

ORAL HEALTH STATUS AND ORAL HYGIENE HABITS AMONG CHILDREN AGED 12-13 YEARS IN YANGON, MYANMAR

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Abstract. We conducted a cross sectional study among children aged 12-13 years in Yongon, Myanmar to assess the oral health status and oral hygiene habits. The studied 220 students were from two high schools, one urban and the other rural. We conducted an oral health examination following WHO criteria and used a self-administrated questionnaire. The prevalence rate of dental caries among the study population was 53.2%. The mean number of decayed, missing and filled teeth (DMFT) was 1.7 ± 2.1 teeth per person (decayed, 1.5 ± 1.9); missing 0.0 ± 0.2 ; filled, 0.1 ± 0.4). Multivariate analysis revealed significant risk factors for dental caries were: the geographical location of the school (adjusted OR=2.24; 95% CI: 1.01-4.94), occupational status of the father (adjusted OR=2.83; 95% CI: 1.05-7.62) and the child's attitude about dental caries (adjusted OR=2.35; 95% CI: 1.18-4.67). Knowledge and oral hygiene habits were not associated with dental caries. The results of this study suggest the need to change from restoration orientated dentistry to dental public health care services, to reduce of the high level of dental caries in this age group.

Keywords: dental caries, oral hygiene habits, schoolchildren, Myanmar

INTRODUCTION

Oral health is essential to general health and quality of life and its meaning is more than good teeth. It is a state of being free from mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking, and

psychosocial well-being (WHO, 2003). Oral hygiene is the practice of keeping the mouth, teeth, and gums clean and healthy to prevent dental problems, most commonly dental cavities, gingivitis, and bad breath, by removing plaque and bacteria. It includes brushing the teeth, flossing, cleaning the tongue, and visiting a dentist for regular check-ups. Poor oral hygiene can lead to other health problems, such as cardiovascular disease, bacterial pneumonia, osteoporosis, complications of diabetes and low birth weight in children (Li *et al*, 2000). Left untreated, the pain and infection caused by tooth decay can lead to problems in eating, speaking, and learning (US General Accounting Offices, 2000).

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Dental caries are a major oral health problem in most industrialized countries, affecting 60-90% of schoolchildren and the vast majority of adults (WHO, 2003). It is also the most prevalent oral disease in several Asian and Latin-American countries, while it appears to be less common and less severe in most African countries (WHO, 2003). The problem of dental caries in Myanmar is gradually increasing and the mean number of decayed, missing and filled teeth (DMFT) among 12-year-old children in Myanmar has increased from 0.98 in 1999 (WHO, 1999) to 1.15 in 2005 (Myint *et al*, 2005). In the US children who have dental caries are 12 times more likely to have more restricted activity days, including missing school, than those who do not (US General Accounting Offices, 2000). More than 50 million school hours are lost annually in the US because of oral health problems which can affect the children's performance at school and success in later life (Gift *et al*, 1992). We chose the 12-13-year-old age group for the study since it is the global monitoring age for dental caries in schoolchildren (WHO, 1997), and there are international comparisons and monitoring of disease trends. At this age group, all permanent teeth, except the third molars, have erupted (WHO, 1997). The aims of this study were to assess the dental caries status and oral hygiene habits of schoolchildren aged 12-13 years in Yangon Region, Myanmar.

MATERIALS AND METHODS

Participants

The study subjects were students studying at two high schools: an urban school in Myingalar Taung Nyut Township and a rural school in Inn Tine, Hlegu Township, Yangon Region, Myanmar. Three classes were randomly selected

from each school: two classes from Grade 8 and one class from Grade 7. All students aged 12-13 years in each of the selected classes comprised the study population. A total of 110 students from each school were included in the study, giving a total number of 220 subjects.

Data collection

The study was approved by the Ethical Review Committee for Human Research, Faculty of Public Health, Mahidol University. Written informed consent was obtained from the parents of all the study subjects prior to participation in the study. A self-administered questionnaire was distributed in each of the study class rooms to assess the demographic characteristics of the subjects, general information about their parents, oral hygiene habits focusing on tooth brushing method, frequency of tooth brushing per day, types of materials used for tooth brushing, use of fluoride tooth paste, eating habits, regularly check-ups, knowledge regarding dental caries and attitudes toward dental caries. After filling out the questionnaire a dental caries examination was performed by one researcher in the classroom under natural light. The method used to conduct the dental caries examination was the World Health Organization Oral Health Survey to determine the DMFT index (WHO, 1997). The mean and standard deviation DMFT indices were then calculated (WHO, 1997). Prevalences of dental caries among those who had at least one DMFT and caries-free status among those who had no DMFT were calculated (WHO, 1997). The examiner conducted the examination following WHO criteria for oral health epidemiological surveys (Eklund *et al*, 1993).

