

Perception Of Oral Hygiene Practices And Dental Treatment Permissible During Fasting Amongst Dental Patients: A Cross-Sectional Study In Pakistan

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Abstract

Background: Fasting places prohibitions on eating and drinking for a certain period of time. Although many dental treatments have been said to be safe and can be performed while fasting, other may result in breaking of fast. The study aims to evaluate the perception of dental patients of Lahore, Pakistan regarding effect of such treatments and hygiene measures during fasting. **Methods :** It was a cross-sectional survey carried out in 2 dental teaching hospitals of Lahore, Pakistan from September-October 2018. Patients were asked to complete a self-administered structured questionnaire developed to assess the knowledge regarding dental treatments, and hygiene practices while fasting. The questionnaire consisted of 7 items regarding the influence of dental treatments such as filling, scaling, and extraction etc. on fasting. Questions were also added regarding maintenance of oral hygiene such as brushing and its effect on fast. Frequencies and percentages are used to display results. Chi-squared test was used for statistical analysis to estimate difference between gender, and educational status with perception of procedures breaking fast. **Results :** Out of 415 responses, 374 were included for analysis. About 76.2% respondents believed that undergoing extraction broke fast. Scaling was thought to nullify the fast by 45.5% of respondents. 52.9% perceived root canal treatment to break fast along with 67.6%, who believed anaesthesia administration broke fast. As far as oral hygiene was concerned, brushing was reported to break fast by 57.5% with the use of mouthwash invalidating fast by 63.4%. **Conclusion :** The respondents were generally aware of some procedures not breaking fast however, most thought that administration of anaesthesia, undergoing root canal treatment, and extraction invalidated fast. Also, hygiene maintenance measures such as brushing and use of mouthwash during was also thought to break fast. It is imperative that the healthcare providers should be familiar with the effect of dental treatments and oral hygiene measures on fasting state that can influence the treatment plan of the patients.

Background

Fasting is an obligatory practice in Islam during the month of Ramadan. According to Islamic calendar (Hijra), each year Ramadan comes about 10 days earlier thus, occurring at various times in different seasons in a 33-year cycle.¹ One of the fundamentals of fasting is totally refraining oneself from consuming any food or drink during the fasting hours. Although traditions may vary according to geographical location, customs are generally influenced by religion specially in regions like middle east and southeast Asia. This phenomenon is reflected in people having same thought process, as they are led by the same ideology. As per Islamic teachings, people who are unwell, elderly and traveling are not covered under the same umbrella of compulsory fasting.² It also includes women who are menstruating, pregnant, new mothers and lactating. Therefore, such individuals have the right to be excused from fasting which can be performed later.^{3,4}

Fasting applies some restrictions on the Muslims who are observing it in the terms of what could potentially break a fast. These limitations include ingesting any solid or intake of minute quantity of water; which can nullify the fast. This places patients and healthcare professionals in a predicament

where, patients will have to ascertain the type of medication they can take before or after fasting along with any diagnostic test or medical/dental procedure. Moreover, practitioners will also have to consider modifications in treatment plans and medication timing so that it doesn't hinder the obligation of performing fast. As far as dental procedures are concerned, it can be assumed that general population is relatively unfamiliar with ramifications of different treatments on fasting. This can be inferred from the fact that most people inquire about the effect of oral hygiene practices such as brushing and use of mouthwash on fasting.⁵ Also, the ratio of attending dental appointments have been documented to decline during Ramadan, which not only delays the treatment but may lead to poor oral health outcomes as well.^{6,7} It can only be expected that they will have little knowledge about permissible dental treatments during Ramadan.

Thus, information about the patients' cultural and religious rituals is of great importance for healthcare professionals, as this knowledge will result in gratification of patients regarding dental healthcare delivery.³

Therefore, the aim of this study was to assess the level of awareness among the patients regarding the types of treatments and oral hygiene practices that are permissible during fasting.

