

Islamic Fasting and Oral Health and Diseases

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ABSTRACT

Fasting is a religious obligation, which can be challenging for individuals with oral conditions due to its stringent code of conduct. Moreover, food abstinence during fasting can restrict oral feeding even further in patients whose nutrition has been already compromised. Previous research has mainly concentrated on oral hygiene and gum health, disregarding orodental conditions and diseases. This highlights the importance of further research in this regard. In this paper, we intended to clarify the correlation between fasting and oral injections, bleeding following tooth extraction, and brushing to overcome common misconceptions which indicate the breach of religious disciplines under such circumstances. We also aimed to determine the grave effects of fasting on health in case of severe immunological deficiencies, chronic oral ulcers and certain drug administration protocols for those with rigid religious beliefs.

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Introduction

Muslims fast during the month of Ramadan all over the world. According to a recent study, there are 1.57 billion Muslims, worldwide, representing 23% of world population (1). Though seemingly less problematic as opposed to other body systems, oral cavity conditions should not be ignored during Ramadan fasting.

A myriad of systemic diseases, namely HIV, AIDS and leukemia, may initially present with orodental involvement. Fasting not only directly but also implicitly affects orodental health. This adds to the importance of orodental hygiene during fasting considering dehydration and protein deficiency during this month.

Materials and Methods

In this study, we searched through a wide range of databases including MagIran, IranMedex, Scopus, Google Scholar, Google, PubMed, and the like to find related studies on orodental hygiene instructions and mouthwash effects on microbial plaques and bleeding.

Several studies have investigated the association between fasting and health status and have revealed the effects of fasting on immune system and inflammatory responses, as

well as the indirect impacts of fasting on mucosal diseases such as lichen planus and pemphigus vulgaris (2).

Results

A descriptive, analytical study by Komeilian and Moghaddas, conducted on 880 fasting subjects, selected from the municipal districts of Tehran in 2004-2005, revealed that only 6.01% of the interviewees brushed their teeth at noon while fasting, whereas 21.16% of subjects maintained their dental hygiene all throughout the year. Considering the standard dental hygiene requirements (regular dental attendance and brushing teeth at least twice a day), it was concluded that gender and education (females and higher education) contribute to oral hygiene (3).

Changes in diet, feeding frequency, and other health-related habits during Ramadan can affect both the size and the composition of dental microbial plaques. In this regard, Mofid et al. conducted an analytical study on 30 dentistry students, aged 18-24 years, at Shahid Beheshti School of Dentistry. They intended to compare

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colonization rates by *Streptococcus mutans* and *Actinomyces viscosus* 10 days prior to and 20 days following fasting, although no significant results were obtained. Nevertheless, their diet survey revealed higher consumption rates of sucrose, as well as mono-, di- and polysaccharides, in contrast with lower fiber intake (4).

Moghaddas and Davoodi in a controlled, cross-over clinical trial on 30 fasting subjects investigated the impact of 0.2% chlorhexidine mouthwash on the extent of microbial plaque, following two common major meals during Ramadan. The rates were shown to be considerably lower, as opposed to the control group ($P < 0.0001$) (5).

Another cross-sectional study on fifty fasting adults, aged 18-60 years, indicated that brushing teeth at noon, particularly with toothpaste, significantly diminished plaques ($P < 0.0001$) (6). In a study by Semiyari et al., a significant difference was found between Gram-positive and Gram-negative cocci and bacilli counts in salivary samples obtained from 10 high school students who fasted for at least 20 days (7).

Sariri et al. demonstrated that the average concentration of salivary glucose (glucose oxidation rates) in male fasting students decreased due to lower nutritional intake throughout Ramadan, which seems beneficial and healthy (8). Moreover, Sharifi et al. reported a significant rise in interferon gamma and cortisol, along with a drastic plunge in immunoglobulin A (IgA) and tumor necrosis factor over one month of fasting, which can be in consistence with increased T cell function, diminished inflammation and manifestations of autoimmune disorders, although the latter two were not statistically significant. Moreover, other researchers reported a rise in serum IgA, immunoglobulin M (IgM) and immunoglobulin G (IgG) 10 days following fasting (9).

Discussion and Recommendations

To the best of our knowledge, there have been no reports regarding pemphigus and lichen planus during fasting. Nevertheless, the abovementioned study results could implicitly confirm the positive effects of fasting on cellular and humoral immunity, considering the role of autoantibodies, cytokines and cell-mediated

immunity, immune dysregulation in the pathogenesis of a range of oral mucosal diseases.

Uppal and Shikhi provided certain guidelines with regard to minor surgeries which cannot be ignored during fasting (10).

In this review, we investigated different aspects of fasting and provided general guidelines, which may vary depending on the context and circumstances.

