



Oral Health of Fasting Muslims

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ARTICLE INFO	ABSTRACT
<p><i>Article type:</i> Research Paper</p>	<p>Introduction: Regular observance of oral hygiene remarkably prevents dental diseases. Ramadan fasting is associated with significant lifestyle changes and food consumption patterns in Muslims. The present study aimed to assess the oral hygiene practices and perceptions of fasting Muslims during the holy month of Ramadan.</p>
<p><i>Article History:</i> Received: 19 Mar 2019 Accepted: 14 May 2019 Published: 19 Jun 2019</p>	<p>Methods: This cross-sectional, questionnaire-based survey was conducted on 305 individuals. The questionnaire consisted of two sections; the first section contained the demographic data of the subjects, and the second section consisted of 10 items regarding their oral hygiene practices and perceptions during the fasting period. The responses of the participants were evaluated using the Microsoft Excel software and tabulated to the percentage strength.</p>
<p><i>Keywords:</i> Oral health Oral hygiene Halitosis</p>	<p>Results: The level of oral health observance was considered favorable during Ramadan in the participants. The majority of the participants brushed their teeth at least once or twice daily during Ramadan. However, some patients complained of halitosis during Ramadan fasting.</p> <p>Conclusion: According to the results, proper oral health is essential to the wellbeing of fasting individuals, and there should be no compromise on regular oral hygiene observance during fasting periods.</p>

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Introduction

Oral hygiene defined as the practices that aim to keep the oral cavity clean and free of diseases by the regular cleaning of the teeth and the associated soft tissues. Regular oral hygiene maintenance could remarkably prevent dental diseases and halitosis.¹ Islamic jurisprudence regarding hygiene places great emphasis on cleanliness. The observance of oral hygiene through cleaning the teeth using natural tooth brushes (*Miswak*) is considered to be prophetic practice (Sunnah), which should be followed by the followers of the Islamic faith.²

In the holy month of Ramadan, 30 days of fasting is obligatory for all healthy adult and adolescent Muslims although there are temporary or permanent fasting exemptions, including ill individuals, those who are

travelling, those with very old age, and menstruating, pregnant, and lactating women. Fasting individuals must abstain from eating and drinking from dawn until dusk.^{2,3}

In Ramadan, fasting individuals experience changes in their lifestyle, food consumption patterns, and sleep patterns. Some fasting individuals may neglect some health issues while fasting. The present study aimed to evaluate the oral hygiene practices and perceptions in fasting individuals.

Materials and Methods

This cross-sectional, questionnaire-based survey was conducted on 305 fasting individuals, who were selected via cluster

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sampling from the members of the Muslim community in Kannur District in Kerala, India. The sample size was calculated after a pilot study at the confidence level of 95%. The study protocol was approved by the Institutional Review Board and Ethics Committee of Kannur Dental College, Anjarakandy, India (Ref. KDC281/2018).

In total, 400 questionnaires were distributed among the selected participants. The questionnaire consisted of two sections; the first section contained the demographic data of the participants (e.g., age and gender), and the second section had 10 items regarding their oral hygiene practices and perceptions during Ramadan.

The inclusion criteria of the study were men and women aged more than 17 years, natural teeth in the upper and lower jaws, and fasting during Ramadan. The individuals with systemic

diseases were excluded from the study, and the fasting individuals were asked to complete the questionnaires. The completed questionnaires were evaluated, and the scores of each item were calculated. The responses to each question were analyzed in the Microsoft Excel software and tabulated to the percentage strength.

Results

In total, 360 out of 400 distributed questionnaires were returned by the participants. The initial evaluation indicated that 55 questionnaires were incomplete, and 305 completed questionnaires were selected for further analysis. Table 1 shows the demographic characteristics of the participants. The participants were within the age range of 17-72 years, with the mean age of 36 years. In total, 62% of the participants (n=189) were female.

Table 1. Demographic Characteristics of Participants

Variables	
Number of Participants	305
Geographical Area	Kannur District, Kerala, India
Age Range (year)	17-72
Mean Age (year)	36
Gender	116 (38.13%)
Male	189 (61.96%)
Female	

According to Figure 1, all the participants brushed their teeth while fasting during Ramadan. Furthermore, 205 participants (67%) brushed their teeth at least twice daily, 81

participants (27%) brushed their teeth more than twice daily, and 19 participants (6%) brushed their teeth at least once a day.

