Dental Hygiene Practices Among BDS Students And Doctors During Ramadan At MMCH, Bangladesh

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KEYWORDS

Ramadan, oral hygiene, dental students, doctors, fasting, dental practices, Bangladesh

ABSTRACT:

Background: Ramadan fasting influences daily routines, including oral hygiene practices. Misconceptions about the permissibility of oral care during fasting may affect dental hygiene behaviors, even among dental professionals. **Aim of the study:** To assess and compare dental hygiene knowledge, attitudes, and practices during Ramadan among BDS students and doctors at Mymensingh Medical College Hospital (MMCH), Bangladesh. **Methods:** A cross-sectional study was conducted during Ramadan involving 230 participants (140 BDS students and 90 doctors). Data were collected via a validated questionnaire covering knowledge, attitudes, practices, barriers, and willingness to promote oral hygiene. Statistical analysis was performed using Chi-square and t-tests, with $p \leq 0.05$ considered significant. **Result:** Doctors demonstrated significantly higher awareness of oral hygiene permissibility during fasting (95.6% vs. 80%, p=0.001), more positive attitudes, and better adherence to recommended practices, including twice-daily brushing (73.3% vs. 58.6%, p=0.02). Students reported more barriers, such as fear of breaking the fast (54.3% vs. 37.8%, p=0.01). Both groups showed strong willingness to promote Ramadan oral health awareness. **Conclusion:** Doctors exhibit better knowledge, attitudes, and practices regarding oral hygiene during Ramadan compared to BDS students. Targeted educational interventions for students are needed to improve their oral hygiene behaviors and patient counseling during fasting periods.

INTRODUCTION

Dental hygiene is the practice of maintaining oral cleanliness to prevent dental diseases and promote overall oral health. Oral hygiene is a vital component of general health and well-being, and its maintenance is crucial for the prevention of oral diseases such as dental caries, gingivitis, and periodontitis [1]. Globally, oral diseases affect nearly 3.5 billion people, with dental caries in permanent teeth being the most prevalent condition, affecting around 2.5 billion individuals, according to the Global Burden of Disease Study 2030 [2]. In Bangladesh, recent surveys indicate that approximately 70% of the population suffers from some form of periodontal disease, while 50–60% experience untreated dental caries, highlighting a significant public health concern [3]. The month of Ramadan, observed annually by millions of Muslims worldwide, is characterized by fasting from dawn until sunset. This religious observance influences not only dietary patterns but also daily routines and personal hygiene habits, including oral care practices [4]. During Ramadan, individuals often consume meals before dawn (Suhoor) and after sunset (Iftar), leading to shifts in food intake frequency and content. These behavioral changes, coupled with reduced fluid consumption and prolonged fasting hours, can have considerable impacts on oral health [5]. Reduced frequency of oral hygiene practices, altered salivary flow due to decreased hydration, and increased consumption of sugary foods during non-fasting hours may elevate the risk of oral health deterioration during this period [5]. Furthermore, many individuals hold the belief that using toothpaste, mouthwash, or even brushing during fasting hours may invalidate the fast, contributing to hesitation or complete avoidance of oral hygiene during daylight hours [6]. These misconceptions, if not properly addressed, can negatively influence oral health,

particularly among individuals who are otherwise knowledgeable about proper dental care. Dental professionals, including both dental students and practicing doctors, are expected to serve as role models for optimal oral health behavior and to provide accurate guidance to patients [7]. However, several studies have shown that even among dental professionals, awareness does not always translate into consistent or evidence-based practice, especially during Ramadan when religious and cultural sensitivities may alter behavior [8]. It is therefore important to assess how these healthcare providers adjust their oral hygiene practices during fasting, as their behavior has a direct influence on their ability to educate and guide patients effectively [9]. In Bangladesh, there is a paucity of data specifically focusing on the dental hygiene behaviors of dental students and doctors during Ramadan [10]. Understanding their practices is critical, as they represent both the current and future workforce in oral healthcare service delivery [11]. Evaluating their behavioral patterns during this unique time can offer valuable insights into existing gaps in knowledge, prevailing misconceptions, and areas where targeted interventions or culturally sensitive educational programs are needed [12]. The aim of this study is to evaluate and compare dental hygiene practices during Ramadan among BDS students and doctors at MMCH, Bangladesh.

