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Status of Dental Caries and Oral Health Behaviour among 6 to 9 Years Children Attending at a Dental College Hospital in Dhaka City

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Abstract

Background: Oral hygiene is the method that is used to `prevent pathological condition that affect mouth like gum disease, cavities, mouth sores and ulcers. **Objective:** The purpose of this study was to observe oral health behavior among the children of 6 to 9 years' old such as regular tooth brushing, uses of oral hygiene aids and dental attendance to maintain their good oral health for a life time. **Methodology:** This cross-sectional study conducted in Dhaka Dental College and Hospital, Bangladesh study was carried out from October 2019 to September 2020. A total of 175 participants' children aged 6 to 9 years attending at the OPD with dental Caries in Dhaka Dental College Hospital were the study population. The study population were included children aged 6 to 9 years in Dhaka dental college and hospital who were available and wished to participate. The questionnaire was used in this study pre-tested before the data collection, data was collected using semi-structured questionnaire by face-to-face interview. **Results:** A total of 175 children were examined during the study. Among them 65.13% were suffering from caries teeth. Among the majority of children (40.57%) dental caries was from government primary school as compare from private primary school (15.43%). The dmft score of 1 or higher increases with the increasing age of the children. 7 to 8 years' children (20.57%) had high dmft score. High DMFT score indicates significant relation between age of children and dmft scores (P=.000, <0.01). Among them 66.86% children brush their teeth regularly whereas 33.14% followed irregularly brush their teeth and only 20.4% brush their teeth twice daily which are recommended whereas majority 79.6% brush their teeth once daily. Among them had habit of snacking aftermeal observed in 87.43% of the participants but only 15.43% of children cleaned their teeth after snack food. **Conclusion:** Good oral health behavior plays a fundamental role for general wellbeing by preventing common oral diseases, such as dental caries and periodontal disease, especially in children who live in developing countries. *[Journal of National Institute of Neurosciences Bangladesh, January 2024;10(1):38-43]*

Keywords: Dental caries; oral health behaviour; tooth brushing habit

Introduction

The mouth is the major gateway to the body; whatever affects oral health may also affect general health[1]. Oral health can be defined as a "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[2]. The oral tissue forms an integral part of every human being and is extremely vulnerable to disease as it is in an intimate relationship with the external environment, and it is also subjected to mechanical, chemical, and bacterial interactions[3]. According to Petersen et al[4] oral diseases may be considered a public health problem due to their high prevalence and significant social impact. Lateefat et al[5] explained that the most common oral health issues across the world are tooth decay, periodontal disease, and halitosis. There are various environmental and life style factors such as nutritional status, tobacco smoking, alcohol, poor oral hygiene, stress, and systemic

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conditions linked to the oral diseases.

Sheiham and Watt[6] explained that a lot of people suffer from poor oral health without being aware of their situation; therefore, chewing and digestion of food as well as quality of life are negatively affected. Singh et al[7] further reported that the oral health care of an individual depends on his or her oral health attitude and behavior, which reflect one's experiences, cultural perception, familial beliefs, and other life style situations. Although children are taught the importance of tooth brushing, they also need to be taught the importance of frequency and the proper methods of brushing their teeth[8]. Children were found to be inadequate when their tooth brushing techniques were examined. A survey done among 12-year-old children in Sudan revealed that 64.0% brushed their teeth once, 25.0% brushed twice and 5.0% brushed more than twice per day. Three percent reported to have used dental floss[9].

Lack of awareness, cost implications and fear of the dentist are some of the factors that contribute to poor dental visit habits[10]. In Ukraine 90.0% of the children had visited a dentist within the past one year despite the fact that each school has a dentist who provides routine oral health care to all enrolle children. However, the study revealed that children only sought dental services when they were in pain[11]. Elsewhere in Africa dental visit behavior of the schoolchildren in both public and private schools was found to be poor. Studies conducted in Lagos, Nigeria found 86.0% of the children had never visited a dentist[12] while in Tanzania 76.0% of the children had never visited a dentist[13]. In contrast a higher number of children visit dentists in developing countries. For example, 71.0% of 12-year-olds in Poland had made dental visits[14]. Dentists are considered key agents in provision of oral education and preventive services that improve oral status. The purpose of this study was to observe oral health behavior among the children of 6 to 9 years old such as regular tooth brushing, uses of oral hygiene aids and dental attendance to maintain their good oral health for a life time.

