ORAL HEALTH STATUS AMONG 12-YEAR-OLD CHILDREN IN PRIMARY SCHOOLS PARTICIPATING IN AN ORAL HEALTH PREVENTIVE SCHOOL PROGRAM IN PHNOM PENH CITY, CAMBODIA, 2002

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Abstract. A cross-sectional survey was undertaken to assess dental caries status, knowledge, attitude and practice in oral health among 12-year-old primary schoolchildren participating in the Oral Health Preventive School Program (OHPSP) conducted since 1998 in Phnom Penh City, Cambodia. Schools were stratified into 3 groups by levels of cooperation (good, partial, and poor) with the OHPS program and samples of schools randomly selected from each group. A total sample size of 239 schoolchildren was randomly selected from the sampled schools. There were 79, 82, and 79 children from schools with good, partial, and poor cooperation, respectively. Dental caries status DMFT (Decayed Missing Filled teeth) and knowledge, attitude and practices in oral health were assessed from 21 January to 5 February 2002. Opinions of school directors toward the OHPS Program were evaluated by interview. The results showed the overall mean DMFT per person in schoolchildren in Phnom Penh City, Cambodia of 2.33 (95%CI=2.05-2.61) while mean DT(Decayed teeth) was 2.31 (95%CI=1.97-2.52) and mean MT (Missing teeth) and mean FT (Filled teeth) were 0.01 per person, which were quite small. Children from schools with good cooperation with the OHPSP had the lowest significant mean DMFT 1.62 (95%CI=1.25-1.98) compared to children from schools with partial and poor cooperation (Mean DMFT=2.67:95%CI=2.10-3.23, and 2.69:95%CI=2.19-3.19, respectively). There were no significant differences in levels of knowledge, attitude and practices in oral health among the 3 groups of schools, but the proportion of good practices was highest in good cooperation schools compared to the schools with partial and poor cooperation to the OHPSP (41.3%, 27.3%, and 31.3%, respectively). Among 35 school directors, the majority of them (97.1%) believed that the OHPS program can reduce the dental caries prevalence among schoolchildren. Only 20.0% agreed that parents of schoolchildren should pay money to the school for tooth brushes and tooth paste of their children for brushing after lunch at school. The remaining answers were, they were uncertain (37.1%) and disagree (42.9%) that the school should have to manage that donated money. Among them, 82.9% reported that the OHPS Program activities did not disturb their time at school; 65% of them agreed there should be volunteers to help the schools in implementing the activities of the program. The majority of school directors (97.1%) thought that oral health examinations for schoolchildren were necessary. The results of the study suggested a need for continuous monitoring and strengthening of activities and cooperation of the Oral Health Preventive School Program among primary schools in Phnom Penh City to reduce the prevalence of dental caries among primary schoolchildren in Phnom Penh City, Cambodia.

INTRODUCTION

According to the results of the first national oral health survey in 1991 (MOH, Cambodia, 1991), the dental caries status among 12-year-old children for the country of Cambodia had a mean DMFT of 1.6 per person. Very few carious teeth were restored. It was realized that oral health among schoolchildren should be a high priority. The oral school health program should be the only important means to solve oral health problems among schoolchildren. The activities usually consisted of disease prevention, dental care, oral

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health education, disease surveillance and public and/or private partnership. Many studies demonstrated significant caries reductions as a result of fluoride toothpaste (Hanachowicz 1984; Conti *et al*, 1998; Fogel *et el*, 1998). The findings clearly indicate the introduction of tooth brushing programs using a fluoride toothpaste can have a significant impact on developing countries (Hansel-Peterson and Bratthall, 1996). Studies showing the effect on schools of having fluoride mouthrinse and supervised brushing with fluoride toothpaste among 11-12 year old children at school showed a 26.8% reduction in caries. When using fluoride toothpaste alone it was 26.3%, and using fluoride mouthrise alone it was 24.5%. The results of the combined procedures were only slightly superior to the use of either procedure alone. Oral health education for schoolchildren should be conducted by trained teachers (Bell *et al*, 1984; Axelsson, 1987). The Oral Health Preventive School Program (OHPSP) was started among primary schools in Phnom Penh City in 1991 with the support of World Concern International (WCI). In 1998, Aide Odontologique Internationale (AOI) came to replace role WCI in supporting the program (MOH, Cambodia, 1991). Recently, there were 95 primary schools in Phnom Penh participating in the OHPSP. The program had four activities: daily tooth brushing, weekly fluoride mouth rising, oral health education, and an oral health competition. The results of the evaluation of the program of the OHPSP in July, 2001 (MOH, Cambodia, 2001), showed that only 37% of primary schools in Phom Penh City had daily tooth brushing and 62% had weekly fluoride mouth rinsing. Depending on the results of program evaluations in terms of levels of cooperational by regularity of implementation of activities, primary schools in Phnom Pen were classified into three groups; 30 schools with good cooperation, 43 schools with partial cooperation and 22 with poor cooperation. At that time, there was no assessment of oral health status among schoolchildren and factors related to cooperation with the program.

