

## Assessment of Tooth Cleaning Techniques and Oral Hygiene Status among Madrassa Students in Islamabad: A Cross-sectional Study

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Received: 25 May 2021 / Revised: 3 June 2021 / Accepted: 10 June 2021 / Published online: 02 July 2021

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### ABSTRACT

**Objective:** To assess the oral hygiene status of madrassa students, including both male and female, in Islamabad city, Pakistan.

**Materials and Methods:** A cross-sectional study was carried out at two Madrassa's, one male and another female, within Islamabad city. The study took place from July 2018 to December 2018 by four 3rd year dental students under the supervision of a senior dentist to assess the oral health status of madrassa students. Data of 233 madrassa students were recorded using the DMFT index and OHI-S index. The data were analysed using SPSS software version 23.

**Results:** Maximum participants of our study ranged between the ages of 11-15 years. They were using different cleaning techniques, with a majority (42.5%) using Miswak as a primary cleaning method. The study indicates that 50.6% of madrassa students have DMFT=0, with overall mean DMFT being 1.24, and mean OHI-S being 1.19.

**Conclusion:** The findings indicate that madrassa students have good oral hygiene despite limited resources.

**Keywords:** Madrassa, Miswak, Oral Health, Oral Hygiene, Toothbrushing

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**How to cite this Article:**

Choudhary UJ, Zaib N, Ilyas S, Bukhari SS, Naseem M. Assessment of Tooth Cleaning Techniques and Oral Hygiene Status among Madrassa Students in Islamabad: A Cross-sectional Study. Found Univ J Dent. 2021;1(1):11-17.

## INTRODUCTION

Health is a fundamental right of every individual and oral health is an integral part of general health and is much more than just healthy teeth.<sup>1</sup> According to World Health Organization (WHO), it is a state of being free from mouth and facial pain, oral and throat cancer, oral infections and sores, periodontal disease, tooth decay, tooth loss and other diseases and disorders that limit an individual capacity in biting, chewing, smiling, speaking and psychosocial well-being.<sup>2-4</sup>

Various factors are responsible for the maintenance of good oral health. Socio-economic status, occupation and education are playing a major role in the maintenance of good oral health.<sup>5</sup> Despite adequate advancement in global oral health, problems persist in many communities around the world. Dental disease, especially dental caries and periodontal disease is the most prevalent dental disease affecting a large population throughout the world.<sup>6</sup> Numerous studies have been conducted both at the national and international level assessing the oral health status of nearly all subsets of the population, particularly the school students. Nonetheless, with the increasing researches on various aspects of oral health in different populations, there are usually a certain number of groups that are overlooked, one such group is Madrassa students.

The madrassa is the Arabic word for any type of educational institution, whether secular or religious. Madrassa not only constitutes religious education but also the modern curriculum.<sup>7</sup> However, Madrassas in Islamic countries are mostly religious schools, focusing on Islamic education.<sup>8</sup> They are privately managed with aid from public donors and the government. The total number of madrassas is estimated but there are different reports with different numbers. In some areas of Pakistan, they outnumber the underfunded public schools. According to the tribune, in 2018 the number had reached as much as 32000 madrassas.<sup>9</sup>

Some of the Madrassas in Pakistan constitute modern resources and technology, however, a large group faces limitations in this aspect. Upon literature review, it was discovered that no studies have been conducted in Pakistan that specifically targeted the oral hygiene status of madrassa students. Considering all these reasons this study was carried out to assess the oral health status of Madrassa students by using the Decayed

Missing Filled Tooth index (DMFT/dmft). It is a commonly used index for epidemiological studies and dental research. It quantitatively provides the number of decayed, missing and filled teeth. The higher the DMFT score is, the higher is the caries prevalence.<sup>10</sup> Simplified Oral Hygiene Index (OHI-S), which is a sum of debris and calculus index, and is also used to evaluate the oral health status.<sup>11</sup>

## MATERIALS AND METHOD

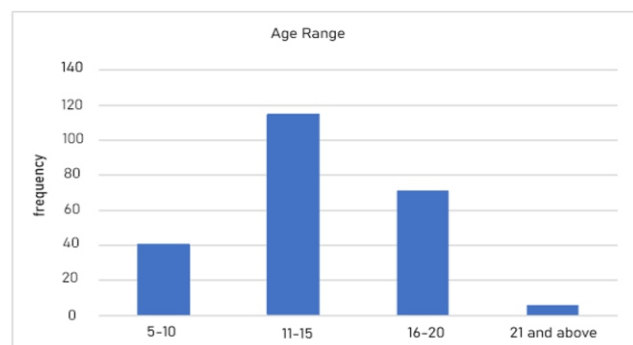
This cross-sectional study was carried out to assess the oral hygiene status of the Madrassa students. The 233 Madrassa students were selected through a non-probability convenience sampling technique, consisting of both male and female between the age ranges of 5-22. The sample size was taken randomly based on the presence and absence of students in Madrassa. The study was carried out after receiving proper consent from the Madrassa head/parents. The students that were absent and didn't consent to be a part of the examination, were excluded. The study was carried out at one male and a female madrassa each in the city of Islamabad. The data was collected by four dental students under the supervision of a senior dentist.