Methodology

Study Settings and Population: This study was a descriptive type of cross-sectional study conducted in Dhaka Dental College and Hospital, Bangladesh study was carried out from October 2019 to September 2020. A total of 175 participants children aged 6 to 9 years attending at the OPD with dental Caries in Dhaka Dental College Hospital were the study population. The study population were included children aged 6 to 9 years in Dhaka Dental College and Hospital who were available and wished to participate. The study population excluded children below 6 and above 9 years of age and those who declined to participate were excluded from the study.

Study Procedure: The questionnaire was used in this study pre-tested before the data collection, data was collected using semi-structured questionnaire by face-to-face interview. Verbal informs consent was taken before starting the data collection

Statistical Analysis: After collection of data, all interviewed questionnaires were checked for completeness, correctness and internal consistency to exclude missing or inconsistent data and those were discarded. Corrected data was entered into Statistical Package for Social Sciences (SPSS) statistical software version 20 for the analysis.

Ethical Consideration Ethical clearance was taken from the appropriate authority and ethics was maintained strictly through the study. Ethical clearance was obtained from Ethical Review Committee of Bangladesh University of Health Sciences (BUHS). A request letter of cooperation was taken from BUHS to study area Dhaka Dental College and Hospital Bangladesh in this study prior to the data collection period. All the participants were given an explanation about the objectives of the study and their right to participate or not. An information sheet for participants in Bengali was also given to each subject to read and it was also explained by the investigator to the participants. All questionnaire and ethical documents were translated into Bengali before interview.

Results

A total of 175 children were examined during the study. Proportion of caries teeth was 65.13%. Whereas male 67(38.28%) had a high prevalence caries then female 47 (26.85%) (Table 1).

Table 1: Distribution of Children according to Sex and Carious Teeth

Grade	Carious Teeth		Total
	Present	Absent	
Male	67 (38.28%)	26 (14.85%)	93
Female	47 (26.85%)	35 (20.02%)	82
Total	**114 (65.13%)**	**61(34.87%)**	**175**

Table showed distribution of caries with type of school among the respondents whereas majority of respondents 40.57% dental caries were from government primary school as compare 15.43% caries from private primary school (Table 2).

Table 2: Distribution of children according to type of school and Carious/ Decayed Teeth

Types of school	Carious/Decayed Teeth		Total
	Present	Absent	
Government Primary School	71(40.57%)	26(14.85%)	97
Private Primary School	27(15.43%)	22(12.57%)	49
No Formal Education	21(12.0%)	8(4.58%)	29
Total	**114 (65.13%)**	**61(34.87%)**	**175**

Dmft score of 1 or higher increases with the increasing age of the children. 7-8 years children (20.57%) had high dmft score. There exists significant relation between age of children and dmft scores (P=0.000, <0.01) (Table 3).

Table 3: Distribution of the children according to age and dmft score

Age Group	Dmft score		Total
	Score 0	Score 1 or higher	
6 to 7 Years	48(27.43%)	19(10.86%)	67
7 to 8 Years	23(13.14%)	36(20.57%)	59
8 to 9 Years	21(12.0%)	28(16.0%)	49
Total	**92(52.57%)**	**83(47.43%)**	**175**

Among them 118(66.86%) respondents brush their teeth regularly whereas 57(33.14%) followed irregularly brush their teeth. About the frequency of cleaning teeth of the respondents 35(20.4%) of respondents brush their teeth twice daily which is recommended whereas 140(79.6%) of respondents brush their teeth once daily, the method of brushing teeth 71(41.5%) respondents brush their teeth according to correct method (vertical and horizontal motion) others104 (58.5%) doesn't know the correct method. and 64(37.3%) respondents brush their teeth according to correct timing (1-3 mints) others 111(62.7%) didn't know the correct method timing (Table 4).

Table 4: Distribution of Respondents According to Daily Tooth Brushing, Frequency of Brushing, Method of Brushing and Duration of Brushing

Daily Tooth Brushing	Frequency	Percent
Regular	57	33.14
Irregular	118	66.9
Frequency of brushing teeth		
Twice daily	35	20.4
Once daily	140	79.6
Method of brushing teeth		
Correct method	71	41.5
Others	104	58.5
Duration of brushing teeth		
1-3 mins	64	37.3
Others	111`	62.7

Table showed that snacking after meal was observed in 87.43% of the participants but only 15.43% of children cleaned their teeth after a snack food (Table 5).