Objectives

- To estimate perception of respondents with regards to dental treatments and hygiene practices that can break fast.
- To identify any difference in perception of dental treatments and hygiene practices amongst genders.
- To evaluate any difference in perception among participants of different educational status.

Methods

The study was a cross-sectional survey carried out in OPD's of two dental teaching hospitals of Lahore, Pakistan affiliated with De 'Montmorency College of Dentistry and University College of Dentistry, University of Lahore from September-October 2018. Sample size was calculated using online Raosoft sample size calculator, with population size (43,200) projected as annual visitors in OPD of both dental teaching hospitals. Keeping margin of error 5% and confidence interval 95%, minimum sample size was estimated to be 321 considering response rate to be 70%. Convenience sampling was used to disseminate the questionnaires. Data was obtained from patients presenting to different departments in teaching hospitals after obtaining informed consent by two researchers. Confidentiality of participants was maintained by omission of questions from which they could be identified such as name and address while giving codes to the questionnaire booklets. Inclusion criteria entailed consenting adults (18 years and above) who could read or understand the questions. A self-administered structured questionnaire was developed to assess the knowledge and perception of patients regarding dental treatments, and

hygiene practices while fasting. The questionnaire included items to record demographic variables of the participants. It also comprised of 7 items inquiring about influence of dental treatments such as filling and scaling etc. on fasting. Second part of questionnaire consisted of 3 items asking the participants whether hygiene measures such as brushing and use of mouthwash, miswaak affects fasting. The responses ranged from “maybe yes”, “yes” to “maybe no”, “no” and “don’t know”. These were then categorized respectively in to ‘yes’, ‘no’ and ‘don’t know’ for the purpose of analysis. Education level of the patients were dichotomized in to two groups; school graduates and college graduates. The high school diploma group includes participants who completed their primary and secondary education; graduates and postgraduates were categorized in college education. Incomplete questionnaires were discarded and not included in analysis. The data was entered and analyzed using SPSS statistical program (version 23). Results are reported as frequencies and percentages. Chi-squared test was used to observe differences between knowledge amongst genders, and education status of respondents. All *p*-values were two tailed and the significance was defined at $p<.05$

Results

A total of 415 responses were obtained out of 600 distributed, of which 41 were excluded due to being incomplete. Total sample included in the analysis was 374. Summary of demographic variables are displayed in table 1. Majority of the participants were male, though much difference wasn’t observed between genders as female participants formed almost half of the total count. Most (68.7%) participants had completed their college degree followed by participants who were educated till primary or high school graduates (31.3%). Majority of the participants were employed (55.9%) with only 21.9% being unemployed.

Figure 1 displays responses of sample population to dental procedures that were thought to break the fast.

Overwhelming majority of respondents thought induction of anesthesia (67.6%) and procedure of extraction (76.2%) broke fast. More than half (52.9%) of the respondents assumed RCT to break the fast. Although majority perceived scaling to not break the fast, many (45.5%) of respondent’s views were in contrast.

Table 2 summarizes the differences in responses of sample population according to education level as demonstrated by Chi-squared test. Amongst school graduates, majority perceived dental procedures to break fast whereas most college graduates thought otherwise. Procedures of scaling, impression taking, and crown cementation were not assumed to break the fast by both college and school graduates. According to majority of college educated respondents (77.8%), filling was not considered to break fast whilst most (45.7%) school graduates believed the procedure broke fast. Multivariate analysis depicted responders with high school education were 2.4 times more likely to believe that procedure of filling broke fast (OR=2.4, 95% CI 1.50 – 3.91, $p<0.001$). Similar results were reported in case of anesthesia induction

as well, where high school graduates were 2.3 times more likely to believe in procedure breaking fast (OR=2.3, 95% CI 1.25 – 4.24, $p=0.007$).

As far as gender is concerned, multivariate analysis revealed that female responders were 45% less likely to believe that filling procedure broke the fast (OR=0.55, 95% CI 0.34 – 0.90, $p=0.018$). Likewise, females were 53% less likely to perceive crown cementation to break the fast as compared to those who did (OR=0.476, 95% CI 0.28 – 0.80, $p=0.005$).