The DMFT/dmft index and OHI-S were assessed to evaluate the oral hygiene status of the students.<sup>10,11</sup> Proper and thorough intra oral examination was done to obtain the correct scores. DMFT/dmft was acquired to estimate the caries experience of the candidate. The teeth missing or filled due to traumatic instances or other treatments i.e., Orthodontic procedures were not recorded.

Oral hygiene was analysed by using a Simplified Oral Hygiene Index (OHI-S). It constitutes two components: The Debris index and the Calculus index. The OHI-S score was obtained by summing the debris index and calculus index scores of an individual after examination of the buccal and lingual surfaces of the six index teeth (the upper first molars, lower first molars, upper right central and lower left central incisors). The Debris index and the Calculus index was evaluated using examination sets i.e., mirrors, probes and tweezers. Information regarding name, age and gender, information about cleaning techniques i.e., Miswak, Toothbrush or Dandasa (Walnut tree peel) was gathered. DMFT and OHI-S were compared with cleaning techniques and age ranges. The data was analysed using IBM SPSS version 23.

**RESULTS**

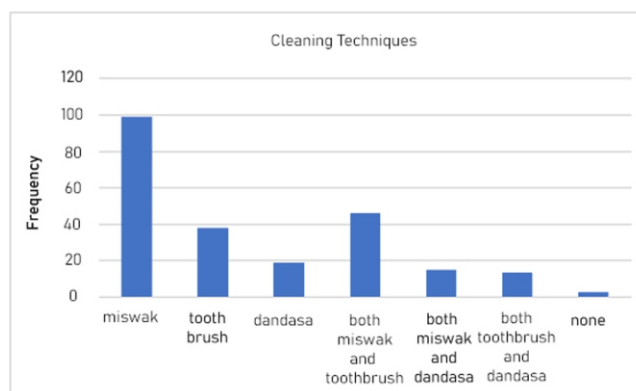
A total of 233 madrassa students age ranging between 5 to 22, both male and female participated in this study. Maximum participants were between 11 to 15 years as shown in Figure 1.



**Figure 1: Percentage of age distribution among the studied participants**

Among the students 115 (49.4%) were males and 118 (50.6%) were females. Since this is not a comparative study no statistical test was applied out to find the relationship between male and female based on cleaning technique and oral hygiene status.

The most frequently used techniques were cleaning by Miswak, Toothbrushing, Dandasa (walnut tree peel) and a combination of any of these. There was a small number that did not practice cleaning at all comprising three students (1.3%) as shown in Figure 2.



**Figure 2: Percentage of teeth cleaning techniques among the studied participants**

DMFT was evaluated by examining the decayed, filled and missing teeth. The mean DMFT for males was  $1.35 \pm 2.20$  and for females  $1.14 \pm 1.52$ . There were 118 students (50.6%) with DMFT = 0. Simplified Oral Hygiene Index was also assessed that consisted of the sum of calculus and debris index. While examining and analysing the participants and data, it was found out that the calculus deposits in the students were not as much as compared to debris level. The overall mean OHI-S score was 1.19 with a standard deviation of 0.94. While in this, the males presented with the mean OHI-S of  $1.68 \pm 0.97$  and female presented with  $0.72 \pm 0.60$ . The mean DMFT and OHI-S score with relation to cleaning technique and age are shown in Table 1 and 2, respectively.