Table 5: Distribution of the Children According to Snacking Habit

Category	Frequency	Percent
Snaking Habits between Mean		
Yes	153	87.4
No	22	12.6
Tooth Cleaning Snacking		
Yes	27	15.4
No	148	84.6

Discussion

This study was a descriptive type of cross-sectional study conducted on 175 of children (6 to 9 years) who attended outpatient department for Dental checkup at the Dhaka Dental College Hospital, Dhaka, Bangladesh from October 2019 to September 2020. An unhygienic status of oral cavity is a predisposing factor to dental caries. An unhygienic mouth harbors plaque which is one of the etiological factors for dental caries[15].

This study showed the prevalence of dental caries was 65.13% significantly higher in male 38.28% as compare to female was 26.85%. Other studies have found similar results that indicate that the urban region had higher caries prevalence than the rural region[16-17]. Female children are more conscious about their proper oral hygiene maintenance as compare to male. Living in urban areas has implications for lifestyle, including dietary pattern and has been shown to be associated with an increased prevalence of dental caries[18]. Similar results found in this study a study done in India showed female did not have a higher caries prevalence compared with male children[19]. This may be because of oral hygiene practices that exist between children residing in male and female.

The finding of this study that female respondents displayed, more positive dental health attitude and practice than their male counterparts, is similar to that of Ostber et al[20]. The majority of respondents 40.57% dental caries were from government primary school as compare 15.43% caries from private primary school. Respondents attending private primary schools displayed better dental health knowledge, attitude and practice and had lower percentage occurrence of dental

caries (15.43%) than their counterparts in the government primary schools (76.9%). Hoffman et al[21] also found out in their study that caries index was highest among public school children. Students in private schools are often those high self-esteem and whose parents can afford means of keeping their dental health in good shape. It should however be noted that dental problems constitute one of the reasons for students' absenteeism form schools hence schools whether private or public should make all efforts to assist their students to keep off dental problems.

In this study dmft score of 1 or higher increases with the increasing age of the children. 7-8 years children (20.6%) had high dmft score. Children had higher dmft score with their ages. In this study, this study showed a strong relationship between increasing age and increase prevalence of dental caries which indicating the importance of taking preventive measures to control dental caries at the very early stage This result was quite similar with earlier findings in Bangladesh by Haque et al[22] which reported an increase in caries prevalence with increasing age. World health organization reports that prevalence of dental caries in 6 to 14th aged children globally to be 60.0% to 90.0% cases[23]. Its further reports that developed countries have lower rates than developing countries and the difference is attributed to availability of simple sugars in diet, to fluoride, and to dental treatment. There has been increased consumption of sugary foods in developing countries as increased industrialization takes place leading to higher dental caries prevalence. The developed countries that have fluoride level below the optimum recommended levels have implemented water fluoridation projects and this has helped to reduce the prevalence of dental caries[24]. In Europe variations in prevalence levels of dental caries do exist with countries such as Spain recording a prevalence of 61.0% and mean DMFT 1.52 by Smyth et al[25] while in Italy prevalence was 45.0% and mean DMFT was 1.44 Ferrazzano et al[26]. In Asia a study done on Saudi Arabia found the prevalence of dental caries among 12-year-olds to be 68.9% by Ferrazzano et al[26] while in Thailand the prevalence was 70.0% with a DMFT of 2.4 by Petersen[27].

Among them 66.9% respondents brush their teeth regularly whereas 33.1% followed irregularly brush their teeth and among them 20.4% respondents brush their teeth twice daily which are recommended whereas 79.6% respondents brush their teeth once daily. Among them 37.3% respondents brush their teeth according to correct timing (1-3 mints) others 62.7 % didn't know the correct method of timing. Although children are taught the importance of tooth brushing, they also need to be taught the importance of frequency and the proper methods of brushing their teeth by Umesi-Koleos a et al[8]. Children were found to be inadequate when their tooth brushing techniques were examined. A survey done among 12-year-old Children in Sudan revealed that 64.0% brushed their teeth once, 25.0% brushed twice and 5.0% brushed more than twice per day. Three percent reported to have used dental floss by Nurelhuda et al[9].

