Knowledge and Practice of Oral Health and Hygiene and Oral Health Status among School Going Adolescents in a Rural Area of Sylhet District, Bangladesh

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Abstract

A cross-sectional, descriptive study was done at a rural high school in Zakiganj Upazila of Sylhet District, Bangladesh, between January and December of 2014, to determine knowledge and practice of oral health and hygiene and oral health status among school going adolescents. Students from three classes: class VIII, IX and X, and aged 12-16 years were taken for the study. Study samples were collected by using simple random sampling technique. A total of 90 students were divided into two age groups: 12-14 years and 15-16 years. A pre-designed, self-administered questionnaire was used for demographic survey and knowledge of oral health and hygiene (a 10-point questionnaire) and practice (a 7-point questionnaire). Then a plane mouth mirror and periodontal probe was used for examining oral health status in those school children. Oral hygiene status was measured by simplified Green and Vermillion Oral Hygiene Index. The mean age of the respondents was 14.37±0.50 years. Females were 68 (75.6%) and males were 22 (24.4%). 31 (34.4%) were from class VIII, 30 (33.3%) from class IX and 29 (32.2%) were from class X. 33.3% of the respondents have scored below the mean of the total knowledge score while 66.7% has scored above the mean (6.86±2.05). Pearson's correlation coefficient (+0.342) revealed that an increase in knowledge score would lead to increase in practice score. The younger group had higher mean knowledge score than older group (7.15+1.35 vs. 6.58+2.54; P=0.017); however, no significant difference was found between males and females (6.90±1.74 vs. 6.85±2.15; P=0.432). There was no significant difference in Debris Index (DI), Calculous Index (CI) and Oral Health Index (OHI) scores in between age groups and genders. On educational status, significant difference was observed only in OHI score (P=0.001) among those three classes of students. Overall, only 31% had good oral hygiene, while 59% respondents had fair and 10% had poor oral hygiene status.

CBMJ 2021 January: vol. 10 no. 01 P: 30-36

Key words: Oral health and hygiene, school going children, public health, Bangladesh.

Introduction

Oral health is defined as complete absence of pain, discomfort or diseases associated with oral cavity and related structures such as teeth, tongue, jaws and oral soft and hard tissues.[1] Good oral health is essential for one's general health, wellbeing and quality of life.[2,3] Diseases of the oral cavity not only adversely affect the aesthetic appearance, limit physical function and may play a role in systemic diseases such as diabetes mellitus. Despite recent advances in oral health research, oral diseases are still a major public health issue across the globe.[3,4] Oral diseases affect nearly half of the world population (3.58 billion people).[3] Oral diseases are more intense among the children and oral diseases restrict activities in school, at work and at home causing several school and work hours to be lost each year.[4]

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Moreover, the psychosocial impact of these diseases often diminishes quality of life.[2-4] Among children, adolescents are particularly at higher risk for oral and dental diseases. Adolescence is a critical period as health practices during adolescence usually persist during adult years.[1,4] To achieve a sound oral health practice of good oral hygiene is a must. Oral hygiene is the practice of keeping mouth and oral cavity clean to prevent dental problems, especially dental caries, gingivitis and bad breath.[4]

The unique characteristic of oral and dental diseases is that they are universally prevalent and do not undergo remission or termination if untreated and require technically demanding expertise and time-consuming professional treatment.[4,5] The other fact is socio-epidemiological data of oral health helps to plan effective community oriented oral health promotion interventions for school children which saves millions of morbidities and millions of dollars in health care.[6-8] 'Polarization' of caries is occurring on a worldwide basis, where the prevalence of caries is declining in developed countries, increasing in less-developed countries, and is epidemic in countries with emerging economies.[6-8]

Bangladesh is developing country of South Asia, with majority of its population living in the rural areas. The aim of the study is to determine the knowledge and practice of oral health and hygiene and oral health status among school going adolescents in a rural area of Sylhet, Bangladesh, to provide basic socio-epidemiological data for planning and eventuation of oral health services in the rural areas focusing particularly on the preventive aspects. The study population was chosen adolescents aged from 12 to 16 years. This age is especially important as it is generally the age at which children move to secondary school from primary level. Moreover, this group is a reliable sample from the adolescent age which can be easily obtained through the school system.[4,9]

