Original Article

UPDCJ OPEN ACCESS

Oral Health Conditions and Hygiene Practices of School-Going Children in Rural Sylhet

Harun KMAA[1], Shan ASMSS[2], Miah MNA[3], Akter F[4], Nurunnabi M[5*]

AUTHOR'S AFFILIATIONS

1. **Dr. K M Abdullah Al Harun**
   Lecturer, Department of Dental Public Health,
   Sylhet MAG Osmani Medical College, Sylhet, Bangladesh.
2. **Dr. A. S. M. Sadman Sakib Shan**
   Intern Doctor, Dental Unit, Sylhet MAG Osmani Medical College,
   Sylhet, Bangladesh.
3. **Dr. Md. Nurul Amin Miah**
   Assistant Professor, Department of Dental Public Health,
   Sylhet MAG Osmani Medical College, Sylhet, Bangladesh.
4. **Dr. Farzana Akter**
   Post Graduate Trainee,
   Department of Conservative Dentistry and Endodontics,
   Sylhet MAG Osmani Medical College Hospital, Sylhet, Bangladesh.
5. **Dr. Mohammad Nurunnabi**
   Assistant Professor,
   Department of Community Medicine and Public Health,
   Sylhet Women's Medical College, Sylhet, Bangladesh.

ARTICLE INFO.

Received: 13 October, 2024
Accepted: 15 December, 2024

Volume: Vol-15, Issue-1, April 2025
DOI: https://doi.org/10.3329/updcj.v15i1.76851

Publisher: Update Dental College, Dhaka, Bangladesh
Web: www.updatedentalcollege.edu.bd
E-mail: updcj@hotmail.com

Scan to access article citation and full online link

*** Corresponding Author**
Dr. Mohammad Nurunnabi
Assistant Professor
Department of Community Medicine and Public Health, Sylhet Women's Medical College, Sylhet 3100, Bangladesh.
E-Mail : nur.somch@gmail.com,
ORCID Id: https://orcid.org/0000-0001-9472-9369

ABSTRACT

Background: Oral health is essential for physical well-being and has a significant influence on an individual's quality of life. All age groups, including children, are prone to develop oral conditions due to lack of information and awareness about oral health. **Objectives:** To explore the oral health conditions and hygiene practices status of school-going children in the rural Sylhet.
Materials and Methods: We conducted this cross-sectional study with a purposively selected group of 290 children attending Dhupagul Government Primary School in Sylhet, Bangladesh. From October 2023 to March 2024, we used a semi-structured questionnaire to interview the participants and performed oral examinations. **Results:** Most students brushed their teeth twice a day (56.6%), with 49.0% brushing before breakfast and 75.2% using toothpaste and brushes for cleaning. The mean DMFT score was (2.07±2.40 and 0.48±1.28) and combined mean DMFT score was 2.55. A statistically significant association was found between the total DMFT scores and the mean number of decayed teeth ($p<0.05$). **Conclusion:** The study identified that, while oral hygiene practices were good, and the overall oral health status was poor.

KEYWORDS: Oral health practices, oral health conditions, school-going children, Bangladesh.

INTRODUCTION

Oral problems affect over 3.5 billion people globally, which renders them an imminent public health burden in nowadays[1]. Although largely preventable, modern dentistry has yet to find an effective solution to address this issue, and the prevalence has been increasing over the past few decades[1-3]. Globally, the most common oral disorders are dental caries (tooth decay), periodontal disease, tooth loss, and malignancies of the lips and oral cavity, with dental caries being the most prevalent [2-4].

A child with severe dental caries early in life may experience dietary deficiencies due to pain-related fear, fewer teeth for chewing food, and decreased appetite, ultimately leading to malnutrition and being underweight later on[5] Poor oral health has been related to delayed growth in children[6]. Maintaining good dental health during the deciduous dentition stage is critical for optimal jaw development, permanent tooth alignment, and speech development[7,8]. It is essential for a child's cognitive, social, and emotional development to communicate clearly with others. Additionally, a child's self-confidence can be substantially enhanced by an appealing smile that is secured by attractive, well-aligned teeth[9]. Unfortunately, according to the World Oral Health Report 2003, about 60-90% of school-aged children were affected by dental caries[10]. Academic performance is negatively affected by dental pain, frequent absences from school, and poor oral health, according to research findings[11].