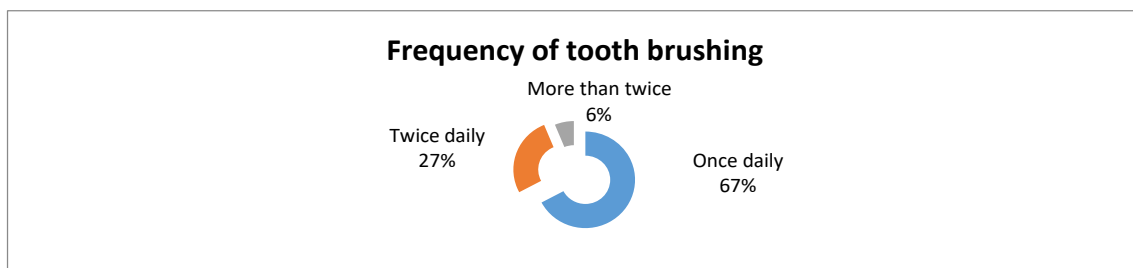


Figure 1. Frequency of Tooth Brushing While Fasting

As is depicted in Figure 2, 288 participants (94%) used a tooth brush with toothpaste, which is the most common oral hygiene aid, while 12 participants (4%) used a wet tooth

brush, three participants (1%) used tooth powder and brushed their teeth with their fingers, and two participants (<1%) used Miswak twigs.

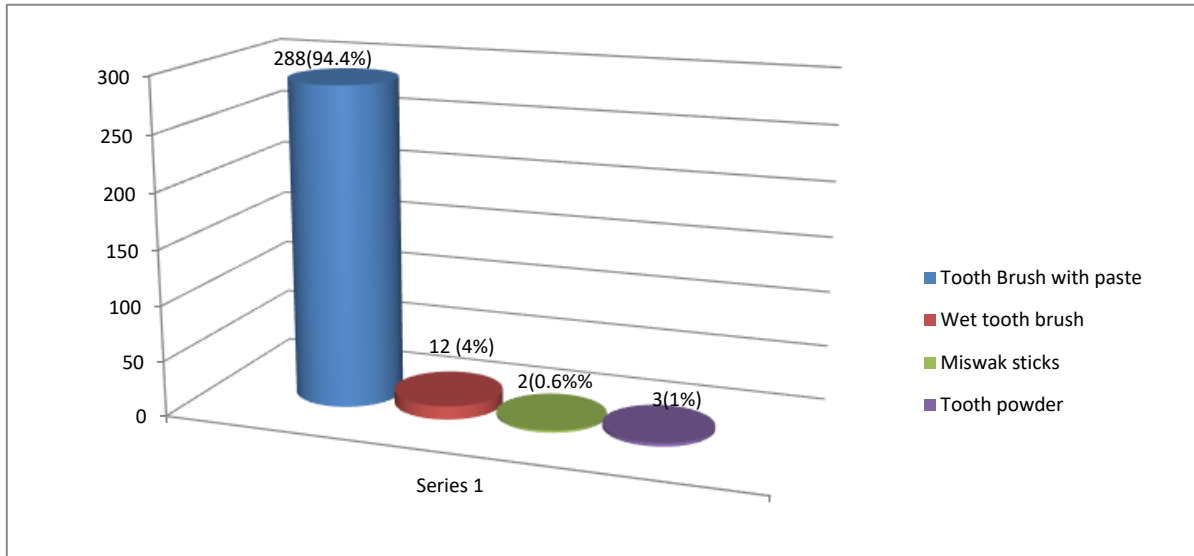


Figure 2. Methods of Brushing Aid during Ramadan

Figure 3 shows the comparison of the use of floss and tongue cleaning during Ramadan and non-fasting periods. According to the obtained results, 101 participants (33.1%) used floss daily in other periods than Ramadan, and 94 participants (30.5%) used floss while fasting.

Moreover, 199 participants (62.5%) cleaned their tongue during Ramadan, while 217 participants (71%) cleaned their tongue in other periods than Ramadan.

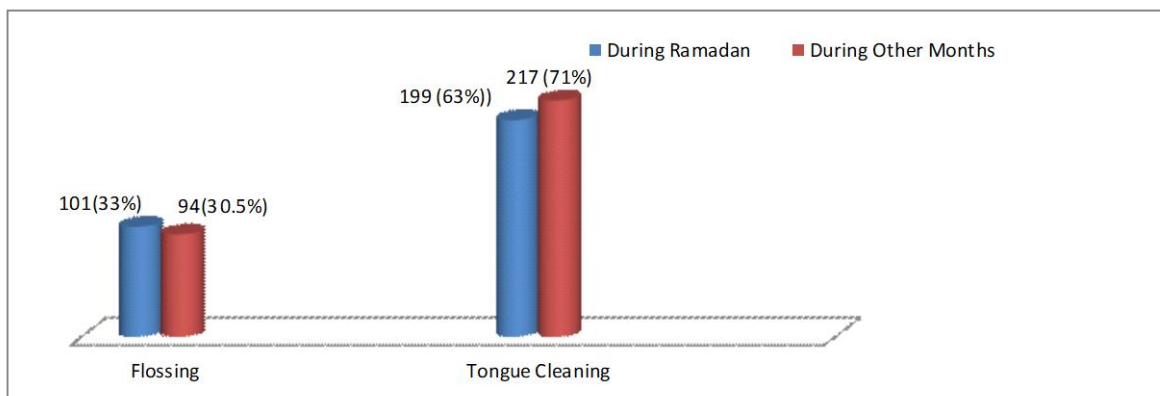


Figure 3. Comparison of Flossing and Tongue Cleaning in Ramadan and Other Months

Figure 4 shows the methods of tongue cleaning used by the participants during Ramadan. Among 199 participants who cleaned their tongue daily, 176 cases (88%) used a tooth