The aim of this study was to assess the dental caries status, knowledge, attitude and practice in oral health among 12-year-olds children in primary schools participating in the OHPSP in Phnom Penh City, Cambodia, and to assess the opinion of the parents and school directors toward OHPSP. The results are to be used to improve the activities of the OHPS Program.

MATERIALS AND METHODS

A cross sectional survey was conducted. Schools were stratified by level of cooperation with OHPSP into 3 groups (good, partial and poor cooperation schools). Random sampling of 3 schools from each group, with a sample size of 213 schoolchildren, the schoolchildren being randomly selected from each sampled school. There were 79, 82, and 79 schoolchildren from good, partial, and poor cooperation schools, respectively.

Questionnaires evaluating for knowledge, attitude and practices in oral health were distributed to schoolchildren in the class room. Oral examination were performed by 2 dentists for decayed, missing, and filled teeth (DMFT), and gingival status was assessed by Community Periodontal Index (CPI). The interviewing for the opinion of the school directors toward the oral heath preventive school program was also performed on the same day. Questionnaires for parents were taken back home to parents by schoolchildren and returned within one or two days.

RESULTS

Oral health status

The results from the oral health examination on schoolchildren showed the overall mean for DMFT was 2.33 (95%CI=2.04-2.61) per person, while mean for DT was 2.31 (95%CI=1.97-2.52), mean for MT was 0.01 and the mean for FT was 0.01 per person. Children from the schools with good cooperation had the lowest significant mean for DMFT 1.62, 95%CI=1.25-1.98, when compared to children at the schools with partial and low cooperation with means of DMFT=2.67; 95%CI=2.10-3.23, and DMFT=2.69; 95%CI= 2.19-3.19, respectively. Children from schools with good cooperation had the lowest significant mean DT=1.15; 95%CI=1.16-1.86 when compared to children from the schools with partial and low cooperation with means of DT 2.59;

Table 1
Comparison means for DMFT in schoolchildren by types of school by level of cooperation.

Types of school	Number	DMFT		DT		MT		FT	
		Mean	95%CI	Mean	95%CI	Mean	95%CI	Mean	95%CI
Good	79	1.62[a]	1.25-1.98	1.51[a]	1.16-1.86	0.08	na	0.01	na
Partial	82	2.67	2.10-3.23	2.59	2.05-3.14	0.07	na	0.00	na
Poor	78	2.69	2.19-3.19	2.62	2.12-3.13	0.05	na	0.01	na
Total	239	2.33	2.04-2-61	2.31	1.97-2.52	0.01	na	0.01	na

[a]significantly lower than the other groups, na=non applicable.

Table 2
Number and percentage of children from schools with different levels of cooperation by highest score of CPI.

School by different levels of cooperation	Healthy No. (%)	Bleeding No. (%)	Calculus No. (%)
Good	54(31.4)	23(41.4)	2(11.1)
Partial	57(33.1)	20(34.5)	5(55.6)
Poor	61(24.1)	14(24.1)	3(33.3)
Total	172(100%)	57(100%)	10(4.2%)

There were no significant differences in the 3 problems between the different schools (p>0.05).

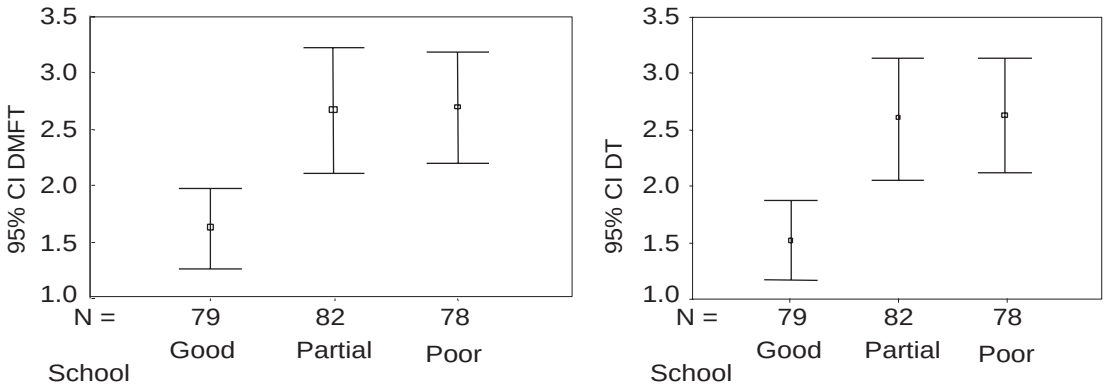

Fig 1–Mean DMFT and DT with 95%CI in children from schools with different levels of cooperation.