Maintaining good dental health is mostly achieved by self-care practices, which is considered to be effectively achieved with appropriate oral health education at the school level[12,13]. Appreciative oral hygiene maintenance, the effects of various foods on teeth, and the importance of preventive and curative dental care in early life contributes to improving and maintaining good oral health throughout one's life, ultimately enhancing the quality of life for future generations[13,14]. The "Decayed, Missing, Filled Teeth index (DMFT index)" is a widely used tool for assessing oral health status. It was first developed by Klein, Palmer, and Knutson in 1938 and later revised by the World Health Organization (WHO) to represent caries experience. The 'D' component stands for untreated caries, 'M'

represents missing teeth due to caries, and 'F' refers to filled teeth (dental restorations for caries treatment). The 'T' indicates the index is calculated per tooth. The WHO's recommended protocol for oral health surveys relies solely on clinical examinations[15]. Oral health conditions can be assessed using the DMFT index, along with the condition of the gingiva, including the colour and health of the gum tissue.[14,16]

The WHO has introduced a new strategy for the prevention and control of non-communicable diseases, highlighting the importance of addressing oral diseases, particularly in middle- and low-income countries[17]. To identify risk factors, a thorough monitoring system pertaining to community preventative measures and oral health promotion should be implemented[18,19]. This study emphases on collecting data regarding oral hygiene, the DMFT index, and gingival conditions to assess the oral health practices and conditions of the children.

MATERIALS AND METHODS

Study design and settings

This cross-sectional study was carried out to assess the oral health conditions and hygiene practices status of the school going students of a purposively selected primary school named Dhupagul Government Primary School, Sylhet 3103, Bangladesh.

Study population

The study comprised 290 students aged 6-12 years, who attended this primary school, and presented during the study period.

Data collection procedures

From October 2023 to March 2024, a pretested face-to-face, semi-structured questionnaire was used to interview study participants at their convenience. An observational checklist also used to observe the intra oral conditions. As part of the residential field site training program (RFST), fifth-year BDS students at Dental Unit, Sylhet MAG Osmani Medical College collected the data under the guidance of assigned teachers in the Dental Public Health department. The questionnaire was generated by the student's profile, oral hygiene practices, and examination of the oral health conditions.

Statistical analysis

Data was entered, curated, and analysed using IBM SPSS Version 26 (New York, USA). Descriptive statistics were expressed as frequency (percentage) and mean (±standard deviation, or SD) for categorical and continuous data, respectively. Chi-square test and Fisher exact test were used to assess the significance of associations between two nominal variables. Paired t-test done to assess the significance of associations between two continuous variables. A p-value of <0.05 at a 95% confidence interval (CI) was considered significant for all statistical tests.

RESULTS

In terms of the respondents' age-sex distribution, nearly two-thirds (62.4%) were ≥8 years, and the remaining one-third (37.6%) were younger. The age range was 6-12 years. With a ratio of 1:1.5, female respondents (60.7%) prevailed over male respondents (39.7%). The mean age of all respondents was 8.6±1.8 years (Figure 1).

Table 1 describes the status of the respondents' oral hygiene practices. More than half of the respondents (56.6%) brushed their teeth twice a day, with only 3.1% not brushing regularly. The majority of students (49.0%) brushed their teeth before breakfast; before breakfast and after dinner (34.8%). The majority of respondents used toothpaste and brushes to clean their teeth (75.2%), with just a few percent using Miswak (1.0%). A few students (6.2%) knew that their toothpaste contained fluoride, but the majority of students (79.7%) were not aware of its composition.

Figure 2 represents the oral examination findings of the students. DT, MT, and FT were examined, and total and mean DMFT scores were computed.

Table 2 outlines the age-sex distribution and the presence of toothache. There was no statistically significant difference in the age-sex distribution among the students defying toothache (P>0.05).

The age-sex distribution and the history of presence of oral ulcers in their oral cavity were outlined in Table 3. The age-sex distribution of the students with oral ulcers was not distinct statistically significantly (P>0.05).

Table 4 depicts the age-sex distribution and their gum conditions. Regarding the age-sex distribution of the students with pathological gum conditions, there was no statistically significant difference (P>0.05) between them.