A study done in Burkina Faso revealed that only 9.0% of the 12-year-old reported the use of fluoridated tooth paste by Varenne et al[28]. Fluoridated toothpastes are advocated because of their preventive properties. An alternative to these two is use of the chewing stick 'mswaki' which has been shown to be as effective[29]. However, children from poor families do not use chewing sticks because they are unaware of its effectiveness. In Kenya, 21.1% cases of peri-urban children and 2.0% of the urban children use chewing sticks to brush their teeth y Kaimenyi et al[30].

Snacking after meal was observed in 87.43% of the participants but only 15.43% of children cleaned their teeth after a snack food. Consumption of sugary foods in between meals is considered a risk factor for dental caries[31]. There is less risk of dental caries when sugary foods are consumed together with the main meal due to increased salivary activity that helps to neutralize the acidic effect and wash away the food. Proper dietary habits should be commenced early enough during infant feeding and weaning. The use of sweetened milk formula is a risk factor for the development of dental caries. Furthermore, when a child is left to sleep with a feeding bottle, he will be more susceptible to dental caries[32]. Nocturnal eating of sweat foods has been associated with increased caries incidence. This is due to the fact that overnight there is less salivary stimulation due to reduced activity in the mouth. As a result of less saliva production the pH of the mouth cannot be buffered to less acidic one hence caries process is activated[33].

Conclusion

In conclusion, significant habits factors for dental caries among children include brushing teeth twice daily with the incorrect method of brushing and eating snakes every meal, and drinking snacks after meal at a high frequency caused caries So, health education is

important in school to maintain oral hygiene to prevent dental carries.

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Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.

Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. As this was a prospective study the written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

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References

1. Nyamuryekung'e KK. Health and oral health related knowledge, attitude and behavior – a study of secondary school students in Dar es Salaam, Tanzania (Master's thesis). 2012; Retrieved from https://bora.uib.no/bitstream/handle/1956/6187/94922681.pdf?sequence=1
2. WHO (1948). WHO Definition of Health. Available at http://www.who.int/about/definition/en/print.html.
3. Dilip CL. Health status, treatment requirements, knowledge and attitude towards oral health of police recruits in Karnataka. Journal of Indian Association of Public Health Dentistry. 2005;5(5):20-33
4. Petersen PE. Improvement of oral health in Africa in the 21st century-the role of the WHO Global Oral Health Programme. African Journal of Oral Health. 2004;1(1):2-16.
5. Lateefat SA, Musa OI, Kamaldeen AS, Buhari AS. Knowledge and Practices On Oral Health Among Junior Secondary School Students In Ilorin West Local Government Area Of Nigeria. E-journal of Dentistry. 2012;2(2):170-175
6. Sheiham A, Watt RG. The common risk factor approach: a rational basis for promoting oral health. Community Dentistry and Oral Epidemiology: Commentary. 2000;28(6):399-406
7. Singh A, Purohit B. Tooth brushing, oil pulling and tissue regeneration: A review of holistic approaches to oral health. Journal of Ayurveda and Integrative Medicine. 2011;2(2):64
8. Umesi-Koleoso DC, Ayanbadejo PO. Oral Hygiene Practices among Adolescents in Surulere, Lagos Sate, Nigeria. Nigerian Quarterly Journal of Hospital Medicine. 2007;17(3):112-5.
9. Nurelhuda NM, Trovik TA, Ali RW, Ahmed MF. Oral health status of 12-year-old school children in Khartoum state, the Sudan; a school-based survey. BMC oral health. 2009;9(1):1-9.
10. Bajomo AS, Rudolph MJ, Ogunbodede EO. Dental caries in six, 12 and 15 year old Venda children in South Africa. East African medical journal. 2004;81(5):236-43
11. Spivak K, Hayes C, Maguire JH. Caries prevalence, oral health behavior, and attitudes in children residing in radiation-contaminated and non-contaminated towns in Ukraine. Community Dentistry and Oral Epidemiology. 2004;32(1):1-9
12. Adekoya–Sofowora CA, Nasir WO, Oginni AO, Taiwo M. Dental caries in 12-year-old suburban Nigerian school children. African Health Sciences. 2006;6(3):145-50.
13. Mwakatobe AJ, Mumghamba EG. Oral health behavior and prevalence of dental caries among 12-year-old school-children in Dar-es-Salaam, Tanzania. Tanzania Dental Journal. 2007;14(1):1-7
14. Wierzbicka M, Petersen PE, Szatko F, Dybizbanska E, Kalo I. Changing oral health status and oral health behaviour of schoolchildren in Poland. Community dental health. 2002;19(4):243-50.
15. Khamadeeva AM, Demina RR, Bagdasarova OA. Role of behaviorial risk factors in developing dental caries of temporary teeth in infancy. Stomatologiia. 2008;87(5):68-71
16. David J, Wang NJ, Åstrøm AN, Kuriakose S. Dental caries and associated factors in 12-year-old schoolchildren in Thiruvananthapuram, Kerala, India. International Journal of Paediatric Dentistry. 2005;15(6):420-8.
17. Wandera M, Twa-Twa J. Baseline survey of oral health of primary and secondary school pupils in Uganda. African health sciences. 2003;3(1):19-22
18. Ismail AI, Tanzer JM, Dingle JL. Current trends of sugar consumption in developing societies. Community dentistry and oral epidemiology. 1997;25(6):438-43
19. Christian B, Evans RW. Has urbanization become a risk factor for dental caries in Kerala, India: a cross-sectional study of children aged 6 and 12 years. International Journal of Paediatric Dentistry. 2009;19(5):330-7.
20. Östberg AL, Halling A, Lindblad U. Gender differences in knowledge, attitude, behavior and perceived oral health among adolescents. Acta odontologica scandinavica. 1999;57(4):231-6.
21. Cypriano S, Hoffmann RH, Sousa MD, Wada RS. Dental caries experience in 12-year-old schoolchildren in southeastern Brazil.