**Table 1: Effect of teeth cleaning technique on DMFT and OHI-S**

Teeth cleaning technique	N	Mean	
		DMFT±SD	OHI±SD
Miswak	99	1.40±2.13	1.51±0.96
Toothbrush	38	1.21±1.56	1.26±1.04
Dandasa	19	1.05±1.58	0.62±0.46
Both Miswak and Toothbrush	46	1.34±2.11	0.95±0.87
Both Miswak and Dandasa	15	0.73±1.03	0.66±0.55
Both Toothbrush and Dandasa	13	0.92±1.11	0.86±0.71
None	3	0.33±0.57	1.32±0.92
Total	233	1.24±1.88	1.19±0.94

**Table 2: Relation of Age range with and DMFT and OHI-S**

Age (years)	N	DMFT $\pm$ SD (Mean)	OHI-S $\pm$ SD (Mean)
5-10	41	1.70 $\pm$ 2.18	0.74 $\pm$ 0.55
11-15	115	1.00 $\pm$ 1.61	0.93 $\pm$ 0.69
16-20	71	1.33 $\pm$ 2.04	1.76 $\pm$ 1.06
21 and above	6	1.83 $\pm$ 2.40	2.60 $\pm$ 1.25
Total	233	1.24 $\pm$ 1.88	1.19 $\pm$ 0.94

## DISCUSSION

Oral hygiene assessment plays an important role in upgrading the dental health of the general public. With increasing urbanization and changes in living conditions, the prevalence of oral diseases continues to increase notably. In today's world, dental caries is the most prevalent oral disease, especially in children. There are several types of research performed on school-going children but very few on the madrasa going children. However, our research focuses on the oral health of madrasa going children, both male and female as compared to a study done in Lucknow, India which only had a male population.<sup>12</sup>

In this study, the difference between both the genders is very slight with a percentage of females (50.6%) being higher than that of males (49.4%), which is quite similar to study done in Madrasa in Bangladesh and Qatar with females' percentage minutely higher than that of males.<sup>3,4</sup>

This study is focused on a population with age ranging from 5-22 years. The maximum percentage of students lie in ages from 11-15 while only 2.6% were twenty and above. Through a literature review of different studies, we found out that most studies focus on these age ranges. The population of a study done in Bangladesh belonged within the ages of 0-14 years whereas the study done in a madrasa in India consisted of age ranges from 12-20.<sup>3,12</sup>

The cleaning technique being used by an individual is a very important parameter to maintain oral hygiene. A major prospect of this study is directed towards different cleaning techniques being used. This study revealed that the majority of madrasa students (42.5%) use miswak for cleaning their teeth while 19.7% use both miswak and toothbrush and only a small number (16.3%) of students use toothbrush alone. Similarly, a

study performed in a primary school in Saudi Arabia by Amin et al. showed that a large number (44.6%) of students used miswak as a primary cleaning method and 24.5% of students used toothbrush.<sup>13</sup> In contrast, another study done in a madrasa in Saudi Arabia by Al Hammadi et al demonstrated that 46.5% of madrasa students used tooth brushes, 44.5% use both tooth brush and miswak whereas only 8% use miswak alone.<sup>14</sup> Also, a study done on Sudanese school children displayed that 93.1% of children used toothbrush while only 3.9% used Miswak.<sup>15</sup> Even though the percentages varies in different studies, it is clear that miswak is still used as one of the cleaning methods by many students.

DMFT is a commonly used index in epidemiological surveys of oral health. This study shows that the mean DMFT of madrasa students is 1.24 $\pm$ 1.88 (males 1.35 $\pm$ 2.20, females 1.14 $\pm$ 1.52) which is contrasting to the study conducted in madrasa of Bangladesh showing mean DMFT of 1.94<sup>3</sup> and also to the studies conducted in 2015 in Saudi Arabia showing DMFT of 1.94 $\pm$ 2.0.<sup>16</sup> Another research carried out in Mangalore, India showed that the DMFT of males is 2.54 $\pm$ 2.84 and of females is 2.50 $\pm$ 2.85. It shows comparable results to our study as the DMFT of these studies is slightly higher than ours, thus suggesting that participants of our study have better oral hygiene.<sup>17</sup>

According to this study, 50.6% of madrasa students have DMFT=0 which is an indicator of good oral health whereas a study conducted in Madrasa of Bangladesh by M. Khan et al showed that around two-thirds of their respondents had decayed teeth while the majority didn't have any missing and filled teeth which are similar to study conducted in 2017 in Hongkong in which 55% of the study population have DMFT > 0.<sup>3,18</sup> This contradicts with the general perception of madrasa students being less than the school-going children.