Statistical analysis

The data were analyzed using the Sta-

Table 1
Characteristics of study subjects by school location.

Variables	Total (n = 220) No. (%)	Urban (n = 110) No. (%)	Rural (n = 110) No. (%)
Age			
12 years old	111 (50.5)	60 (54.5)	51 (46.4)
13 years old	109 (49.5)	50 (45.5)	59 (53.6)
Sex			
Male	125 (56.8)	75 (68.2)	50 (45.5)
Female	95 (43.2)	35 (31.8)	60 (54.5)
Father's education level			
Below secondary	31 (14.1)	17 (15.5)	14 (12.7)
Secondary level or above	189 (85.9)	93 (84.5)	96 (87.3)
Mother's education level			
Below secondary	34 (15.5)	16 (14.5)	18 (16.4)
Secondary level or above	186 (84.5)	94 (85.5)	92 (83.6)
Father's occupation			
Laborer	55 (25.0)	41 (37.3)	14 (12.7)
Farmer	16 (7.3)	2 (1.8)	14 (12.7)
Unemployed	4 (1.8)	2 (1.8)	2 (1.8)
Government or private employee	81 (36.8)	15 (13.6)	66 (60.0)
Merchant/self-employed	64 (29.1)	50 (45.5)	14 (12.7)
Mother's occupation			
Laborer	22 (10.0)	16 (14.5)	6 (5.5)
Farmer	6 (2.7)	2 (1.8)	4 (3.6)
Housewife	138 (62.7)	76 (69.1)	62 (56.4)
Government or private employee	25 (11.4)	5 (4.5)	20 (18.2)
Merchant/self-employed	29 (13.2)	11 (10.0)	18 (16.4)

tistical Package for Social Science (SPSS) version 18.0 (SPSS, Armonk, NY). The DMFT data showed a skewed distribution. The Mann-Whitney *U* test was used to compare the mean DMFT indices by geographical location of the school. The association between oral hygiene habits, knowledge, attitude and dental caries status was examined using the chi-square test. Multiple logistic regression analysis was used to identify associations between independent variables and dental caries.

RESULTS

A total of 220 children from two schools were included in the study; 56.8% were boys and 43.2% were girls, 49.5% were 13 years old and 50.5% were 12 years old. The majority of their fathers (60.0%) were employees. Most of their mothers (62.7%) were housewives followed by merchant/self-employed (13.2%) (Table 1). Fifty-one point two percent of study subjects had dental caries and the mean DMFT score was 1.71 ± 2.07 teeth per

Table 2
Comparison of mean dental DMFT score by location of school.

Location of school	Number	DMFT	<i>p</i> -value (difference by location)
Urban	110	2.19 ± 2.23	0.001 ^a
Rural	110	1.23 ± 1.78	
Total	220	1.71 ± 2.07	

DMFT, decayed, missing and filled teeth; ^a *p*-value from Mann-Whitney *U* test.

Table 3
Association between dental caries knowledge, attitude score and oral hygiene habits and DMFT.

Variable	Caries free No. (%)	At least one DMFT No. (%)	<i>p</i> -value ^a
Knowledge			0.98
Poor (score 0-5)	16 (48.5)	17 (51.5)	
Fair (score 6-8)	76 (46.6)	87 (53.4)	
Good (score 9-10)	11 (45.8)	13 (54.2)	
Attitude ^b			0.01
Fair (scores 18-24)	20 (33.3)	40 (66.7)	
Good (scores 25-30)	83 (51.9)	77 (48.1)	
Oral hygiene habits			0.77
Poor (scores 0-8)	18 (41.9)	25 (58.1)	
Fair (scores 9-12)	70 (47.9)	76 (52.1)	
Good (scores 13-15)	15 (48.4)	16 (51.6)	

DMFT, decayed, missing and filled teeth; ^a*p*-value from chi-square test; ^battitude level – no poor attitude level.

person. The mean DMFT score among children from the urban school (2.19 ± 2.23 teeth per person) was significantly higher than among children from the rural school (1.23 ± 1.78 teeth per person) (Table 2).

No poor level of attitude toward dental caries was found among subjects and a significant association was found between level of attitude and dental caries (*p* = 0.01). Secondary schoolchildren with a good attitude level were more likely to be caries free than those with a fair attitude level. Subject with a fair knowledge level

about oral hygiene had more caries than those with poor and good levels of knowledge (Table 3). All independent variables were investigated using multiple logistic regression analysis to identify factor significantly associated with dental caries. The schoolchildren with fair attitude level regarding dental caries were 2.35 times (95%CI: 1.18-4.67) more likely to have dental caries than those with a good attitude level. We did not find a statistically significant association between oral hygiene habits and dental caries. The

Table 4
Association between variable and dental caries.