brush, while 21 cases (11%) used tongue cleaners, and two cases (1%) used Miswak twigs.

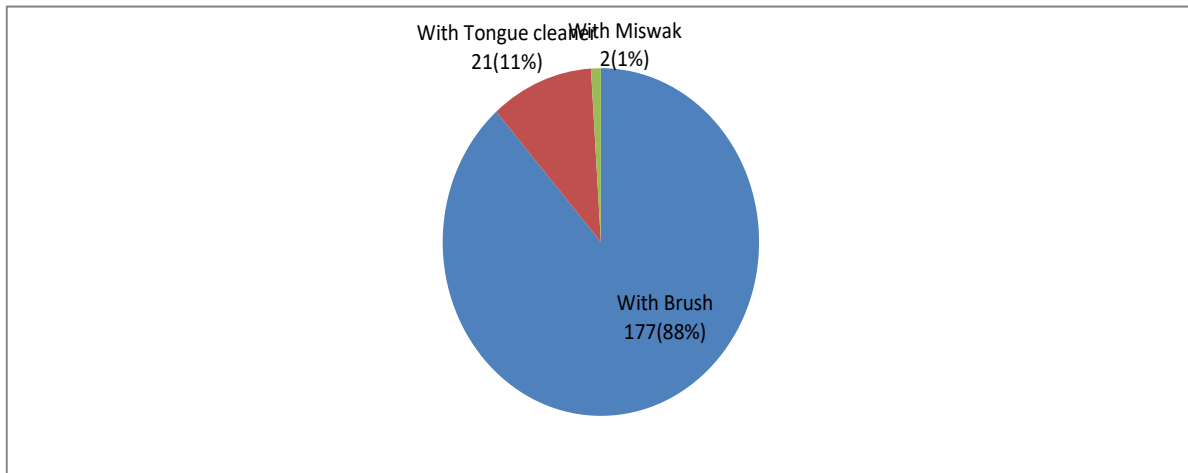


Figure 4. Method of Tongue Cleaning While Fasting

Among 305 participants in the present study, 174 cases (57%) complained of halitosis while fasting. Figure 5 shows the actions taken by the participants to diminish halitosis. Among 174 participants who complained of halitosis, 105

cases (60%) did not take any remedial measures, 34 cases (20%) gargled with water while fasting, 20 cases (11%) brushed their teeth while fasting, 12 cases (7%) used mouthwash, and three cases (2%) consulted dentists.