The minimum DMFT=1 is observed in the age range of 11-15 years which is almost similar to the study conducted in 2013 in Himachal which demonstrates the DMFT= 0.62 at the age of 12 and DMFT = 1.06 at 15 years of age.<sup>19</sup> Another study in India revealed DMFT= 0.8 in the age group of 13-15 years.<sup>20</sup>

In this study, it is observed that the mean DMFT of miswak users is 1.4 and that of toothbrush users is 1.2, this difference is not statistically significant. Since the majority of students studying in madrasas belong to families with low socio-economic background, we compared our results with another Pakistani study carried out to assess the oral hygiene status of the low-income strata population i.e., Railway Coolies age ranged between 15-60 years. Their results revealed a DMFT of 6.2 and 4.8 for toothbrush and miswak users, respectively. These high values are indicative of very poor oral hygiene status, the reason being unaffordability to buy even toothbrush and paste and lack of awareness.<sup>21</sup> Comparison of this study with the present study highlighted the fact that both the study populations belong to low socio-economic backgrounds, but the oral hygiene status results are nearly opposite. The most appropriate reason for the good oral hygiene status of madrasa students is because of their good knowledge and understanding of oral hygiene measures, it signifies that madrasa students are taught well regarding the different aspects of oral hygiene. As when you understand the importance of oral health, the cost of any tool to be used for maintaining oral hygiene whether it be toothbrush/paste or miswak becomes extremely negligible. Another study in Saudi Arabia demonstrated that DMFT of miswak users is low as compared to non-miswak users, thus again endorsing the fact that good oral hygiene can be achieved with miswak as well which is generally a cheap tool for maintaining oral hygiene as compared to tooth brush/paste.<sup>22</sup>

OHI-S is an expression of the oral health of an individual in numeric values, range starting from zero, lower the score better the oral hygiene is. In our study, mean OHI-S was found to be 1.19, the students with ages ranging from 5-10 had mean OHI-S of 0.74, while 11-15 had mean OHI-S 0.93 which is an indicator of good oral hygiene. The highest mean OHI-S was observed in the age range 16-20 and 20 and above being 1.76 and 2.60 respectively, which displays that with an

increase in age the accumulation of debris and calculus increased. In contrast, a study done on school children of Sunsari District, Nepal showed that children with ages 12-13 and 15 had quite identical values of mean OHI-S i.e., 1.21 and 1.22, respectively.<sup>23</sup>

There is a great impact of the cleaning technique on OHI-S like in this study we found that children who used toothbrushing had a mean OHI-S of 1.26 while that of miswak was 1.51. It may be due to the reason that a large number of madrasa students use miswak as compared to a toothbrush or maybe due to the reason that they are unaware of the proper technique to use miswak. However, another study done in Saudi Arabia did not find any significant relation between OHI-S and cleaning technique.<sup>14</sup> Even though the study is carried out properly, we could not collect a large number of data due to permission from madrasahs.

## CONCLUSION

The present study indicates that Madrasa students have good oral hygiene status despite the fact majority of madrasa students belong to low socioeconomic background. This relates to their better understanding of the importance of oral hygiene.

## DISCLAIMER

None.

## CONFLICT OF INTEREST

No conflict of interest declared by the authors.

## ETHICAL STATEMENT

Ethical approval was taken from the institute's ethical review committee before data collection.

## FUNDING DISCLOSURE

The author(s) received no financial support for the research, authorship, and/or publication of this article.

## AUTHORS CONTRIBUTION

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Analysis and interpretation of data: U.J. Choudhary, S. Ilyas, and S.S. Bukhari

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Critical review of the manuscript: U.J. Choudhary, S. Ilyas, S.S. Bukhari, and M. Naseem

