

## Level of Knowledge and Causes of Dental Disease among the Students of Selected Secondary Schools in Dhaka City

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### Abstract

To assess the level of knowledge and causes of dental disease among the urban school children a cross-sectional study was conducted in two secondary schools of Dhaka city. 20 students each of class 6, 7 & 8 from each school were randomly selected. List of the students was obtained from the teacher & from the list 20 were selected.

Regarding the level of knowledge 54% were found to have average knowledge and 25.8% had good knowledge about causes of dental disease. People should be made more aware about the maintenance of oral hygiene for ensuring better oral health.

**Key words:** DMF, oral hygiene, food habits, junk food.

### Introduction

Oral health means being free of chronic mouth and facial pain, oral and throat cancer, oral sores, birth defects such as cleft lip and palate, periodontal (gum) disease, tooth decay and tooth loss, and other diseases and disorders that affect the mouth and oral cavity.<sup>2</sup>

Dental caries, a consequence of poor oral hygiene continues to be a major public health problem in many countries particularly in developing countries. Oral diseases share common risk factors with the four leading chronic diseases cardiovascular diseases, cancer, chronic respiratory diseases and diabetes including unhealthy diet, tobacco use, and harmful alcohol use. Poor oral hygiene is also a risk factor.

The most common oral diseases are dental cavities and periodontal (gum) disease. 60-90% of school children worldwide have dental cavities. Severe periodontal (gum) disease, which may result in tooth loss, is found in 5-20% of middle-age adults; the rate varies across geographical regions. Traditional curative dental care is a significant economic burden for many high-income countries, where 5-10% of public health expenditure relates to oral health.<sup>1</sup>

The main purpose of dental hygiene is to prevent the build-up of plaque, the sticky film of bacteria that forms on the teeth. Bacterial plaque accumulated on the teeth because of poor oral hygiene is the causative factor of the major dental problems. Poor oral hygiene allows the accumulation of acid producing bacteria on the surface of the teeth. The acid demineralises the tooth enamel causing tooth decay (cavities). Dental plaque can also invade and infect the gums causing gum disease and periodontitis. In both conditions, the final effect of poor oral hygiene is the loss of one or more teeth. You should not wait until a tooth is lost, just then to understand the importance of oral hygiene and preventive care. Many health problems of the mouth, such as oral thrush, trench mouth, bad breath and others are considered as effect of poor dental hygiene. Most of these dental and mouth problems may be avoided just by maintaining good oral hygiene.<sup>2</sup>

The public health solutions for oral disease are most effective when they are integrated with other chronic disease and with national public health programmes. The activities of the World Health Organization (WHO) span advocacy needed for a common risk actor approach to prevent oral and other chronic diseases simultaneously Technical support is needed for countries that are integrating oral health into their public health systems.

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The objectives of the WHO Global Oral Health Programme (GHP), one of the technical programmes within the Department of Chronic Diseases and Health Promotion (CDHP), have been reoriented according to the new strategy of disease prevention and promotion of health. Greater emphasis is put on developing global policies in oral health promotion and oral disease prevention, coordinated more effectively with other priority programmes of CDHP and other clusters and with external partners. The programme simulates development and implementation of community-oriented demonstration projects for oral health promotion and prevention of oral diseases with focus on disadvantaged and poor population groups in developed and developing countries. Certain developing countries, countries with economies and health systems in transition, and industrialized, developed countries are targeted. Community empowerment strategies are applied according to the Primary Health Care concept.<sup>3</sup>

### Justification

Good dental hygiene is very important to health. Everything people eat comes through mouth and everything people eat leaves something in mouth. With good dental hygiene one can keep mouth clean and keep oneself healthier. With good dental hygiene one will be healthier because there will be fewer germs in body to make people sick. Good dental hygiene keeps teeth healthy and this is necessary for proper speech, eating a good variety of foods and having a good natural smile. Good dental hygiene needs to start when children are young. Good oral hygiene is one of the crucial components of prevention of morbidity. Beyond protecting the oral health and the teeth, good dental hygiene may even play a crucial role in preventing heart valve infection, according to research reported in *Circulation: Journal of the American Heart Association*. This suggests that bacteria get into the bloodstream hundreds of times a year, not only from tooth brushing, but also from other routine daily activities like chewing food. A good oral hygiene practice is a function of individual's lifestyle. People acquire most good lifestyle practice at early life. Early days of school is particularly the best time to instigate such practices. Current study is conducted to assess the level of knowledge and causes of dental diseases among school children.