Table 5 elucidates the DMFT scores of the student's oral examination findings. The mean of the total DMFT scores and the mean of the decaying tooth implied a statistically significant association (p<0.05).

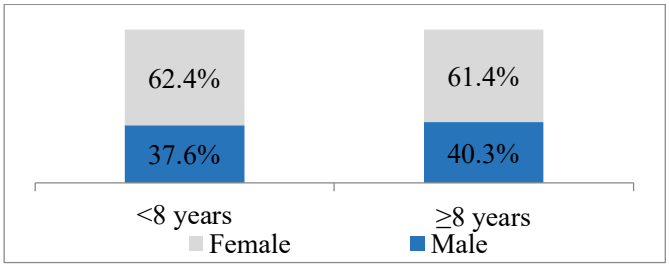

Figure 1: Age-sex distribution of the respondents (n=290)

Table 1: Oral hygiene practices status of the children (n=290)

Attributes		Frequency (n)	Percent (%)
Tooth brushing practices	Not brushing	9	3.1
	Once daily	94	32.4
	Twice daily	164	56.6
	>2 times daily	23	7.9
Time of brushing teeth	Before breakfast	142	49.0
	After breakfast	26	9.0
	After dinner	1	0.3
	Before breakfast, & after dinner	101	34.8
	After breakfast, & after dinner	15	5.2
	Before breakfast, after breakfast, & after dinner	5	1.7
Methods of cleaning tooth	Toothpaste & brush	218	75.2
	Toothpowder & brush	39	13.4
	Toothpowder & finger	30	10.3
	Miswak	3	1.0
Presence of fluoride in toothpaste	Yes	18	6.2
	No	41	14.1
	Did not know	231	79.7

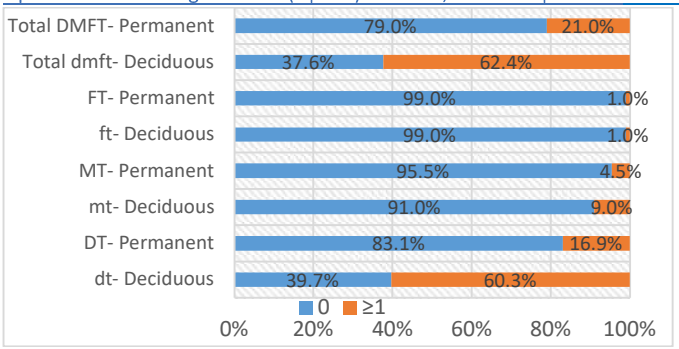

Figure 2: Oral examination findings of the children (n=290)

Table 2: Association of age-sex distribution with their presence of toothache

Attributes	Presence of toothache			Test of significance	p-value
	No pain	Occasional	Frequently		
	n(%)	n(%)	n(%)		
Age group					
<8 years	37(30.6)	49(43.0)	23(41.8)	4.368	0.120
≥8 years	84(69.4)	65(57.0)	32(58.2)		
Total	121(100)	114(100)	55(100)		
Gender					
Male	43(35.5)	48(42.1)	23(41.8)	1.240	0.558
Female	78(64.5)	66(57.9)	32(58.2)		
Total	121(100)	114(100)	55(100)		

Chi-square test done; p<0.05 considered as statistically significant value

Table 3: Association of age-sex distribution with their history of oral ulcer

Attributes	History of oral ulcer			Test of significance	p-value
	No ulcer	Occasional	Frequently		
	n(%)	n(%)	n(%)		
Age group					
<8 years	73(35.1)	29(40.8)	7(63.6)	4.053	0.136
≥8 years	135(64.9)	42(59.2)	4(36.4)		
Total	208(100)	71(100)	11(100)		
Gender					
Male	80(38.5)	29(40.8)	5(45.5)	0.307	0.872
Female	128(61.5)	42(59.2)	6(54.5)		
Total	208(100)	71(100)	11(100)		