Methods

A cross-sectional, descriptive study was done at a rural high school in Zakiganj Upazila of Sylhet District in Bangladesh, between January and December of 2014. The students of the three classes: class VIII, IX and X, aged between 12 and 16 years were taken for the study. Both the school and the study samples were collected by using simple random sampling technique. A total of 90 students were divided in two age groups: 12 to 14 years and 15 to 16 years. A pre-designed, self-administered questionnaire was used for demographic survey, knowledge of oral health and hygiene, as per WHO protocol.[9] Oral hygiene status has been measured by simplified Greene and Vermillion Oral Hygiene Index (OHI-S).[10] Oral health status has been differentiated as good, fair and poor, according to OHI score as follows: 0.1-1.2=Good, 1.3-3.0=Fair, 3.1-6.0=Poor.[10] Clinical examinations of oral cavity and teeth were carried out under field conditions in a classroom setting by one dental surgeon using plane mouth mirrors, WHO periodontal probes and natural light as a source of illumination. A data collector recorded the observations. Students were examined being seated on a chair.

After data collection data entry was done. Demographic characteristics were analyzed by using frequency table and percentage. Mean age was seen; relationship between age category and sex and educational status were presented by cross tabulation. Statistical data analysis was done using the Statistical Package for the Social Sciences (SPSS) version 21.0 (USA). Data analysis was summarized in form of proportion and frequency tables for categorical variables. Continuous variables were summarized using means and standard deviation. P values were computed for categorical variables using Student 't' test and one-way ANOVA test. P value <0.05 was considered to constitute a statistically significant difference. The study was approved by the Institutional Review Board (IRB) of Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh.

Results

A total of 90 students who were aged between 12 to 16 participated in the study. 44 (48.9%) were aged between 12 and 14 years, while 46 (51.1%) were between 15 and 16 years. The mean age of the respondents was 14.37±0.50 years. Most of the participants were females 78 (75.6%); the number of male participants was 22 (24.4%). They were almost equally distributed according to their educational status. 31 (34.4%) were from class (grade) VIII, 30 (33.3%) from class (grade) IX and 29 (32.2%) were from class (grade) X. (Table-I). Table-II shows the knowledge level of the respondents. The mean knowledge score of the respondents were 6.86 out of 10 points, with a standard deviation of 2.05. 33.3% of the respondents have scored below the mean of the total knowledge score while 66.7% has scored above the mean (Table-III).

Table-IV shows practice of oral health and hygiene among the students. Pearson's correlation coefficient test revealed the value +0.342, as an association between the knowledge score and practice score suggesting that an increase in knowledge score would lead to increase in practice score (Table-IV). The younger group (12 to 14 years) had higher mean knowledge score than the older group (15 to 16 year) (7.15+1.35 vs. 6.58+2.54), and the difference was significant (P=0.017). There was no significant difference between the mean knowledge score of males and females (6.90±1.74 vs. 6.85±2.15; P=0.432) (Table-VI). Gender wise mean score of Debris Index (male=1.20, female=2.1) is more than the score of Calculus Index (male=0.91, female 0.76) and score of Oral Hygiene Index is (male=2.08, female=1.69). However, no significant difference was found. In the age groups, the older group had more score in Debris Index (12 to 14 years=0.89, 15 to16 years=2.92). However, there is no significant differences among DI, CI and OHI scores between age groups.

Educational status wise data showed that class X had the highest scores in all the three components (DI=1.34, CI=0.91, OHI=2.22). However, significant difference was observed only in OHI score (P=0.001) among those three classes of students (Table-V). The respondents who had knowledge score above the mean have less tooth plaque than the other group and the difference was statistically significant (P=0.02). Similarly, the respondents who had knowledge score above the mean knowledge score had better oral hygiene status as they have lower mean OHI score; the difference was also statistically significant (P=0.045). However, in Calculus Index, no significant difference was observed (P=0.716) (Table-VII). Overall, only 31% had good oral hygiene, while 59% respondents had fair and 10% had poor oral hygiene status.