It was also revealed that unemployed responders and high schoolers were more likely to consider RCT to break the fast as compared to others (OR=1.8, 95% CI 1.13 – 2.88, $p=0.013$ and OR=2.1, 95% CI 1.24 – 3.64, $p=0.006$ respectively). Unemployed responders were also 1.82 times more likely to perceive that impression taking breaks fast (OR=1.82, 95% CI 1.12 – 2.96, $p=0.014$). Similarly, it was also found that one-unit increase in age resulted in 1.036-unit increase in believing that tooth extraction breaks the fast as compared to others (OR=1.036, 95% CI 1.004 – 1.068, $p=0.025$).

Overall, high school graduates were likely to consider procedures to break fast and female gender was associated with good knowledge of which procedures broke fast.

The participants were also inquired about their views concerning the dental hygiene practices during fasting and if they thought those could potentially break their fast (figure 2).

As far as maintaining oral hygiene was concerned, majority respondents (57.5%) of both educational background perceived brushing to break fast ($\chi^2=9.62$; $p<.01$).

Significant difference was only observed amongst gender and use of miswaak ($\chi^2=8.21$; $p=.01$); where females were likely to assume that use of miswaak did not break fast (OR=9.4, 95% CI 1.11 – 79.45, $p=0.04$).

Conclusively, majority of respondents believed brushing teeth and using mouthwash to break fast. Overwhelming majority (88.2%) did not associate use of miswaak with breaking of fast. High schoolers were more likely to believe that brushing breaks the fast with an odds of 2.35 (95% CI 1.42 – 3.88, $p=0.001$).

Discussion

This study aimed to evaluate the perception of dental patients concerning the influence of dental treatment on fasting. Overall, many respondents in the study thought that undergoing dental treatments did not invalidate fast though, oral hygiene practices broke fast. Procedures like scaling and filling were not thought to nullify fast by many. Since the use of rubber dam is common nowadays than it was previously, patients may be aware that it eliminates the risk of intake of any kind of liquid during filling and root canal treatments. In contrast, most of them thought that induction of anesthesia will invalidate the fast as, they may perceive introduction of anesthetic material in oral tissues to break fast. Also, it is

generally assumed that any kind of inoculation breaks the fast. To tackle this sensitive issue, Islamic rulings were pronounced by scholars that administration of local anesthetics will not invalidate fast; only nutritional IV injections are not permitted during fasting.⁶ Although, it is doubtful if the patients are aware of any such ruling.

As far as maintaining oral hygiene is concerned, most respondents considered use of mouthwash, and tooth brushing to breakfast. This could be due to the presence of flavoring agents in toothpaste and mouthwash as consumption of flavorful components during fast is prohibited. However, using miswaak was not thought to be associated with breaking of fast. Miswaak is a small twig of a plant rubbed against the surfaces of teeth for the purpose of cleaning. The twig is reported to have some anti-microbial and plaque inhibitory effects.⁸ Conflicting opinions have been documented by different scholars where one school of thought suggests not brushing teeth during fasting state; though others have set a condition. It was proposed that tiny amount of toothpaste can be used to brush the teeth whilst fasting; ascertaining that the paste is not swallowed and spit out immediately.

Overall, females were more aware of impact of dental treatments and dental hygiene practices on fasting state as compared to males. While there were more males in the study, more females were educated till bachelor level. This could explain the more educated responses of females as compared to males as they were more educated and informed. Also, college educated respondents had relatively better awareness of procedures which did not break fast as compared to school graduated respondents. Similar results were observed in another study conducted in Malaysia where educated people were likely to be more knowledgeable about effect of dental treatments on fasting.⁹