Although irrelevant to oral hygiene, one key question always arises as to what elective dental procedures annul fasting and need to be performed in non-fasting states (after Iftar or Ramadan). It is generally suggested that non-emergency dental procedures be carried out after Iftar or be postponed to a later time after Ramadan. Nevertheless, treatment is possible during this month as long as caution is taken (10, 11).

General guidelines

1-What considerations have to be taken into account in emergency cases which require dental care or drug prescription during fasting?

Acute Pulpitis

It is regarded as an emergency condition, necessitating the administration of anesthesia and palpectomy. Postponement of treatment is also a possibility if long-acting painkillers are prescribed (10).

Acute abscesses surrounding the root apex, as well as the periapical and periodontal tissues

Such conditions often warrant antibiotic therapy, pulpotomy or pulpectomy, and drainage. However, injection can replace oral administration, since it does not nullify fasting. In cases for which injections are not possible, decisions need to be made accordingly.

Jaw fractures

Treatment options still remain controversial due to pain, swelling and swallowing difficulties. Jaw cannot be fully clamped by inducing anesthesia or analgesia in these cases; moreover, tolerating hunger and pain can be difficult and may lead to syncope. Yet some do not regard these fractures as emergency cases unless they cause respiratory obstruction or massive hematoma. It should be mentioned that large hematomas do not necessarily prevent

individuals from fasting, unless they cause eating difficulties. In case antibiotic therapies are required, antibiotics need to be injected.

Acute Oral ulcers and Diseases

Oral lesions and Ulcers may cause a range of complications, namely eating disorders, diet disturbances and constitutional manifestations such as fever, headache, dehydration, pain, malaise, immune deficiency, and xerostomia, which in turn aggravate the underlying lesions. The need for emergency treatment may be obviated if there are no grave health concerns (angioneurotic edema and airway obstruction).

Systemic administration of drugs has to be decided in consultation with pertinent specialists. Fasting is also under question when it comes to high-dose corticosteroid use in case of pemphigus and other severe mucocutaneous Diseases. Drug administration can also vary according to the type of lesion; in some cases, the procedure can be postponed to a later time after breakfast.

2- Chronic conditions causing eating difficulties

Dental problems

Fasting has not been shown to aggravate periodontal problems. In case of edentulism or tooth loss and Maximum opening limitation, particularly in the elderly, decision is made based on nutritional limitations.

Non-dental problems

Peripheral exophytic lesions such as inflammatory hyperplasia (e.g., pyogenic granuloma) are less likely to bleed; thus, they do not affect feeding. Even biopsy does not seem to cause any difficulties in either feeding or fasting.

Chronic extensive Ulcers can interfere with oral feeding and result in intense pain, depending on the extent, duration, and corticosteroid use. The latter involves those receiving treatment for pemphigus and benign pemphigoid, who are often advised not to fast. Lichen planus, if not extensive and erosive, does not preclude fasting. In all these circumstances, individual conditions have to be taken into account as there are no fixed indications and/or contraindications in these cases.

Oral and Maxiofacial pain

The ability to fast is chiefly determined by a number of influential parameters namely the type, duration (acute or chronic, paroxysmal or persistend), extension, severity, underlying conditions, drug side effects such as: xerostomia and neurological as well as psychological consultation. Pain, per se, does not preclude fasting, but acute dental pain and conditions, which cannot be ameliorated by painkillers or postponed to a later time, can be determinants of fasting, considering the individual's tolerance and pain.

Oro dental conditions aggravated by fasting Foul breath, xerostomia and subsequent gum bleeding

Foul breath, which is caused by the fermentation of food debris stuck between the teeth, can be intensified in fasting by systemic dehydration, the type of consumed food (garlic and onion in particular), lingual immobility, decreased mastication, diminished epithelial friction and subsequent epithelial accumulation (11). Regular soft brushing and/or dental flossing, mouth washing/rinsing, as well as using fiber-rich food products such as apple and mango, will help overcome this problem. In addition, dentures need to be regularly washed and cleansed (11).

Xerostomia is a common problem for fasting individuals, chiefly caused by thirst reflex activation. This condition is aggravated if the patient uses medications with dry mouth. Xerostomia can lead to oral lesions, which hinder fasting. The decision regarding fasting should be made by the individual based on his/her dental condition.

3- Other conditions including, burning mouth syndrome, atypical facial pain, and myofascial pain dysfunction

Psychological disorders significantly affect the occurrence of pain and can reduce pain threshold. Nevertheless, it is the patients' call as their religious faith and willpower often enable them to overcome the involved difficulties. Consultation with a psychologist can be extremely helpful, as well.

Conclusion

Considering the power of faith and the obligatory nature of fasting for Muslims, it is the

patient who should decide for or against fasting. Yet, the physician can assist the patient with his/her choice by taking a number of determining factors into account namely pain, lesion(s), nutritional status, psychological status, underlying conditions, hydration status, type & extent of lesions and the like. Further research is absolutely warranted in this respect as there seems to be no clear-cut indication and/or contraindication.

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