Chi-square test done; p<0.05 considered as statistically significant value

Table 4: Association of age-sex distribution with their gum conditions

Attributes	Gum conditions				Test of significance	p-value
	Normal	Reddish	Swelling	Ulcer		
	n(%)	n(%)	n(%)	n(%)		
Age group						
<8 years	106(38.8)	0(0.0)	3(42.9)	0(0.0)	6.268	0.076
≥8 years	167(61.2)	8(100)	4(57.1)	2(100)		
Total	273(100)	8(100)	7(100)	2(100)		
Gender						
Male	110(40.3)	2(25.0)	1(14.3)	1(50.0)	2.697	0.472
Female	163(59.7)	6(75.0)	6(85.7)	1(50.0)		
Total	273(100)	8(100)	7(100)	2(100)		

Fisher exact test done; p<0.05 considered as statistically significant value

Table 5: DMFT scores of the respondents (n=290)

		Deciduous	Permanent	t- value	p-value
		Mean±SD	Mean±SD		
DMFT scores	dt, DT	1.93±2.29	0.34±1.05	11.625	*0.001
	mt, MT	0.12±0.39	0.12±0.74	-0.138	0.521
	ft, FT	0.02±0.19	0.01±0.14	0.242	0.885
	Mean dmft, DMFT	2.07±2.40	0.48±1.28	10.693	*0.005
	Mean combined dmft, DMFT		2.55		

Paired t-test done; p<0.05 considered as statistically significant value

DISCUSSION

In our country, dental problems are the most prevalent non-communicable disease. The primary causes of low dental health status are inadequate treatment facilities and a lack of awareness about oral diseases[16]. As oral health is one of the integral components of general health, it's important to acquire reflexes to maintain general hygiene practices and attitude toward oral health during childhood stage, so that, general health of their future life can be ensured[20]. It is the responsibility of educators, parents, and children themselves to understand the value of good oral hygiene.

This study shows that almost 68% of the total number of students were having either decayed or filled or missing teeth due to caries which was within the limits of WHO oral health report 2003 that states that 60-90% of school children have experienced dental caries. The dental experts recommend that formation of dental plaque, and consequently dental caries and other gum diseases, can be prevented by tooth brushing twice daily, avoiding sugary and acidic foods and drinking plenty of water[21].

Approximately 57% of students in this study brush their teeth twice daily which were lower than the children in Sweden, Denmark, Germany, Austria and Norway (73-83%). It indicates the lack of health education in our country compare to the European countries at school level[22]. The majority of students used toothpaste and brushes to clean their teeth (75.2%), which was almost similar with the study. Here, 95.1% of the respondents' brushing material was toothpaste[23]

Although majority of the students brush twice daily and use toothpaste and brush as their cleaning material, 80% of the students didn't knew whether their toothpaste contain fluoride or not. For caries prevention fluoride is recognized as the most successful measure[24]. Around 6% of the students had swollen or red gum which was less than the previous year's (11.1%)[25]. Absence of proper gingival status scoring technique might be an issue for this study as other studies also showed higher rate of gingival/periodontal disease in other countries as well[26]. Mean DMFT found in this study was 2.55 which are considered as "Low" according to the quantification of the severity of dental caries defined by WHO parameters, 1986. In Asia, the prevalence of dental caries in children is reported to be low to moderate as well[27]. The mean DMFT found in this study was 2.55 which were higher than previous study, which was 1.19[25]. Large number of decayed teeth that was untreated caries among school going children was the main contributor to the mean DMFT value was a concern, as it indicates less awareness of the parents and/or less access to the dental health service. Female students had mean DMFT (2.7) value higher than that of male students (2.31), which may indicates the negligence towards the girls in our society.

We can educate and encourage children and their parents to maintain and be conscious of their dental health. It is crucial that oral health

instruction be included in the regular school curriculum from the beginning. This will assist in controlling oral health issues by raising awareness and fostering the development of good oral hygiene habits.

CONCLUSION

The study revealed that most students brushed their teeth twice a day, brushed their teeth before breakfast, used toothpaste and brushes to clean their teeth, with only a few using fluoride-containing toothpaste. While their oral hygiene practices appeared satisfactory, an examination of their teeth showed a low mean DMFT score, indicating poor overall oral health status. To enhance and maintain good oral health, schools need to implement a comprehensive oral health awareness and education program at regular intervals for both students and their parents

ETHICAL STATEMENT

The interviewer obtained informed assent from participants before commencing the interviews and examinations; and the institutional permission was taken from the head of the school. Participation was voluntary, and participants were informed that they have the right to withdraw at any point without any negative consequences. Ethical approval was obtained from the 'Research Ethical Committee' of Sylhet MAG Osmani Medical College, Sylhet 3100, Bangladesh. All procedures were conducted according to the guidelines of the Declarations of Helsinki. (Reference: SOMC/Dental/2024/18)

ACKNOWLEDGMENTS: We applaud the school authorities for allowing us to collect data and examine students. We also acknowledge the fifth-year students' contributions to this study.