METHODOLOGY & MATERIALS

This cross-sectional study was conducted at the Dental Unit of Mymensingh Medical College Hospital (MMCH), Bangladesh, during the month of Ramadan in 2025. The aim was to assess and compare dental hygiene knowledge, attitudes, and practices among BDS students and doctors during the fasting period. A total of 230 participants were enrolled using purposive sampling. The study population was divided into two groups:
BDS Students (n=140): undergraduate students from 1st to 4th year.
Doctors (n=90): practicing dental professionals from MMCH with various years of clinical experience.

Inclusion Criteria

- BDS students currently enrolled in MMCH.
- Registered doctors practicing at MMCH.
- Observing fasting during Ramadan.
- Provided informed consent to participate.

Exclusion Criteria

- Individuals not observing fasting during Ramadan.
- Interns or those currently on academic leave.
- Individuals unwilling to participate or provide consent.

Data Collection

Data were collected through a structured, pre-validated questionnaire distributed during clinical hours. The questionnaire consisted of close-ended items covering six major domains: demographic profile, knowledge about oral hygiene during Ramadan, attitudes toward oral care while fasting, current oral hygiene practices, perceived barriers, and willingness to promote oral health during Ramadan. The key variables assessed included age, gender, year of study or years of practice, awareness regarding permissibility of oral hygiene while fasting, understanding of brushing and miswak usage, attitudes toward spiritual and physical importance of oral hygiene, specific hygiene practices such as timing and frequency of brushing, reported barriers like fear of breaking the fast or fatigue, and willingness to counsel patients or participate in Ramadan-based awareness campaigns. All participants completed the forms voluntarily and anonymously.

Ethical Consideration

The study was approved by the Institutional Ethics Committee of MMCH. Written informed consent was obtained from all participants. Confidentiality and anonymity were maintained throughout the study process.

Statistical Analysis

All collected data were analyzed using SPSS software (version 26). Categorical variables were expressed as frequencies and percentages. Continuous variables were presented as mean ± standard deviation (SD). Group comparisons between BDS students and doctors were made using the Chi-square test for categorical data and the independent t-test for continuous data. A p-value ≤ 0.05 was considered statistically significant.

RESULT

A total of 230 participants were included in this study. The demographic characteristics of the participants are shown in Table 1. The mean age of BDS students was 23.2±1.6 years, while for doctors, it was 30.1±4.3 years ($p<0.001$). Among BDS students, 44 (31.43%) were male and 96 (68.57%) females, while among doctors, 34 (37.78%) were male and 56 (62.22%) female ($p=0.29$). Most students were in 3rd–4th year (98, 70.00%), while