95%CI=2.05-3.14, and 2.62; 95%CI=2.12-2.52, respectively. There were no significant differences between the means for DMFT and DT in the children at schools with partial and poor cooperation with the OHPSP (Table 1, Fig 1). For gingival status, there was no significant difference in the prevalence of gingivitis (bleeding and calculus) of schoolchildren among the 3 groups of schools. The majority of schoolchildren had healthy gingiva (Table 2).

Knowledge, attitude and practice in oral health among schoolchildren

There were no significant differences in knowledge, attitude and practice in oral health

Table 3
Number and proportion of schoolchildren's knowledge, attitude and practices by level of cooperation.

Variables	Types of school by level of cooperation					
	Good		Partial		Poor	
	n	%	n	%	n	%
Knowledge						
High	65	33.2	70	35.7	61	31.1
Moderate	11	29.7	11	29.7	15	40.5
Low	3	50.0	1	16.7	2	33.3
Attitude						
Good	71	33.5	68	34.0	61	30.5
Moderate	8	21.1	14	36.8	16	42.1
Poor	0	-	0	-	1	100
Practices						
Good	62	41.3	41	27.3	47	31.3
Moderate	14	21.2	30	45.5	22	33.3
Poor	3	13.0	11	47.8	9	39.1
Total	79		82		78	

There were no significant differences in the variables between the different schools ($p>0.05$).

among children from the 3 groups of schools. Children from good cooperation schools had a higher proportion in good practices in oral health (Table 3) but the difference was not significant.

Opinions of school directors toward the Oral Health Preventive School Program

There were 14 schools with good cooperation, 8 schools with partial cooperation and 13 schools with poor cooperation. The majority of school directors agreed that the OHPSP was important to the oral health of schoolchildren. There was 1 school director who was uncertain if the OHPSP could prevent schoolchildren from having dental caries. The majority of school directors did not agree that parents should pay money to the school in order to buy tooth paste and brushes for schoolchildren to use at school. They felt uncertain (37.1%) or disagreed (42.9%) that the school could manage that money properly. There were 3 directors from good cooperation schools who admitted that the OHPSP disturbed their time at school. The majority of them agreed that the schools should have volunteer staff (65.7%) or one regular school staff (88.6%) to run the activities of the OHPSP at school. The majority of school directors (97.1%) agreed that the OHPSP activities should include oral examinations for schoolchildren.

DISCUSSION

The results of this small scale study demonstrate the mean DMFT among schoolchildren in this city. It is important and urgently needed to strengthen the oral school health activities, and the cooperation of school directors and parents. Support from the government and private organizations was needed in order to fulfill the activities of the program, especially tooth brushing, which can make the program more effective. In a comprehensive review of disease control priorities in developing countries, "It is believed that fluoride toothpaste and other fluoride containing produces have been of great importance in decreasing the prevalence of caries in industrial countries. The use of such products in developing countries should be promoted, but the outcome of such activities is also dependent on the price of products. New products, more affordable than those produced today, must become available" (Bratthall *et al*, 1990). There was an interesting conclusion from the results of on evaluation in a school-based primary preventive program for children in Kalimantan Barat, Indonesia (WHO, 1998) that any preventive project to

be conducted in developing countries should carefully consider the community characteristics. Encouragement and involvement of local personnel is of crucial importance. Supervised school health programs should be considered by authorities as one effective way of reducing dental caries and should be introduced if other ways have not proven more effective.

Recommendations

1. Since the results of this study showed higher means of DMFT among children of partial and poor co-operational schools compared to children from good cooperation school, the Oral Health Preventive School Program (OHPSP) should be continued with close continuous supervision for better effectiveness by working groups from the of Faculty of Odonto-stomatology, Ministry of Health and the School Health Department of the Ministry of Education, Youth and Sport.

2. Tooth brushes and fluoride toothpaste, which are affordable to as many people as possible should be made availble, and the use of fluoride containing tooth paste should be promoted by mass media.

3. Supervised school oral health preventive programs, such as daily tooth brushing and mouth rinsing, should be considered by authorities as one effective, affordable solution, that matches the situation in Cambodia.

4. The program should try to create more activities, such as oral health examinations, fissure sealant and simple treatment (one surface) activities for primary schoolchildren.

5. A sustainable oral health preventive school program should have community participation. All parents, school directors, government authorities, private companies and oral health staff should be involved in this program.

6. Further study in prepayment systems and leadership perception toward oral heal care should be emphasized.

7. OHPSP should be a national oral health policy for ongoing preventive school programs. It will set the standard of cooperation between schools and dentists or dental nurses throughout the country.

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