

School-based dental health considerations for program development

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Summary

School-based oral health programs give children a chance to experience optimal oral health, but developing relevant programs that address the need of today's children is a complex task. School-based oral health preventive programs that are designed to help children must be relevant and offer interventions based on current research findings.

Treatment is not the answer to solving children's oral health problems; instead, prevention is the key. Schools have been and will continue to be an important environment for the dissemination of disease prevention information. Because the classroom maximizes the number of children reached simultaneously, school-based education, health promotion, and preventive efforts are efficient.

School serves as an institution that supports the adoption and practice of behaviors deemed desirable by society. In the school, students are also prepared to assume responsible roles as future parents and community leaders.

The year 2010 objectives help provide a focus for relevant and comprehensive school-based oral health programs.

This presentation summarizes current directions in school-based dental health. Recommendations and proposed strategies were obtained through personal interviews, published research, oral health conferences, personal observation of school-based dental centers and educational institutions. The presentation is intended to serve as guidance, based on best available information, for successful school-based dental health program development. This information is presented with the understanding that the oral health needs of children and adolescents are locality specific and will require flexibility in program design and implementation. We hope that you will find the following information useful for presenting dental health issues to partners in your community.

Key words: oral health, school-based dental health program.

School-based oral health programs give children a chance to experience optimal oral health, but developing relevant programs that address the need of today's children is a complex task. School-based oral health preventive programs that are designed to help children must be relevant and offer interventions based on current research findings. Different target populations present different needs, and the astute planner must address these. For example, children at high risk for caries may require different program strategies than children at less risk who live in fluoridated communities. No standardized program completely meets the needs of all children.

Economic constraints also affect the scope of many school-based programs. Despite the challenges posed by overwhelming need and limited resources, children deserve to receive information that allows them to make informed choices. They also deserve the chance to learn skills and needed to make cost-efficient measures available to the children. School administrators, legislators, oral health professionals, and parents must all work together to ensure that children are offered the opportunity to achieve optimal oral health.

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CHALLENGES AND SOLUTIONS

To involve communities, families, or individuals in assuming responsibility for their own dental health, two main ingredients are necessary: knowledge and motivation. It is impossible for dental professionals to assume the tremendous task of imparting oral health facts to the public and encouraging the behaviors that are requisite in oral health care. Such mass education can only be accomplished through the public school system [24].

Despite the great competition for the little time available in the curriculum, it should be stressed that the end purpose of education is to:

- provide the information and experience for people to earn a living;
- make life more worthwhile.

Optimal oral health contributes to the latter objective.

Public schools have traditionally accepted the responsibility of teaching dental health as a part of general health.

Many programs may be episodic and lack depth. Many erroneously consider education like an inoculation. Once an individual is exposed, results are permanent [20]. A school-based oral health curriculum should include education and health promotion along with preventive and treatment services.

The core components of a school oral health program are: services and instruction.

Services

- appropriate regimens to prevent dental caries, and gingivitis;
- assurance of periodic oral examination and treatment;

- effective referral and follow-up procedures for children in need of treatment;
- emergency first aid for accidental oral injuries at school.

Instruction

A comprehensible educational curriculum for all grade levels, including both personal and community health topics; messages in school can be readily reinforced. Oral health education and promotion should begin in the early school years, but should extend into adulthood, then parenthood, and finally into community wellness initiatives as a public service responsibility.

CREATING EFFECTIVE SCHOOL-BASED PROGRAMS

To maximize program success, a school-based oral health program should include all the elements contained in the mnemonic, **CAPITE**, [18] that is:

- **Compatible** with the need of the nation and of the population served;
- **Administratively** sound, requiring political, professional, educational and community planning to ensure a source of oral health and teaching personnel, money, materials, and facilities necessary to support the objectives of the school oral health program;
- Incorporate effective **Preventive** and **Promotive** regimens into school and classroom activities as part of the oral health curriculum;
- Periodic oral screening inspections to **Identify** impending or actual pathology implying the need for preventive, screening, and referral program requisite for optimal student oral health;
- Provisions for screening and **Treatment** referral programs requisite for optimal student oral health;
- **Education** that supports the acquisition of knowledge and develops the attitudes for self-care.

PLANNING A SCHOOL-BASED PROGRAM

A successful school-based program does not just happen. Planning is the key to success.

A diverse and involved work group ensures a greater variety of input, a representative comi-

ties audience, and a broad-based sense of ownership.

It is important that cooperation is established in the initial planning stages among parents, community, leaders, teachers, school administrators and oral health professionals.

Planning procedures must include collecting and analyzing need-assessment data; establishing priorities, setting goals that include monitoring oral health status changes, establishing objectives; planning activities geared toward these objectives; identifying resources; developing a budget; and implementing, monitoring and evaluating program objectives [22].

An integrated plan of action spanning kindergarten through 12th grade is essential, as a clear delineation of program responsibilities [21].

Judicious planning ultimately can result in meaningful, target-specific programs that are integrated through the school years.

With this strong academic base, positive attitudes and behaviors can be developed regarding oral health that will accompany children into adulthood.