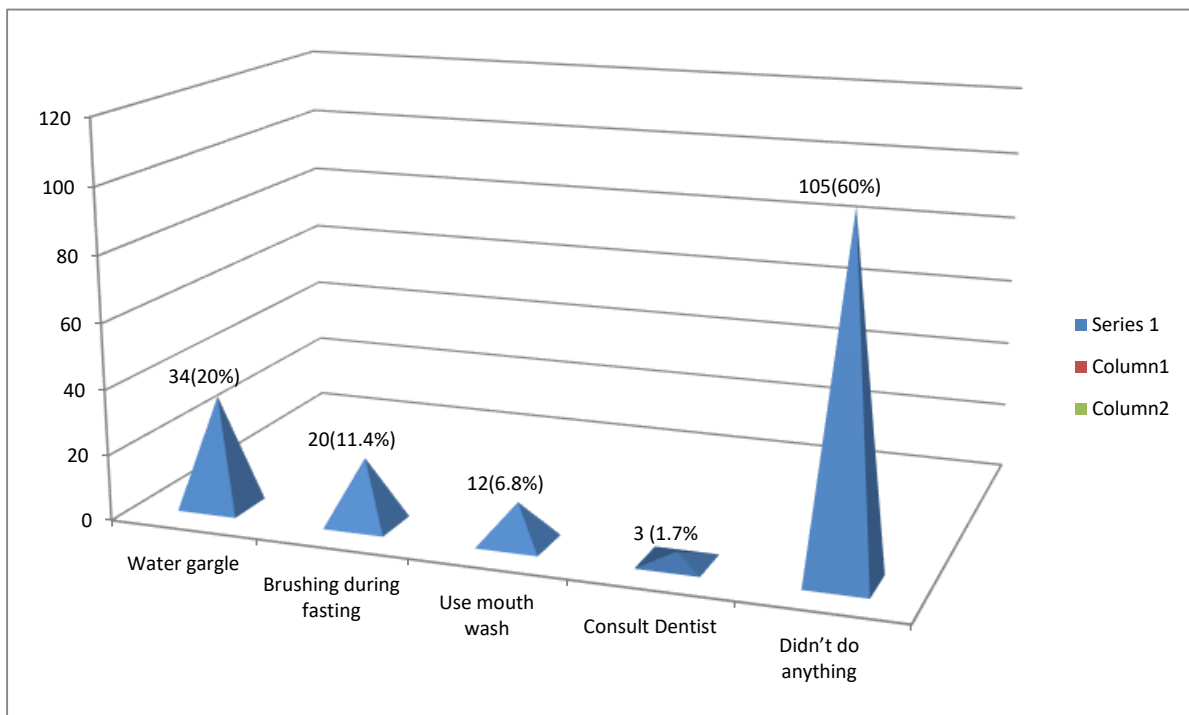


Figure 5. Methods to Reduce Halitosis

Discussion

According to the results of the present study, the participants practiced proper routine oral

health maintenance while fasting. In addition, the majority of the respondents brushed their teeth more than once daily. In order to prevent

dental problems and provide early treatment, dental healthcare professionals must recommend tooth brushing and flossing to adults at least once a day and seeking regular dental checkups.^{4, 5} Brushing before bedtime is of particular importance for the prevention of plaque and food particles remaining in contact with the teeth throughout the night.⁶ In a study in this regard, Frandsen⁷ concluded that the frequency of tooth brushing should be up to twice daily, which is still substantiated, and increasing this frequency serves no special purpose. In contrast, the Brothwell update⁸ has suggested that increasing the frequency of tooth brushing could further improve periodontal health as it is considered to be a primary mechanical means of removing substantial amounts of plaque in order to prevent oral diseases (e.g., gingivitis and dental caries), while also maintaining dental aesthetics and preventing halitosis.

In the current research, the majority of the participants used a tooth brush with toothpaste for oral hygiene. From a religious perspective, using toothpastes is allowed during Ramadan, whereas few scholars of Islam consider the use of toothpastes while fasting to be highly undesirable due to their deliberate or accidental swallowing and the subsequent nullification of fasting. Therefore, fasting individuals are advised to brush and floss thoroughly before sleeping at night and brush after the pre-dawn meal as well.² brushing twice daily is sufficient to eliminate food lodgment and shorten the duration of carbohydrate impact, which could lead to oral diseases.⁹

Halitosis seems to be a common oral problem that affects fasting individuals.¹⁰ Salivation decreases while fasting, and the subsequent mouth drying may lead to halitosis. In addition, the increased concentration of sulfur-containing compounds in the oral cavity could cause marked halitosis, which may be misdiagnosed for oral diseases or the poor observance of oral hygiene. The gases responsible for oral halitosis are the byproducts of protein and glycoprotein putrefaction by the oral microbiota. The dorsal-posterior tongue is the most important halitogenic site since it has the largest surface area and highest bacterial load.¹¹ Moreover, there may be more oral malodor in the fasting individuals with dental caries, gingivitis, and

other oral or airway infections. Therefore, fasting individuals are advised to consume large quantities of water and avoid spicy foods before prior to fasting.

Fish and milk contain specific proteins, which could cause mouth odor while breaking down into particles inside the mouth. The odor may reduce with proper oral hygiene, debridement with dentifrices, while the individual starts fasting or at the end of daily fasting. Use of tongue scrappers or tongue cleaner to dispose of tongue coating is advised to reduce the food lodgment, which may cause mouth odor.¹² Chlorhexidine is a commonly prescribed antiseptic mouthwash in dentistry to be used if required. However, some fasting individuals may be reluctant to use mouthwash due to the fear of absorption from the mucosa and inadvertent swallowing. In such case, the mouthwash could be used during non-fasting hours.¹³

One of the important limitations of the present study was the high dropout rate. Moreover, the findings are based on the responses of a self-administered questionnaire, which might not be of actual practice and may be unconscientious. This research was an attempt to investigate the status of oral health maintenance practices in a Muslim population during one month of fasting. It is recommended that further studies in this regard be conducted in different areas with various customs and socioeconomic background in order to obtain more accurate results.

Conclusion

According to the results, the participants had favorable oral hygiene maintenance while fasting. Some of the participants had complaints of halitosis while fasting. Therefore, emphasis should be placed on the measures to reduce halitosis through proper oral health behaviors and modifying dietary intakes in fasting individuals.

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