the majority of doctors had >5 years of practice (53, 58.89%). Awareness that oral hygiene is allowed during fasting was noted in 112 (80.00%) students and 86 (95.56%) doctors (p=0.001). Knowledge that brushing doesn't break the fast was found in 87 (62.14%) students and 81 (90.00%) doctors (p<0.001). Awareness of halitosis importance was reported by 125 (89.29%) students and 88 (97.78%) doctors (p=0.02). A total of 116 (82.86%) students and 83 (92.22%) doctors knew miswak is permissible during fasting (p=0.05) (Table 2). A majority believed oral hygiene is more important during Ramadan—132 (94.29%) students and 88 (97.78%) doctors (p=0.18). A total of 112 (80.00%) students and 81 (90.00%) doctors stated that patients avoid dental care during fasting (p=0.04). Most participants believed dentists should raise awareness—128 (91.43%) students and 87 (96.67%) doctors (p=0.13). Spiritual and physical comfort due to oral hygiene was acknowledged by 105 (75.00%) students and 83 (92.22%) doctors (p=0.002) (Table 3). Table 4 shows oral hygiene practices. Brushing during Suhoor was practiced by 128 (91.43%) students and 85 (94.44%) doctors. After Iftar brushing was reported by 106 (75.71%) students and 77 (85.56%) doctors. Use of miswak was reported by 71 (50.71%) students and 53 (58.89%) doctors. Brushing more than once daily was done by 82 (58.57%) students and 66 (73.33%) doctors (p=0.02). Table 5 highlights barriers. Fear of breaking fast was noted by 76 (54.29%) students and 34 (37.78%) doctors (p=0.01). Lack of awareness and fatigue were more frequent among students (p<0.001, p=0.003). Table 6 shows greater willingness among doctors to counsel and support campaigns (p=0.01, p=0.003, p<0.001).

Table 1: Demographic Characteristics of Study Participants (N = 230)

Variables	BDS Students (n=140)		Doctors (n=90)		P value
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	
Age (years)					
Mean ± SD	23.2 ± 1.6		30.1 ± 4.3		<0.001
Gender					
Male	44	31.43	34	37.78	0.29
Female	96	68.57	56	62.22	
Year of study/practice					
1st–2nd year	42	30.00	–	–	
3rd–4th year	98	70.00	–	–	
1–5 years practice	–	–	37	41.11	
>5 years practice	–	–	53	58.89	

Table 2: Knowledge Regarding Oral Hygiene During Ramadan (N = 230)

Knowledge Item	BDS Students (n=140)		Doctors (n=90)		P value
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	
Aware oral hygiene is allowed in fasting	112	80.00	86	95.56	0.001
Know brushing does not break the fast	87	62.14	81	90.00	<0.001
Aware of halitosis importance	125	89.29	88	97.78	0.02
Know miswak is permissible while fasting	116	82.86	83	92.22	0.05

Table 3: Attitudes Toward Oral Hygiene During Ramadan (N = 230)

Attitude Statement	BDS Students (n=140)		Doctors (n=90)		P value
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	
Oral hygiene is more important during Ramadan	132	94.29	88	97.78	0.18
Patients avoid dental care fearing fast invalidation	112	80.00	81	90.00	0.04
Dentists should raise awareness during Ramadan	128	91.43	87	96.67	0.13
Oral hygiene affects spiritual and physical comfort in fasting	105	75.00	83	92.22	0.002

Table 4: Oral Hygiene Practices During Ramadan (N = 230)

Practice	BDS Students (n=140)		Doctors (n=90)		P value
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	
Brush teeth during Suhoor (pre-dawn)	128	91.43	85	94.44	0.37
Brush teeth after Iftar (evening)	106	75.71	77	85.56	0.07
Use mouthwash during fasting hours	27	19.29	13	14.44	0.34
Use miswak while fasting	71	50.71	53	58.89	0.23
Brush more than once daily	82	58.57	66	73.33	0.02

Table 5: Reported Barriers to Oral Hygiene During Ramadan (N = 230)

Barrier	BDS Students (n=140)		Doctors (n=90)		P value
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	
Fear of breaking fast	76	54.29	34	37.78	0.01
Lack of time (during Suhoor/Iftar)	34	24.29	22	24.44	0.98
Lack of awareness about permissibility	53	37.86	12	13.33	<0.001
Forgetfulness/fatigue due to fasting	49	35.00	15	16.67	0.003

Table 6: Willingness to Promote Oral Hygiene During Ramadan (N = 230)

Item	BDS Students (n=140)		Doctors (n=90)		P value
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	
Willing to counsel patients during OPD	104	74.29	80	88.89	0.01
Support Ramadan-based oral health campaigns	89	63.57	74	82.22	0.003
Believe Ramadan is ideal time for dental awareness	101	72.14	83	92.22	<0.001