This study holds importance especially amongst Muslim community since this domain hasn't been well researched. It can also be assumed that the results are generalizable to Muslim population anywhere as external validity was assured by devising an inclusion/exclusion criteria and collecting data at the same timing. In places where Muslims are a minority; this could prove to be helpful in understanding the knowledge and attitude of people who are fasting, as people often tend to miss appointments during Ramadan and even if they attend, usually do not undergo any form of treatment.⁷ The study also emphasizes on the importance of information regarding patient available to the dentist. For example, a study conducted amongst Muslims in India depicted that most of the respondents believed using eye drops during Ramadan would break their fast.¹⁰ On the contrary, no evidence exists that reinforces this notion; as the medicine is not taken orally. Moreover, the respondents indicated that they would not take the medicine in case of emergency as well. This implies that people who fast could be noncompliant with medications.¹⁰

It is important that dentists themselves should be updated with the religious affiliation of patients and the latest rulings in relation to dental treatments and medication. This is to avoid any inconvenience during treatment as patients may not visit their dentist even in emergency in fear of breaking their fast.¹¹ Also, the dentists should ascertain that the patients are informed about the rulings such as the Islamic Fiqh Council and the Standing Committee for Academic Research and Issuing Fatwas, a Saudi Arabian

organization that issues decrees in Islamic jurisprudence.¹² One possible limitation that is associated with the study is that it could have benefited from including people living in rural areas since it is possible that their views may have differed.

Conclusion

Patient education should be focused on pre-Ramadan dental health evaluation and existing exemptions in Ramadan for people who require immediate treatment. Further research is recommended to determine the knowledge of non-Muslim practitioners with regards to treatments and practices which are allowed during fasting. This could help in formulating guidelines specific to those regions and health services authorities.

Abbreviations

OPD- outpatient department

RCT- root canal treatment

Declarations

The study has not been funded by any authority and authors declare no conflict of interest.

The data set used in the current study is available on request from Dr. Khaloud Tariq at khaloud.tariq@ucd.uol.edu.pk

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Methodology and validation; K.T, M.H, S.D

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Supervision; M.A.B, A.H

All authors have read and agreed to the published version of the manuscript.

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Tables

Table 1: Demographic status

VARIABLE	N (%)
Gender	197 (52.7%)
Male	177 (47.3%)
Female	
Age¹	29.4 (±11.5)
Education status	35 (9.4%)
Primary educated	82 (21.9%)
Secondary educated	257 (68.7%)
College educated	
Occupation	83 (22.2%)
Students	117 (31.3%)
Professional	30 (8%)
Businessmen	62 (16.6%)
Casual workers	82 (21.9%)
Unemployed	

¹ Displayed as Mean \pm S.D

Table 2- Association of education and dental procedures likely to break the fast

Variable	Education		P value
	N (%)		
	College degree	≤ High school	
Scaling			
Yes	120(46.7%)	50 (42.7%)	0.21
No	132 (51.4%)	61 (52.1%)	
Don't know	5 (1.9%)	6 (5.1%)	
Filling			
Yes	70 (27.2%)	59 (50.4%)	<0.01
No	178 (69.3%)	52 (44.4%)	
Don't know	9 (3.5%)	6 (5.1%)	
Anesthesia			
Yes	159 (61.9%)	94 (80.3%)	<0.01
No	85 (33.1%)	17 (14.5%)	
Don't know	13 (5.1%)	6 (5.1%)	
RCT			
Yes	129 (50.2%)	69 (59%)	<0.01
No	119 (46.3%)	27 (23.1%)	
Don't Know	9 (3.5%)	21 (17.9%)	
Extraction			
Yes	189 (73.5%)	96 (82.1%)	0.09
No	60 (23.3%)	16 (13.7%)	
Don't know	8 (3.1%)	5 (4.3%)	
Impression			
Yes	81 (31.5%)	29 (24.8%)	<0.01
No	165 (64.2%)	67 (57.3%)	
Don't Know	11 (4.3%)	21 (17.9%)	
Crown cutting & Cementation			
Yes			<0.01
No	58 (22.6%)	34 (29.1%)	
Don't Know	181 (70.4%)	59 (50.4%)	
	18 (7%)	24 (20.5%)	