Table-I: Socio-demographic characteristics of the respondents (N=90)

Variables		Frequency	Percentage
Age	12 to 14 years	44	48.9
	15 to 16 years	46	51.1
Mean±SD	14.37±0.50 years		
Gender	Male	22	24.4
	Female	68	75.6
Educational Status	Class VIII	31	34.4
	Class IX	30	33.3
	Class X	29	32.2

Table-II: Knowledge of oral health and hygiene (N=90)

Sl. No.	Statements regarding knowledge status	Frequency	Percentage
1	Protecting natural teeth is important for general welbeing	47	52.2
2	Brushing teeth can prevent tooth decay	78	86.7
3	Consuming too much sweet food causes tooth decay	69	76.7
4	Gum bleeding means inflammed gum	64	71.1
5	Regular brushing of teeth can protect gum bleeding	59	65.6
6	Regular brushing of teeth can protect tooth decay	78	86.7
7	Dental plaque means soft debris on teeth	79	87.8
8	Dental plaque leads to tooth decay	58	64.4
9	Use of fluoride can prevent tooth decay	20	22.2
10	General health has a relationship to oral health	62	68.9

Table-III: Distribution of total knowledge score of oral health among the respondents (N=90)

Knowledge score	Frequency	Percentage
Below mean knowledge score	30	33.3
Above mean knowledge score	60	66.7
Total	90	100
Mean ± SD	6.86 ± 2.05	

Table-IV: Practice of oral health and hygiene among the respondents (N=90)

Sl. No.	Practice variables		Frequency	Percentage
1	What do you use to clean your teeth?	Tooth brush	65	72.2
		Finger	24	26.7
		Meswak	0	0
		others	0	0
2	How many times do you clean your teeth every day?	Less than once	3	3.3
		Once	37	41.1
		Twice	46	51.1
		More than twice	4	4.4
		Others	0	0
3	When do you brush your teeth?	Morning	33	36.7
		Before sleep at night	2	2.2
		Morning and night	55	61.1
		Others	0	0
4	What material do you use to brush your teeth?	Toothpaste	59	65.6
		Toothpowder	11	12.2
		Char Coal /Ash	18	20.0
		Others	0	0
5	Do you rinse your mouth with water every time after eating?	Never	7	7.8
		Yes	55	61.1
		No	9	10.0
		Sometimes	18	20.0
6	Do you use dental floss/toothpick?	Yes	24	26.7
		No	43	47.8
		Sometimes	17	18.9
		Never	6	6.7
7	How many times do you eat sweet foods in a week?	Never	9	10.0
		Once in a week	43	47.8
		Twice in a week	21	23.3
		3-5 times in a week	16	17.8
		More than 5 times	1	1.1
Pearson's coefficient of correlation between knowledge score and practice score			+0.342 (P=0.001)[s]	

Table-V: Distribution of the scores of the components simplified oral hygiene index (N=90)

Variables	DI Mean ± SD	P value	CI Mean ±SD	P value	OHI Mean ± SD	P value
Gender Male Female	1.20±0.59 2.16±0.96	0.24[NS]	0.91±0.39 0.76±0.50	0.98[NS]	2.08±0.87 1.69±0.82	0.45[NS]
Age 12 to 14 years 15 to 16 years	0.89±0.53 1.13±0.53	0.18[NS]	0.77±0.57 0.82±0.38	0.19[NS]	1.63±0.82 1.94±0.84	0.65[NS]
Educational status Class VIII Class IX Class X	0.77±0.51 0.96±0.51 1.34±0.51	0.00[NS]	0.68±0.43 0.81±0.59 0.91±0.37	0.18[NS]	1.45±0.86 1.82±0.69 2.22±0.81	0.001[$]

DI=Debris index, CI=Calculus index, OHI= Oral hygiene Index, SD=Standard deviation, S=Significant, NS=Not significant, P value reached from Student t test and one-way ANOVA test.

Table-VI: Relationship between knowledge score and socio-demographic characteristics of respondents (N=90)

Variables	Knowledge score Mean±SD	P value
Age 12 to 14 years 15 to 16 years	7.15±1.35 6.58±2.54	0.017[S]
Gender Male Female	6.90±1.74 6.85±2.15	0.432[NS]
Educational status Class VIII Class IX Class X	7.19±1.42 7.03±1.18 6.34±3.06	0.243[NS$]

SD=Standard deviation, P value reached from Student t test and one-way ANOVA test.