CONFLICT OF INTEREST: The authors declare no conflict of interest.
FUNDING: This research received no external funding.
DATA AVAILABILITY STATEMENT: The data presented in this study are available on reasonable request from the corresponding author.

REFERENCES

1. **Watt RG**, **Daly B**, **Allison P**, et al. Ending the neglect of global oral health: time for radical action. *The Lancet*. 2019;394(10194):261-72. doi: http://doi.org/10.1016/S0140-6736(19)31133-X
2. **Shoaee S**, **Ghasemi E**, **Sofi-Mahmudi A**, et al. Global, regional, and national burden and quality of care index (QCI) of oral disorders: a systematic analysis of the global burden of disease study 1990–2017. *BMC Oral Health*. 2024;24(1):116.
   doi: http://doi.org/10.1186/s12903-023-03808-z
3. **Kassebaum NJ**, **Smith AG**, **Bernabé E**, et al. Global, regional, and national prevalence, incidence, and disability-adjusted life years for oral conditions for 195 countries, 1990–2015: a systematic analysis for the global burden of diseases, injuries, and risk factors. *Journal of Dental Research*. 2017;96(4):380-7.
   doi: http://doi.org/10.1177/0022034517693566
4. **Bawaskar HS**, **Bawaskar PH**. Oral diseases: a global public health challenge. *The Lancet*. 2020;395(10219):185-6.
   doi: http://doi.org/10.1016/S0140-6736(19)33016-8
5. **Peres MA**, **Macpherson LM**, **Weyant RJ**, et al. Oral diseases: a global public health challenge. *The Lancet*. 2019;394(10194):249-60. doi: http://doi.org/10.1016/S0140-6736(19)31146-8
6. **Sheetal A**, **Hiremath VK**, **Patil AG**, et al. Malnutrition and its oral outcome– A review. *Journal of Clinical and Diagnostic Research*. 2013;7(1):178. doi: http://doi.org/10.7860/JCDR/2012/5104.2702
7. **Mishu MP**, **Tsakos G**, **Heilmann A**, **Watt RG**. The role of oral health-related quality of life in the association between dental caries and height, weight and BMI among children in Bangladesh. *Community Dentistry and Oral Epidemiology*. 2022;50(6):529-38.
   doi: http://doi.org/10.1111/cdoe.12707
8. **Baume LJ**. Physiological tooth migration and its significance for the development of occlusion: I. The biogenetic course of the deciduous dentition. *Journal of Dental Research*. 1950;29(2):123-32. doi: http://doi.org/10.1177/00220345500290020301
9. **Bankson NW**, **Byrne MC**. The relationship between missing teeth and selected consonant sounds. *Journal of Speech and Hearing Disorders*. 1962;27(4):341-8. doi: http://doi.org/10.1044/jshd.2704.341
10. **Gomes MC**, **Perazzo MF**, **Neves ET**, et al. Oral problems and self-confidence in preschool children. *Brazilian Dental Journal*. 2017;28(4):523-30. doi: http://doi.org/10.1590/0103-6440201601295
11. **World Health Organization**. The World Oral Health Report 2003: Continuous improvement of oral health in the 21st century – the approach of the WHO Global Oral Health Programme. 2003. Available from: https://www3.paho.org/hq/dmdocuments/2009/OH_st_WHO.pdf (Cited April 12, 2024).
12. **Jackson SL**, **Vann Jr WF**, **Kotch JB**, et al. Impact of poor oral health on children's school attendance and performance. *American Journal of Public Health*. 2011;101(10):1900-6.
   doi: http://doi.org/10.2105/AJPH.2010.200915
13. **Haghdoost A**, **Bakhshandeh S**, **Ghorbani Z**, **Namdari M**. The relationship between oral and Dental Health Self-care and hemoglobin A1c in adults with diabetes. *Journal of Dentistry*. 2022;23(1):33. doi: http://doi.org/10.30476/DENTJODS.2021.87966.1300
14. **Bhowmick A**, **Nurunnabi M**, **Adhikary L**, et al. Periodontal Status and Gingival Conditions of the Tea Workers. *Eastern Medical College Journal*. 2023;8(1):19-23. doi: http://doi.org/10.3329/emcj.v8i1.66723
15. **Bratthall D**, **Hansel-Petersson G**, **Sundberg H**. Reasons for the caries decline: what do the experts believe? *European Journal of Oral Sciences*. 1996;104(4):416-22.
   doi: http://doi.org/10.1111/j.1600-0722.1996.tb00104.x
16. **Bhowmick A**, **Adhikary L**, **Nurunnabi M**, et al. Factors Influence the Oral Hygiene Practices and Oral Health Status of Tea Garden Workers. *Shaheed Syed Nazrul Islam Medical College Journal*. 2022;7(2):204-10.
17. **World Health Organization**. World Oral Health Surveys: Basic Methods. 2013. Available from:
   https://iris.who.int/bitstream/handle/10665/97035/9789241548649_eng.pdf (Cited April 12, 2024).
18. **Bhowmick A**, **Hossain KJ**, **Adhikary L**, et al. Dentition Status of Tea Workers in Sylhet. *Z H Sikder Women's Medical College Journal*. 2024;6(2):52-7. doi: http://doi.org/10.47648/zhswmcj.2024.v0602.09
19. **World Health Organization**. Non-communicable Diseases Country Profiles 2014. 2014. Available from:
   http://apps.who.int/iris/bitstream/10665/128038/1/9789241507509_eng.pdf (Cited April 22, 2024).
20. **Vishwanathaiah S**. Knowledge, attitudes, and oral health practices of school children in Davangere. *International Journal of Clinical Pediatric Dentistry*. 2016;9(2):172. doi: http://doi.org/10.5005/jp-journals-10005-1358
21. **Tinanoff N**, **Kanellis MJ**, **Vargas CM**. Current understanding of the epidemiology mechanisms, and prevention of dental caries in preschool children. *Pediatric Dentistry Journal*. 2002;24(6):543-51. PMID: 12528947.