Figures

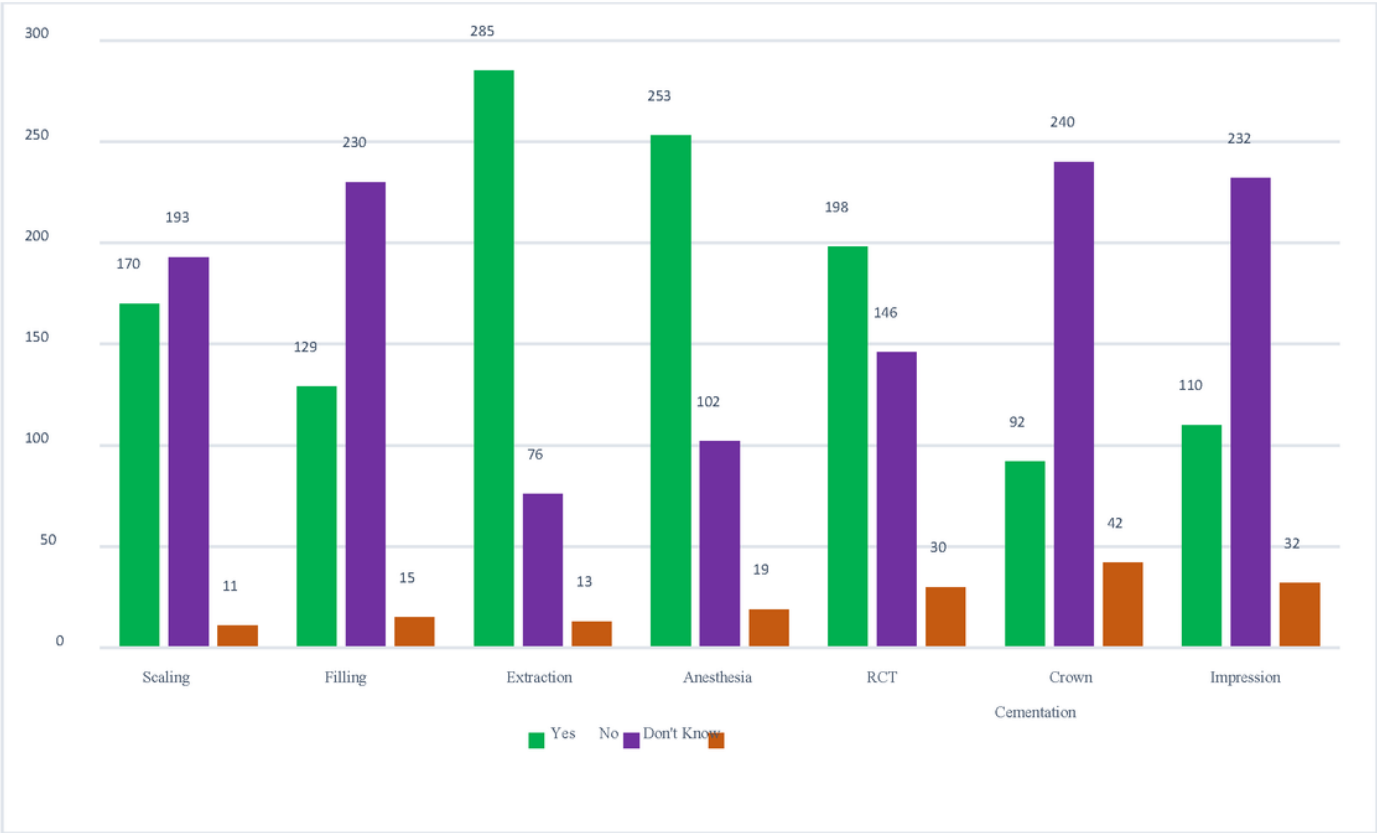


Figure 1

Respondents view of dental treatments permissible during fasting