DISCUSSION

Dental hygiene practices during Ramadan can vary significantly due to changes in routine, dietary habits, and religious observances, making it essential to assess behaviors among healthcare professionals like BDS students and doctors [13]. This study provides a comprehensive insight into the knowledge, attitudes, and practices regarding oral hygiene during Ramadan among BDS students and doctors at MMCH, Bangladesh. The findings reveal significant differences between the two groups, with doctors consistently demonstrating higher awareness, more favorable attitudes, and more optimal oral hygiene practices during Ramadan. In our study, the mean age of the BDS students was 23.2±1.6 years and 30.1±4.3 years among the Doctors. Males were 31.43% and 37.78% in BDS students and Doctors. This cohort mirrors previous study by Javed *et al*. [14]. Our study found that 95.6% of doctors were aware that maintaining oral hygiene does not invalidate fasting, compared to 80% of BDS students (p=0.001). This aligns with a study conducted by Tariq *et al*. in Pakistan, where most of the dental professionals correctly identified that brushing during fasting does not break the fast, suggesting that clinical experience positively influences accurate religious-medical knowledge [6]. The attitude data in our study further supports this discrepancy in maturity and professional responsibility. Notably, 92.22% of doctors agreed that oral hygiene impacts both spiritual and physical comfort during fasting, significantly higher than students (75%, p=0.002). This is consistent with findings from Tariq *et al*. in Pakistan, where most of the of dentists emphasized the psychological and religious significance of oral hygiene during Ramadan [6]. Practice-wise, although most respondents in both groups maintained regular brushing routines, a greater proportion of doctors brushed more than once daily (73.33% vs. 58.57%, p=0.02), reflecting stronger behavioral adherence. Comparable findings were reported in a study by Shah (2023), where it is observed that most of clinicians practiced twice-daily brushing during Ramadan, indicating a higher commitment to personal oral care among professionals [15]. Interestingly, barriers such as fear of breaking the fast and lack of awareness were more common among students. More than

half (54.3%) of students feared that oral hygiene measures might invalidate fasting, compared to 37.8% of doctors (p=0.01). These misconceptions echo the results from the study by Tariq *et al*., which found that younger students were more influenced by religious ambiguity and lacked confidence in patient counseling regarding fasting and oral care [6]. Encouragingly, willingness to promote oral hygiene was high across both groups but significantly stronger among doctors. About 88.9% of doctors were ready to counsel patients during OPD hours, compared to 74.3% of students (p=0.01), highlighting the potential for integrating targeted Ramadan-based oral health campaigns within clinical settings. This finding is supported by studies such as by Forsyth *et al*., who reported that practicing dentists are more likely to engage in patient education if culturally contextual support is provided [16].

Limitations of the study:
This study was conducted at a single institution with a purposive sample, which may limit the generalizability of the findings to other regions or populations. Self-reported data on oral hygiene practices are subject to recall and social desirability biases, potentially affecting accuracy. The cross-sectional design captures practices only during one Ramadan period, limiting assessment of changes over time. Additionally, factors such as religious interpretation and personal motivation were not deeply explored, which could influence oral hygiene behaviors during fasting.

CONCLUSION

This study reveals significant differences in dental hygiene knowledge, attitudes, and practices during Ramadan between BDS students and doctors at MMCH, Bangladesh. Doctors demonstrated greater awareness of the permissibility of oral hygiene while fasting, more positive attitudes regarding its spiritual and physical importance, and better adherence to recommended practices. In contrast, BDS students showed more misconceptions and barriers, such as fear of breaking the fast, which may affect their oral care routines during Ramadan. Both groups showed a strong willingness to promote oral hygiene awareness, indicating an opportunity for culturally sensitive educational interventions. Targeted training for students could enhance their knowledge and confidence, supporting improved oral health promotion during Ramadan in the community.

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