002;17:119-26.
- Petersen PE, Peng B, Tai B, Bian Z, Fan M. Effect of a school-based oral health education programme in Wuhan City, People's Republic of China. *International Dental Journal* 2004;4:33-41.
- Petersen PE, Torres AM. Preventive oral health care and health promotion provided for children and adolescents by the Municipal Dental Health Services in Denmark. *International Journal of Paediatric Dentistry* 1999;9:81-91.
- French SA, Jeffery RW, Story M, Breitlow KK, Baxter JS, Hannan P, et al. Pricing and promotion effects on low-fat vending snack purchases: the CHIPS Study. *American Journal of Public Health* 2001;91:112-7.
- Bere E, Veierod MB, Klepp KI. The Norwegian School Fruit Programme: evaluating paid vs. no-cost subscriptions. *Preventive Medicine* 2005;41:463-70.
- Health promotion evaluation: recommendations to policy makers*. Copenhagen: WHO Regional Office for Europe; 1998.
- Report of WHO Workshop on the effectiveness of community-based oral health promotion and oral disease prevention held in Geneva on 19–20 June 2003*. Geneva: World Health Organization; 2004.
- Evaluation in health promotion. Principles and perspectives*. Copenhagen: WHO Regional Office for Europe; 2001.
- MacGregor A. *Evaluation of breakfast club initiatives in greater Glasgow, stages 1 and 2*. Edinburgh: Health Education Board for Scotland and Greater Glasgow Health Board Health Promotion; 1999.
- Dental Health Foundation, Ireland. *Oral health in disadvantaged schools in the Eastern Region*. Dublin: Dental Health Foundation, Ireland; 2001.
- Denman S, Moon A, Parsons C, Stears D. *The health promoting school. Policy, research and practice*. London: Routledge Falmer; 2002.
- Shape healthy environments for children. shape the future of life*. Geneva: World Health Organization; 2003.
- The 2nd Asian Conference on Oral Health Promotion for School Children. Prospectus for our future generation*. Ayutthaya, Thailand, February 2003. Bangkok: Thammasat University; 2003, pp.25-38.
- Adyatmaka A, Sutopo U, Carlsson P, Bratthall D, Pakhomov P. *School-based primary preventive programme for children. Affordable toothpaste as a component in primary oral health care. Experiences from a field trial in Kalimantan Barat, Indonesia*. Geneva: World Health Organization; 1998.
- Nyandindi U, Palin-Palokas T, Milen A, Robison V, Kombe N, Mwakasagule S. Participation, willingness and abilities of school-teachers in oral health education in Tanzania. *Community Dental Health* 1994;11:101-4.