Variables	Number	Adjusted odds ratio ^a		p-value
		OR	95% CI	
Location of school				
Urban	110	2.24	1.01-4.94	0.04 ^c
Rural	110	1 ^b		
Sex of student				
Male	125	0.68	0.37-1.26	0.22
Female	95	1 ^b		
Education level of father				
Primary/no education	31	2.34	0.76-7.17	0.14
Secondary or above	189	1 ^b		
Education level of mother				
Primary/no education	34	1.95	0.68-5.63	0.22
Secondary or above	186	1 ^b		
Occupation of father				
Laborer	55	2.83	1.05-7.62	0.04 ^c
Farmer	16	1.09	0.27-4.47	0.90
Unemployed	4	0.63	0.05-7.43	0.72
Government or private employee	81	1.59	0.65-3.90	0.31
Merchant/self-employed	64	1 ^b		
Occupation of mother				
Laborer	22	0.44	0.10-1.85	0.26
Farmer	6	3.61	0.28-45.73	0.32
Housewife	138	0.62	0.25-1.53	0.30
Government or private employee	25	0.67	0.20-2.29	0.52
Merchant/self employed	29	1 ^b		
Knowledge about dental caries				
Poor	33	0.93	0.29-3.01	0.90
Fair	163	1.13	0.43-2.98	0.80
Good	24	1 ^b		
Attitude about dental caries				
Fair	60	2.35	1.18-4.67	0.02 ^c
Good	160	1 ^b		
Oral hygiene habits				
Poor	43	2.00	0.68-5.90	0.21
Fair	146	1.27	0.53-3.05	0.59
Good	31	1 ^b		

^aAdjusted for all variables in table; ^bReference group; ^c $p < 0.05$.

children with poor and fair levels of oral hygiene were twice (95%CI: 0.68-5.90) and 1.27 times (95%CI: 0.53-3.05) more likely to have dental caries, respectively, than

those with a good level of oral hygiene, Subjects with fathers who were laborers were 2.83 times (95%CI: 1.05-7.62) more likely to have dental caries than those

whose fathers were merchants or were self-employed (Table 4).

DISCUSSION

The mean DMFT score in this study was 1.71 ± 2.07 teeth per person, which is higher than 0.98 found in a previous oral health survey in Myanmar in 1999 (WHO, 1999) but similar to 1.8 found in a survey conducted in Lao PDR in 2006 (Jürgensen and Petersen, 2009). The mean DMFT score was higher among urban children (2.19 ± 2.23) than rural children (1.23 ± 1.78) in our study. This disparity between urban and rural results was also seen in a study from Burkina Faso in 2004 which found a DMFT score of 0.9 among urban children and a score of 0.5 among rural children (Varenne *et al*, 2004). Sugary foods and drinks were more easily available to urban students than rural students. In our study there was a significant association between dental caries status and urban school location. Our findings are different than a study from Nepal that found a rural school location was significantly associated with caries among schoolchildren (Yee and Donald, 2002).

It has been well known for centuries that good oral hygiene is essential for good oral health and caries prevention (Thylstrup and Fejerskov, 1986). In our study children with poor and fair levels of oral hygiene were more likely to get dental caries than those with good oral hygiene. Eighty-nine point five percent of schoolchildren in our study brushed their teeth two or more times per day, similar to another study (Thylstrup and Fejerskov, 1986). More than 90% of the students in our study always used toothpaste with fluoride and changed their toothbrush when the bristles were worn out. Ninety-three point three percent of the students

in our study agreed with the statement, "Although modern treatments are effective in curing dental diseases, we need to pay attention to regular oral hygiene practices". Children with fair attitude levels regarding dental caries were more likely to have dental caries than those with good attitudes levels. Students with father who were laborers were more likely to have dental caries than those whose father were merchants or were self-employed, which is different than a study from Iran that found no association between parental occupation and dental caries (Daneshkazemi and Davari, 2005).

In conclusion, significant associations were found between having dental caries and geographical location of the school, occupation of the father and attitudes about dental caries. Although the mean DMFT score in this study was low it was slightly higher than other studies conducted in Myanmar (WHO, 1999; Myint *et al*, 2005). Dental caries prevention and oral health promotion programs for schoolchildren are needed to reduce this upward trend of dental caries and to increase the awareness of oral health.

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