Table-VII: Association between the score of oral hygiene index and its components with knowledge of oral health (N=90)

Variables	Mean ± SD	P value
DI Below mean score of knowledge Above mean score of knowledge	1.14±0.64 0.96±0.51	0.02[S]
CI Below mean score of knowledge Above mean score of knowledge	0.74±0.43 0.82±0.50	0.716[NS]
OHI Below mean score of knowledge Above mean score of knowledge	1.88±0.99 1.74±0.76	0.045[S]

DI=Debris index, CI=Calculus index, OHI= Oral hygiene Index, SD=Standard deviation, S=Significant, NS=Not significant, Mean knowledge score=6.86. P value reached from Student 't' test.

Discussion

In this study more than 50% of the respondents knew the importance protecting natural teeth. Awareness of importance of regular tooth brushing for caries prevention was high (86.7%) among the study population. This finding is similar to the result reported by Varenne *et al.*[11] 87.8% respondents knew the significance of dental plaque which is higher than the result of a study in Nepal where only 48% reported to be known about the significance of dental plaque.[12] 64.4% know that dental plaque can cause tooth decay. However, knowledge on fluoride and its effect on oral health were low, about 80% of the students did not know about fluoride and its benefits on dentition. This result is similar to the result of some studies done in South Asian region.[12-14] This indicates that the awareness of benefits of fluoride and importance of using fluoridated toothpaste is not well disseminated in our country. WHO working group has recommended for public health efforts to make fluoridated toothpaste affordable in developing countries like Bnagladesh.[15]

More than 60% of the respondents knew that general health is related to oral health. The similar general pattern was observed in studies in Pakistan and India.[16,17] There was no significant difference of knowledge score between male and female respondents. This shows that the knowledge obtained from various sources including schools, parents, teachers and media is more or less the same for the boys and girls. However, several studies reported that in rural India, boys of a similar age group are more knowledgeable than girls, which reflects that in the rural population specially in developing countries the boys are more exposed to the extraneous sources of information including schools and mass media and are the focus of attention at home when it comes to hygiene and other health related measures.[7,12,16,18]

In the present study, only 31% of the respondents had good oral hygiene status, whereas in a study in India among the school going children 80% of the respondents had good oral hygiene status.[5]

In a recent study, in northern Bangladesh among the secondary school student, it was found that, 66% students had good oral hygiene status and 25% students had fair oral hygiene.[19]

In this study, it was found that there was significant association between oral hygiene index score and the knowledge score, which means the respondents who had knowledge above the mean knowledge score had better oral hygiene status. This result is similar to that of some other studies done in India.[5,7,16] This could be attributed to the respondents who has better knowledge on oral health gad healthy oral hygiene practices and better oral hygiene status.

Provision of oral health care is not a difficult thing, but proper treatment facilities are not available all over the country. Hence, simple preventive measure should be taken to maintaining good oral and dental health. The oral health teaching manual should be revised to include newer concepts of oral health care like tooth brushing using fluoridated toothpaste twice a day at an interval of twelve hours, avoidance of sugar containing food as far as possible and ringing of the mouth properly after taking sweet food etc.[4,14,19,20] As this study was done in a rural school of Sylhet, it cannot be generalized in the rest of the community who live in the other parts of Bangladesh. Besides, descriptive design of the present study does not attempt to generalize the findings to populations outside the study participants.

Conclusion

Our data suggest that in oral health knowledge score, 33.3% of the respondents have scored below the mean, while 66.7% has scored above the mean (6.86±2.05). Pearson's correlation coefficient revealed that an increase in knowledge score would lead to increase in practice score. There was no significant difference in Debris Index (DI), Calculus Index (CI) and Oral Health Index (OHI) scores in between age groups and genders. On educational status, significant difference was observed only in OHI score (P=0.001) among those three classes of

students. Overall, only 31% had good oral hygiene, while 59% respondents had fair and 10% had poor oral hygiene status. A high prevalence of oral health care need still exists in the country as reflected in this study. Hence, essential oral and dental treatments should be easily accessible and available in the rural areas.

Acknowledgement

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