Journal of Applied Oral Science. 2008;16:286-96
22. Haque MJ, Begum JA. Dental caries - a persisting problem in the pre-school age children. JOPSOM. 1994;13(2-4): 98- 101
23. Petersen PE. The World Oral Health Report 2003: Continuous improvement of oral health in the 21st century – the approach of the WHO Global Oral Health Programme. Community Dentistry and Oral Epidemiology, 2003;31: 3-24
24. Petersen PE, Hoerup N, Poomviset N, Prommajan J, Watanapa A. Oral health status and oral health behaviour of urban and rural schoolchildren in Southern Thailand. International dental journal. 2001;51(2):95-102
25. Smyth E, Caamaño F, Fernández-Riveiro P. Oral health knowledge, attitudes and practice in 12-year-old schoolchildren. Medicina Oral, Patología Oral y Cirugía Bucal (Internet). 2007;12(8):614-20
26. Ferrazzano GF, Scaravilli MS, Ingenito A. Dental and periodontal health status in Campanian children and relation between caries experience and socio-economic behavioural factors. European Journal of Paediatric Dentistry. 2006;7(4):174.
27. Petersen PE, Bourgeois D, Ogawa H, Estupinan-Day S, Ndiaye C. The global burden of oral diseases and risks to oral health. Bulletin of the world health organization. 2005;83:661-9.
28. Varenne B, Petersen PE, Ouattara S. Oral health status of children and adults in urban and rural areas of Burkina Faso, Africa. International dental journal. 2004;54(2):83-9.
29. Ndung'u MM. Denture hygiene practices and candida-associated Denture stomatitis among complete denture Wearers at two clinics in Nairobi (Doctoral dissertation, University Of Nairobi).
30. Kaimenyi JT, Ndungu FL, Maina SW, Chindia M. Oral hygiene habits and dental health awareness of Kenyan children aged 9-15 years in a peri-urban and urban school. East African medical journal. 1993;70(2):67-70.
31. Burt BA, Eklund SA, Morgan KJ, Larkin FE, Guire KE, Brown LO, Weintraub JA. The effects of sugars intake and frequency of ingestion on dental caries increment in a three-year longitudinal study. Journal of Dental Research. 1988;67(11):1422-9.
32. Robke FJ. Effects of nursing bottle misuse on oral health. Journal of Orofacial Orthopedics/Fortschritte der Kieferorthopädie. 2008;69(1):5-19.
33. Ying Z, Rui-bo C, Min C, Yan L. The prevalence of dental caries in primary dentition and the risk factors of 5-year-old children in Northeast of China. Shanghai Journal of Stomatology. 2007;16(6): 570-3