Before implementing a school-based oral health curriculum, it is necessary to consider that:

- people interpret health messages through the "filter" of their own values and attitudes. These need to be understood, if the educational process is to have any chance of success;

- the most successful education maximizes self-involvement of the participants;

- health professionals must accept that not all people share their values about the importance of physical health. An acceptance of all components of wellness helps in dealing with the infinite variety of human beliefs on health [3].

DENTAL HEALTH TEACHING

General considerations

Committed, knowledgeable teachers are the cornerstone of all effective school-based oral health programs. Yet, they have concerns about teaching oral health. Unfortunately, teachers receive little dental information in undergraduate training to prepare them to teach the subject.

Usually the dental subject matter contained in undergraduate texts used in teacher's colleges and education curricula relates to the physiology and anatomy of the teeth, the supporting tissues, and the salivary glands. Such grounding enables

the schoolteachers to communicate basic information about oral physiology.

Teachers cannot, however, be expected to possess expertise in a constantly changing pool of scientific knowledge about primary preventive procedures, health promotion, and dental treatment options.

Also, few sources are accessible for periodic updates of dental information that allow teachers to remain current on dental education objectives. Hence, teachers are reluctant to teach what could be incorrect or obsolete information [1]. *Kay and Baba* [23] suggest that this problem might be addressed by involving the teachers in the formative evaluation of teaching materials. This involvement, they suggest, would promote teacher confidence and foster individualized, experiential, and participatory student learning.

One of the findings of the US National Dentistry Program was that teaching of dental information was the least expensive and the least effective way of improving oral health status [26]. This is partially due to the fact that it is possible to transmit information without immediately improving the aptitudes and attitudes necessary for long-term self-care, especially if the need of behavioral change is not emphasized. On the other hand, it is always possible that knowledge acquired in public school will become meaningful in adult life when the importance of good health becomes more apparent. Children are fast learners, and when learning starts at an early age it can be reinforced with a variety of teaching techniques that enhance absorption and retention. It also is posited that without having appropriate information, behavior change cannot occur. Changes in health-related knowledge, practices, and attitudes increase with the amount of instruction; therefore greater integration of oral health education into the curriculum should be a goal of a school-based program.

Dental teaching - teacher or parent responsibility

School-aged children are almost totally dependent on parent or school-based back-up to participate in preventive dentistry or dental treatment programs.

Many teachers believe that oral health awareness should be the responsibility of parents and dental health professionals - not teachers [2]. A child that rises in a home where the parents are subject to cultural, technical, economic, and edu-

cational disadvantages, often can be dentally neglected. Even with highly motivated parents, knowledge about dental health is often minimal. In addition, behavioral change can be more difficult to influence at home under parental guidance than under the tutelage of the teacher. In other words, the parents themselves do not know how to help their children or themselves and need the support of a school-based oral health program.

Parent participation

Whenever possible, the parent must be included in a school-based oral health program [27]. One or both of the parents can provide strong positive reinforcement either through role modeling or verbal messages that support the attitudinal and behavioral changes promulgated in the school. Ideally, parent education should parallel child education; in this way parents can learn how to improve their own oral health as well as guiding their children. This educational process of parents is often needed to overcome the barriers raised by their past adverse experiences with dental disease and its financial hardship.

Professional involvement

In addition to parental support, professional involvement in the school program is desirable. The involvement of oral health professionals is important to the success of local school efforts. Representatives from local professional societies should be included in the oral health curriculum-planning phases. Professional input is valuable for identifying teaching-learning resources; for speaking to students, faculty and parent groups; for teaching of faculty and administrators; and for aiding the school on special occasions, such as "career day". The support of the professional community enhances a program's credibility, improves the image of the oral health professions, and is a practice builder for the participating dentists. A more consistent presence of the oral health professions throughout the academic year is needed to help strengthen school-community relationships.

CHILDREN'S AND ORAL HEALTH PROGRAMS

Student participation

Theoretically all children should be entitled to receive maximum information and primary pre-

ventive dental care. Delivering maximum oral health treatment to all children, however, is not feasible.

Thus, any school-based primary and secondary preventive dentistry program, other than classroom education, mouth rinse, or tablet programs, should be selective in targeting the children most at risk for a higher level of caries.

Once criteria are established defining "high risk" however, all students meeting the high-risk criteria should be eligible for the same preventive and treatment benefits. Also, the extent of student involvement in program activities is an important issue. The most highly successful programs include considerable student involvement and participation.

Personal involvement tends to have a greater effect on behavior, attitudes and beliefs. Active participation enhances instruction about oral disease prevention measures, such as appropriate fluoride use and the employment of methods for the mechanical disruption or removal of plaque.

ACTIVE PREVENTION DENTISTRY PROGRAMS

Education and active prevention

The main advantages to a school-based program are listed below:

- the children are available for preventive or treatment procedures;
- school clinics are less threatening than private offices;
- a school dental program facilitates and increases the effectiveness of teaching dental subjects, and
- the dental services supplement the school nursing services by helping to provide total health care for children.

Diet and prevention

Basic information on diet and nutrition should be a part of all health education. Children need to understand that sugar consumption is a key component of the dental decay process and that sugar must be present for caries to occur.