### Back ground

Healthy teeth not only enable to look and feel good, they make it possible to eat and speak properly. To maintain pearly whites in good condition and last a lifetime, one must follow some simple yet vital rules of oral hygiene: Brushing teeth twice a day, getting a dental check-up and teeth cleaning at least twice a year, avoiding smoking, avoiding candy and other sugary foods, eating a well-balanced diet and not ignoring loose teeth, bleed and swollen gums.<sup>5,6</sup>

Three key features of maintaining oral hygiene are: <sup>6</sup>

**Brushing:** At minimum, one should thoroughly brush teeth twice a day, however brushing after each meal is even better. If one can't brush after meals, rinsing mouth with water can help to wash away some of the particles that remain on teeth after eating. When people brush, they should use toothpaste that contains fluoride as this can help prevent teeth from decaying.

**Flossing:** Taking the time to properly floss teeth is one of the most important things one can do to maintain good dental health, yet it is the step that people most often skip. While brushing helps to clean the surface of teeth, flossing helps to ensure that the areas between teeth are also cleaned. While dentists typically recommend that adults floss at least once a day, brushing alone is considered to be adequate for children.

**Diet:** A person's diet can also make a huge difference. For instance, large quantities of sugary or starchy food can cause a significant amount of plaque – an acid that can trap food and germs and can, over time, cause tooth decay – to develop.

Soft and sticky foods are most dangerous between the teeth as they get attached between the teeth and provide a breeding ground for bacteria. Tough foods increase saliva production and some amount of self-cleaning of the teeth takes place. Snacking in between meals is a sure fire recipe for continuous acid attack on the teeth all day long. A balanced diet with limited number of between-meal snacks is ideal for healthier teeth. Some foods are beneficial and some are detrimental to oral health.

### Literature Review

Oral hygiene consists of proper brushing and flossing daily. The purpose of oral hygiene is to minimize any etiologic agents of disease in the mouth. The primary focus of brushing and flossing is to remove and prevent the formation of plaque. Plaque consists mostly of bacteria. As the amount of bacterial plaque increases; the tooth is more vulnerable to dental caries when carbohydrates in the food are left on teeth after every meal or snack.

A toothbrush can be used to remove plaque on accessible surface, but not between teeth or inside pits and fissures on chewing surface. When used correctly, dental floss removes plaque from areas which could otherwise develop proximal caries. Other adjunct hygiene aids include interdental brushes, water picks, and mouthwashes.<sup>2</sup>

However, oral hygiene is probably more effective at preventing gum disease than tooth decay. The brush and fluoride toothpaste have no access inside pits and fissures, where chewing forces food to be trapped. It is here that resident plaque bacteria change any carbohydrate to acid that demineralises teeth inside pits and fissures, causing over 80% of cavities occlusal caries accounts for between 80 and 90 percent of caries in children. The teeth at highest risk for carious lesions are the first and second permanent molars.

Chewing fibre like celery after eating forces saliva inside pits and fissures to dilute any carbohydrate like sugar in trapped food, neutralize acid and remineralised tooth and should be part of everyday personal tooth care to prevent tooth decay.

Hygiene care consists of regular dental examinations and cleanings. Sometimes, complete plaque removal is difficult, and a dentist or dental hygienist may be needed. Along with oral hygiene, radiographs may be taken at dental visits to detect possible dental caries development in high risk areas of the mouth.

#### Materials and Methods

It was a cross sectional study conducted in the selected secondary school students of Dhaka City with a view to assessing their level of knowledge and causes of dental diseases among them. Two schools

**Table I: Distribution of the respondents by sex**

Sex	Frequency	%
Female	60	50.0
Male	60	50.0
Total	120	100.0

Table 1 shows the distribution of the respondents by sex, Among the respondents 50% were boys and 50% were girls were selected for the study purpose. They were – Saint Joseph Higher Secondary School, Mohammadpur and Mohammadpur Girls High School. The study was conducted between January to June, 2009. The sample size was calculated as follows:  
 $n = z^2 pq / d^2$

where,

n=required sample size

z= value of z at 95% of confident limits. i.e 1.96

p=proportion of secondary school children with satisfactory level of oral hygiene practice. As prevalence was unknown, it was assumed 50%.

Therefore  $p=0.5$

$$q=(1-p)=0.5$$

d=precision or error allowed in the study 10% of 'p'.