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## REFERENCES

- Reddy VB, Kusuma YS, Pandav CS, Goswami AK, Krishnan A. Prevalence of malnutrition, diarrhea, and acute respiratory infections among under-five children of Sugali tribe of Chittoor district, Andhra Pradesh, India. *J Nat Sci Biol Med.* 2016;7(2):155-60.
- World Health Organization [cited 2021 May 31]. Available from: [http://apps.who.int/iris/bitstream/handle/10665/68506/WHO\\_NMH\\_NPH\\_ORH\\_03.2.pdf?sequence=1&isAllowed=y](http://apps.who.int/iris/bitstream/handle/10665/68506/WHO_NMH_NPH_ORH_03.2.pdf?sequence=1&isAllowed=y).
- Khan M, Nishi SE, Yusufzai SJ, Jamayet NB, Alam MK. Oral Health Status among madrasa going children in Selected Areas of Dhaka City, Bangladesh. *Int J Exp Dent Sci.* 2016;5(1):45-9.
- Al-Thani MH, Al-Thani AA, Al-Emadi AA, Al-Chetachi WF, Akram H, Poovelil BV. Oral health status of six-year-old children in Qatar: findings from the national oral health survey. *Int J Dent Hyg.* 2018;16(2):225-32.
- Peter T, Cherian DA, Peter T. Assessment of oral health parameters among students attending special schools of Mangalore city. *Dent Res J (Isfahan).* 2017;14(4):260-6.
- Benjamin RM. Oral health: the silent epidemic. *Public Health Rep.* 2010;125(2):158-9.
- Islam KT. A Comparative Analysis on Health Status of Residential Students of Madrasa in Bangladesh [Internet]. CORE. East West University; 1970 [cited 2021 May 31]. Available from: <https://core.ac.uk/display/159750140>
- Hasan M. Identification of Knowledge & Practice of Vaccination, Dental & Eye Glass Program in Alia Madrasah in Dhaka City of Bangladesh [thesis on the Internet]. Bangladesh: East West University; 2016 [cited 2021 May 31]. Available from: <http://dspace.ewubd.edu:8080/handle/123456789/1727>
- Talat Masood. Mainstreaming Madrassas: The Express Tribune; [updated February 7, 2018. Available from: <https://tribune.com.pk/story/1627829/6-mainstreaming-madrassas-opinion-edited-draft/>.
- World Health Organization. [cited 2021 May 31]. Available from: [http://apps.who.int/iris/bitstream/handle/10665/97035/9789241548649\\_eng.pdf;jsessionid=022652F5628258BC11F249A7360073A9?sequence=1](http://apps.who.int/iris/bitstream/handle/10665/97035/9789241548649_eng.pdf;jsessionid=022652F5628258BC11F249A7360073A9?sequence=1)
- Greene JG, Vermillion JR. The Simplified Oral Hygiene Index. *J Am Dent Assoc.* 1964;68(1):7-13.
- Mohammad S, Saha S, Srinivas S. Oral Hygiene Status of School - Going Muslim Population Associated with the use of Miswak in Lucknow, India. *Journal of J Indian Assoc Public Health Dent.* 2010;8(16):72-7.
- Amin TT, Al-Abad BM. Oral hygiene practices, dental knowledge, dietary habits and their relation to caries among male primary school children in Al Hassa, Saudi Arabia. *Int J Dent Hyg.* 2008;6(4):361-70.
- Al-Hammadi AA, Al-Rabai NA, Togoo RA, Zakirulla M, Alshahrani I, Alshahrani A. Knowledge, Attitude, and Behavior Related to Use of Miswak (Chewing Stick): A Cross-Sectional Study from Aseer Region, Saudi Arabia. *Contemp Clin Dent.* 2018;9(Suppl 1):S64-S8.
- Farah HH, Ghandour IA. Periodontal health status of 12-year-old Sudanese schoolchildren and educational level of parents in Khartoum province. *Odontostomatol Trop.* 2009;32(127):25-33.
- Farooqi FA, Khabeer A, Moheet IA, Khan SQ, Farooq I, ArRejaie AS. Prevalence of dental caries in primary and permanent teeth and its relation with tooth brushing habits among schoolchildren in Eastern Saudi Arabia. *Saudi Med J.* 2015;36(6):737-42.
- Aparna M, Sreekumar S, Thomas T, Hedge V. Assessment of dental caries experience among 5-16-year-old school-going children of Mangalore, Karnataka, India: A cross-sectional study. *Ann Essences Dent.* 2018;10(1):12-7.
- Chen KJ, Gao SS, Duangthip D, Li SKY, Lo ECM, Chu CH. Dental caries status and its associated



- factors among 5-year-old Hong Kong children: a cross-sectional study. *BMC Oral Health*. 2017;17(1):121.
19. Shailee F, Girish MS, Kapil RS, Nidhi P. Oral health status and treatment needs among 12- and 15-year-old government and private school children in Shimla city, Himachal Pradesh, India. *J Int Soc Prev Community Dent*. 2013;3(1):44-50.
20. Yadav M, Kohli A, Singhania H, Awasthi N. Evaluation of Oral Health Status of School Children and to assess its association with the Parent's Education Level. *J Adv Med Dent Scie Res*. 2018;6(9):51-4.
21. Iqbal M, Lubna K, Mukesh R. Oral health status; very low income strata of population. *Professional Med J*. 2006;13(2):220-224.
22. Mustafa M, AlJeaidi Z, AlAajam WH, Dafaalla Mohammed KA. Study of Caries Prevalence among Miswak and Non-Miswak Users: A Prospective Study. *J Contemp Dent Pract*. 2016;17(11):926-9.
23. Yee R, David J, Khadka R. Oral cleanliness of 12-13-year-old and 15-year-old school children of Sunsari District, Nepal. *J Indian Soc Pedod Prev Dent*. 2006;24(3):146-51.
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