Ideally, dietary information should be mixed with the preventive benefits of appropriate fluoride regimens, oral hygiene measures and pit and fissure sealants.

Classroom tooth brushing

The daily brushing of teeth in the classroom may be an ideal objective, and many classroom-brushing programs have been a success [25]. Although little evidence indicates that tooth brushing alone reduces caries incidence, overwhelming evidence supports the fact that tooth brushing with a fluoride dentifrice is beneficial; consequently the use of a fluoride dentifrice should be emphasized. Other studies show that there is only questionable support that school tooth brushing programs have any long-term effect on gingival status, although it is known that plaque control through tooth brushing can be effective in helping to control gingivitis. Thus the teacher should encourage routine use of the Bass technique to help control gingivitis, and the use of a fluoride dentifrice to help control caries. The ultimate objective of tooth brushing instruction is prevention, not tooth brushing as an exercise. Reinforcement of the therapeutic benefits of tooth brushing coupled with the use of fluoride dentifrice is required, because even in well-directed programs in which improvement is noted a relapse can be expected during summer vacation.

Classroom-based fluoride programs

The use of fluoride mouth rinses and tablets provide caries-preventive options that are effective and easy to implement. *Horowitz and Frasier* [20] provide complete descriptions of logical fluoride combinations and appropriate self-applied fluoride regimen for use. Rinsing programs are advised for grade 1 through 12 but not below. In general fluoride rinses resulted in significant caries reduction of about 30% to 35%. School based-fluoride programs were evaluated and subsequently, many states adopted such programs for communities, particularly in non-fluoridated areas. These programs had appeal because cost for supplies was low and the regimen could be supervised readily by schoolteachers, teacher aids or volunteers after minimal in-service training. There are two main preventive programs available with fluoride mouth rinse: a weekly mouth rinsing in school with 0.2% sodium fluoride and daily rinsing with 0.05% sodium fluoride. Weekly rinsing with 0.2% NaF remains the most popular school-based caries preventive program in several countries. Some advantages of this kind of program are listed below:

- safe and effective;
- relatively inexpensive;
- easy to learn and do;
- non-dental personnel can supervise;
- well accepted by participants - good compliance;
- little time is required - 5 minutes/week.

It is important to note that the effects of school fluoride programs are not permanent. In a 11-year follow-up study in Norway it was concluded that the residual benefits of school-based fluoride programs decreased as the length of time between previous participation and follow-up increased. This information underlines the need for the continued use of fluoride supplement, fluoride mouth rinse, and fluoride dentifrice throughout life in nonfluoridated areas [19].

Pit-and-fissure sealants

The effect of systemic or topical fluorides in preventing dental caries is noted principally on the smooth surfaces of teeth; the effect on pit and fissure caries is relatively small. It is probable that the protected stagnation sites provided by pits and fissures offer such favorable conditions for the initiation of caries that fluoride is inadequate to combat it. Therefore there is a place in preventive dentistry for a method aimed specially at preventing caries in these caries-prone sites. Fissure sealants are materials designed to prevent pit and fissure caries. They are applied mainly to the occlusal surfaces of molar teeth in order to obliterate the occlusal fissures, and remove the sheltered environment in which caries may thrive. Fissure sealing is a most conservative way of tackling the problem of occlusal caries, involving a minimum of treatment which most children have no difficulty in accepting. Sealing is especially indicated for teeth that have marked pits or fissures, and for high-risk patients. Teeth should be sealed as soon as possible after they erupt. Sealing of all caries-susceptible pits and fissures may be considered to be ideal treatment. The highest priority may be given to sealing first permanent molars of children between the age of 6 and 8 years, and second permanent molars of children between the age of 11 and 13 years.

There is little doubt that the need for fissure sealants still exists despite the recent decline in dental caries prevalence, with upwards of 90%

of carious lesions occurring in pits and fissures [28] together with the evidence that caries in pits and fissures of teeth increase with age.

Ripa and colleagues [29] completed a 2-year study for children in second and third grade assessing the effectiveness of a 0.2% fluoride mouth rinse used alone compared with a rinse plus sealants. Twenty-four occlusal lesions developed in the 51 rinse subjects, and only 3 in the 84 subjects receiving rinse plus sealants. The conclusion was that caries could be almost completely eliminated by the use of these two preventive procedures.

The involvement of a dental hygienist in the school health staff involved in a comprehensive education-prevention program is salient. A dental hygienist is educated to plan and to participate in programs that include topical fluoride applications, oral prophylaxes, the teaching of

tooth brushing and flossing, counseling on diet, placement of pit and fissure sealants and screening and referral of suspected oral pathology for definitive diagnosis and treatment. The dental hygienist also acts as a program resource person.

The final level of a preventive dentistry program in a school involves the identification of referral for early treatment of children with oral pathology. To attain this objective, an annual screening should be performed for all children and at least a semiannual screening done for children classified as high risk. During the development of a preventive dentistry program, various health education and promotion topics should be included.

The combination of education, active prevention programs and appropriately trained personnel has the potential of greatly reducing the dental treatments workload of a school system.

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