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HOW TO ENGAGE A COMMUNITY AND IMPROVE CHILDREN'S ORAL HEALTH

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ABSTRACT

Background: Globally, gingivitis (gum inflammation) and dental caries (tooth decay) have a negative impact on the health and quality of life of children. Those from disadvantaged populations suffer disproportionately from poor oral health, yet much of the pathology and associated pain and suffering is preventable if children are taught simple and inexpensive practices that can improve their oral health. The World Health Organization (WHO) has called for more programs to improve children's oral health worldwide.

Aims: To summarize how readily implemented school-based programs can provide knowledge and teach health practices that promote behaviors that can enable children to improve their oral health through better hygiene and a reduced incidence of gum disease and caries.

Results: The WHO Health Promoting School (HPS) program model is well suited to address poor oral health. The model begins with community dialogue to establish understanding of the cause, adverse effects and approaches to prevention. Next teachers are helped to establish, sustain and evaluate an intervention in the local school. Intervention is based on the two core components of WHO HPS programs; first, teachers add health-related curriculum and visual aid production to classroom activities, and second, opportunities are added for children to participate in health-related practices while at school, for example tooth brushing or tooth stick sessions to clean their teeth after the lunch break.

Conclusions: Poor oral health is an example of a worldwide public health issue of central importance to children where school-based intervention has been shown to have benefits, through changes in behaviors achieved through teaching a combination of simple factual knowledge and inexpensive health practices.

Keywords: Oral Health, School-based intervention, Teachers, WHO Health Promoting Schools

Globally, many children suffer unnecessarily from poor oral health which leads to periodontal disease; gingivitis (gum inflammation), dental caries (tooth decay) and loss of teeth (1,2).

Factors predisposing children to this health burden include poverty, poor nutrition and a lack of knowledge about the relevance of oral health and how to clean their teeth as a preventive measure.



Figure 1. The negative effects of poor oral health on wellbeing, quality of life and overall health during children are widespread globally and well documented

Prevention is the foundation of good oral health. Using a toothbrush or tooth stick to remove food debris reduces the production of acids that lead to plaque formation and tooth decay, and avoiding foods and especially drinks manufactured with a high sugar content also helps prevent caries (3).

Dental caries is the commonest infectious disease worldwide (4); the bacteria streptococcus mutans thrives in an acidic environment where sugar is available (5); bacteria multiply and are trapped in deposits (plaque) that build up on the gum line and cause chronic inflammation of the gums (periodontal disease).



Figure 2. Chronic gingivitis and advanced dental caries in a child

School programs are a worthwhile and effective way to promote improved oral health and reduce the risks of caries and loss of teeth (6). The WHO health promoting school model combines adding knowledge through in class teaching with opportunities to learn and practical skills (7,8).

Health care providers and educators wanting to promote children's oral health should begin by holding community dialogue where the risks of poor oral health and benefits of improvement can be explained.



Figure 3. Parents at a community workshop the causes of poor oral health, adverse effects and approaches available for school-based prevention are presented.

Then, where communities want an intervention, curriculum content and classroom visual aids can be developed with teachers so that they can teach in class how tooth decay occurs, how it can be prevented

by cleaning teeth after meals and especially before sleeping, and what dietary practices are helpful e.g. avoiding soda drinks with a high sugar content and eating locally available healthy foods that help oral hygiene like sugar cane (9).



Figure 4. In class teaching on healthy eating using pupil participation and visual aids



Figure 5. Soda consumption can adversely affect oral health, as each bottle contains up to 6 teaspoons of sugar.

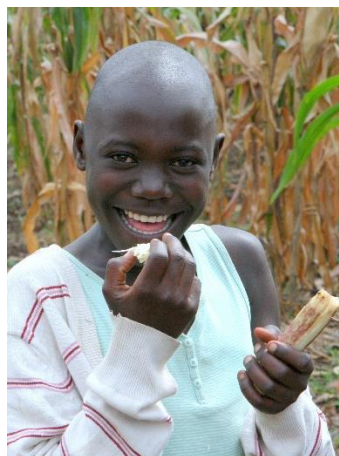


Figure 6. Eating sugar cane is beneficial; although it contains sugar the fibrous nature helps clean teeth and promote gum health.

The way to add the practical skills training for children is to show teachers how to organize tooth brushing (or tooth stick use) for their class after lunch each day at school. Teachers need instruction how to demonstrate and promote good technique; this involves using the brush or stick to clean debris from between the teeth, gently stimulate the gums and conscious attention to the teeth at the back of the mouth (4,10).



Figure 7. A class at school taking part in a daily health practice session on tooth brushing after lunch.

Tooth sticks are used in many cultures; they offer a natural alternative to tooth brushes and tooth paste and as they can often be sourced from nature at no cost, and so are a practical option where schools cannot meet the cost of providing tooth brushes and paste. Learning where to find suitable sticks growing, and how to prepare them for use can be another in class activity. Children who learn to use a tooth stick effectively can keep their mouths healthy just as well as a children using a tooth brush (11).



Figure 8. A child in rural Africa holding a tooth stick and showing how well such sticks enable her, and her brother, to keep their teeth and gums healthy.

Measuring the effect of a school-based oral health program can be done in many ways (10). The children themselves can be asked what improvement they have noticed. A common response is that they no longer suffer from bad breath; this is an indirect measure of improved periodontal (gum) health as inflammation and bacterial growth are the cause of the bad smell.



Figure 9. Children experiencing effective oral health promotion in school report noticing many tangible benefits.

The evidence that tooth decay is reduced comes over time; it is no longer necessary to prove that a program is working by formal evaluation as studies have shown caries rates fall where programs are sustained and children continue to practice what they have learned (3,8,10). However, validated scores exist, like the decayed, missing and filled teeth index (DMFT), and collaborative programs where local or international teams can use them where they want to formally measure outcome (10). Using such scores requires short training for the health care personnel involved and visits to the schools, at least annually, so all the children are assessed before, during and after the period of intervention. Under these circumstances some intervention programs add an annual application of topical fluoride to the participating children's teeth; fluoride (from this treatment and from fluoride enriched toothpaste) hardens the tooth enamel increasing resistance to decay (12).



Figure 10. WHO HPS-based programs offer the opportunity for collaboration between the health and education sectors, for international partnership and for advanced care using topical fluoride application. An advantage of such visits is that teams can use them to motivate the teachers and children to sustain the program and use group sessions to reinforce key messages and practices. Parents and members of the community beyond the school can be invited to attend to share such teaching and gain feedback on the program.

This form of broad community engagement is an advantage of the WHO health promoting school model (WHO); research shows that the health knowledge and practices taught to the pupils are “taken home” and shared with siblings and parents so that the benefits “trickle down” to improve health in the broader community (13,14). Such benefits are evident with a variety of health promoting school programs. However, an oral health program is a simple and uncontroversial way to introduce a school to WHO-based health promotion; and success with oral health often then leads communities to go on to promote other health topics that they identify as relevant to them (10,14).



Figure 11. The pupils in school-based programs benefit directly, and can positively influence the health of the broader community through knowledge and behaviors shared with siblings and family.

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CONSENT

The children and adults photographed who are identifiable have given their consent for their pictures to be used in the dissemination of this research.

CONFLICT OF INTEREST

None

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