Hence  $d=0.05$

Therefore,  $n = \{(1.96)^2 \times (0.50) \times (0.50)\} / (0.05)^2 = 384$

The sample size further was increased by 5% to account for contingencies such as non-responses. So, the final sample size was  $n \times 1.05 = 384 \times 1.05 = 403$ . But due to short period within which data were collected, sample size was purposively fixed at 120. 20 students from each of class 6,7 & 8 from each school were randomly selected. List of the students was obtained from the teachers; from the list 20 students were selected by lottery method. An interview schedule was developed consisting of five parts. The first part of the interview schedule was on socio-demographic status related questions, second part on their practice of oral hygiene, third part was on their knowledge regarding oral hygiene, and fourth part focused on their food habits while the last was on their oral and dental health problem. Further an examination form was developed to assess the no. of decayed, missing, filled teeth, status of oral hygiene etc. After explaining the purpose of the study data were collected through face to face interview using a Bengali structured questionnaire and an examination form. The investigator herself collected data from the selected high schools of Dhaka city. The collected data were checked and verified by the investigator at the end of work everyday. Any inaccuracy and inconsistency were corrected in the next working day. The data entry was started immediately after the completion of data collection. The collected data were checked, verified and then entered into the computer. Only fully completed questionnaires were entered into the computer for final analysis. The analysis was carried out with the help of SPSS (Statistical package for social science) Windows software program version 12.5.

## Results

**Table 2: Level of knowledge about causes of dental disease (n=120)**

Level of knowledge about causes of dental disease	Frequency	%
Poor knowledge (<2)	24	20.0
Average knowledge (2-5)	65	54.2
Good knowledge (>5)	31	25.8
Total	120	100.0

Table 2 shows the level of knowledge of the students based on the correct response of the students provided following the question on prevention of dental carries. Considering 1 score for each correct response total score was generated. Level of knowledge was categorized based on predefined cut-off point (< 2 poor knowledge, 2-5 average knowledge and >5 good knowledge).

Regarding the level of knowledge about causes of dental disease, 20.0% were found to have poor knowledge 54.2% had average knowledge and 25.8% had good knowledge.

**Table 3: Knowledge about causes of dental disease (n=120)**

Knowledge about causes of dental disease	Frequency	%
Poor oral hygiene	26	21.7
Taking excessive sweets	34	28.3
Accumulation of residual food	14	11.7
Consumption of junk food	16	13.3
Cigarette, Betel and jarda	25	20.8
Not seeking dental care	43	35.8
Multiple responses	56	46.7

Table 3 shows the distribution of the respondents by their response regarding causes of dental disease. Among the respondents 21.67% thought that poor oral hygiene, 28.3% said about taking excessive sweets, 11.7% reported accumulation of residual food, 13.3% pointed towards consumption of Junk food, 20.8% Cigarette, Betel and Jarda, 35% pointed towards negligence in seeking dental care and 46.7% were not sure about causes of dental disease.

## Conclusions and Recommendations

Level of awareness about dental hygiene among the students should be raised.

Proper brushing methods, duration and procedure should be demonstrated to the school students for better teeth.

Students should be provided with the information about harm of frequent sweet, junk food consumption.

Regular dental checkup should be encouraged among the school children. As prevalence of dental problem is too high, initiative should be started encompassing both curative as well as preventive medicine.

## References

1. World Health Organization (2009), Oral Health, available from the web: <http://www.who.int/mediacentre/factsheets/fs318/en/index.html> Accessed on 23d June 2009
2. WHO, (2009) The Objectives of the WHO Global Oral Health Programme (ORH), [http://www.who.int/oral\\_health/objectives/en/index.html](http://www.who.int/oral_health/objectives/en/index.html) accessed on 23rd June 2009
3. Anonymous. Nutrition and dental health available on web <http://users.forthnet.gr/ath/abyss/dep1340.htm> accessed on 23rd June 2009
4. Tobacco use and incidence of tooth loss among US male health professionals. *Journal of Dental Research*, April, 2007; 86(4):373-7
5. Bhuiyan A M. prevalence of dental disease in Bangladesh. *Bangladesh Den J* 1988;5:6-9
6. Smith AJ, Murray PE, Sloan AJ, et al. "Trans-dentinal Stimulation of Tertiary Dentinogenesis". *Advances in Dental Research*, (August 2001); 15(1): 51-4.