22. **Kuusela S**, **Honkala E**, **Kannas L**, et al. Oral hygiene habits of 11-year-old schoolchildren in 22 European countries and Canada in 1993/1994. *Journal of Dental Research*. 1997;76(9):1602-9. doi: http://doi.org/10.1177/00220345970760091301

23. **Chowdhury N**, **Nurunnabi M**, **Kaiser FR**, et al. Knowledge and Practices among the Primary School Children Regarding Personal Hygiene. *Journal of Sylhet Women's Medical College*. 2018;8(2):29-33.

24. **Chopra S**. Diagnosis and Prevention Strategies for Dental Caries. *Journal of Advanced Medical and Dental Sciences Research*. 2022;10(5):43-5. doi: http://doi.org/10.21276/jamdsr

25. **Dye BA**, **Hsu KL**, **Afful J**. Prevalence and measurement of dental caries in young children. *Pediatric Dentistry*. 2015;37(3):200-16. PMID: 26063550.

26. **Dhar V**, **Jain A**, **Van Dyke TE**, **Kohli A**. Prevalence of gingival diseases, malocclusion and fluorosis in school-going children of rural areas in Udaipur district. *Journal of Indian Society of Pedodontics and Preventive Dentistry*. 2007;25(2):103-5.

doi: http://doi.org/10.4103/0970-4388.33458

27. **Almoudi MM**, **Hussein AS**, **Abu Hassan MI**, **Schroth RJ**. Dental caries and vitamin D status in children in Asia. *Pediatrics International*. 2019;61(4):327-38. doi: http://doi.org/10.1111/ped.13801

How to Cite

Harun KMAA, Shan ASMSS, Miah MNA, Akter F, Nurunnabi M. Oral Health Conditions and Hygiene Practices of School-Going Children in Rural Sylhet. Update Dent. Coll. j [Internet]. [cited 2025 Apr. 25];15(1):1-5. Available from: https://www.banglajol.info/index.php/UpDCJ/article/view/76851