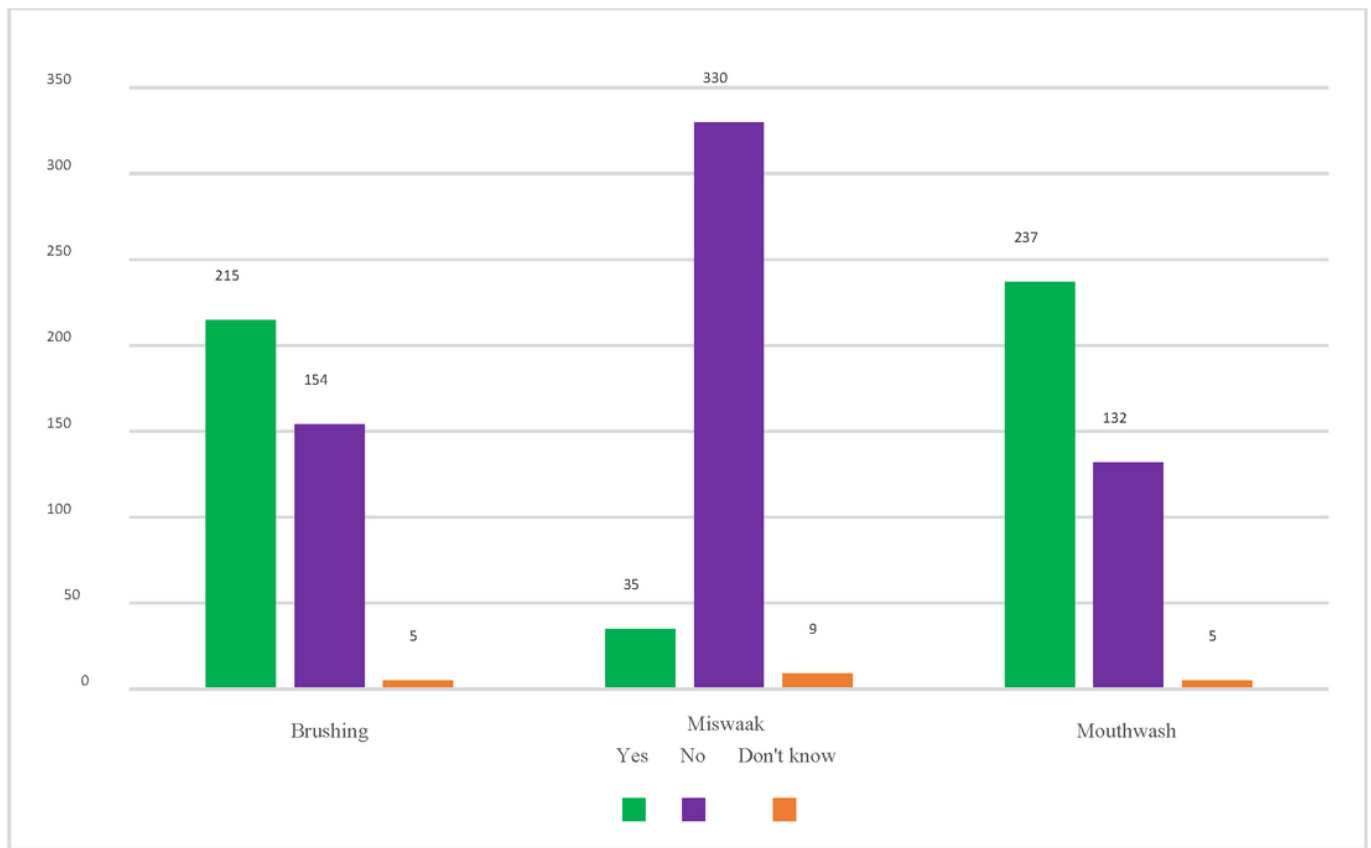


Figure 2

Perception of oral hygiene practices breaking fast