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Original Article

Oral hygiene practices, dental knowledge, dietary habits and their relation to periodontal health among adults: A questionnaire-based survey

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ABSTRACT:

Background: Appropriateness of oral hygiene-related behavior which includes daily performed tooth-brushing, use of dental floss, and receiving regular dental checkups may help in preventing periodontal diseases. This is related to knowledge regarding oral hygiene. **Aim:** The study aimed to assess oral hygiene practices, dental knowledge, dietary habits, and their relation to periodontal health. **Materials and Methods:** This questionnaire-based study was performed to include 300 study respondents using a well-structured questionnaire. **Results and observations:** On analyzing oral hygiene, 47% of respondents brushed three times daily; 13% brushed and 40% brushed once. 96% of subjects used toothpaste and 15% regularly cleaned inter-proximal areas. 87% consumed food thrice. 69% performed oral self-examination once weekly. 84% indicated strong willingness towards the maintenance of their teeth for a long time. 80% of subjects willingly underwent dental treatment or followed preventive measures for improvement of oral health. **Conclusion:** Thus, there is a requirement for up-gradation of knowledge regarding oral hygiene behavior.

Keywords: Oral hygiene, knowledge, diet, periodontal.

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INTRODUCTION

Oral health status is an integral part of a subject's general physical health and complete well-being. [1, 2]

Maintenance of good oral hygiene remains an important requirement for the healthy state of teeth along with gums. A good state of oral health enables an individual in looking as well as feeling good about themselves. Hence maintenance of oral functioning is equally important. Despite great achievements in the field of oral and dental health, the total burden of oral health diseases remains high around the world that may be due to a lack of acceptance of healthy oral habits which are critical for controlling the commonest oral diseases such as dental caries as well as periodontal diseases which are mostly considered as 'behavioral diseases'. [3]

Both the socio-behavioral along environmental factors play a vital role in the maintenance of sound oral health status. [4] These factors include nutritional status

level, the habit of smoking tobacco, intake of alcohol, hygiene conditions, development of stress, and a variety of systemic diseases among others. [5, 6] As the oral cavity is generally regarded as a "mirror of the body", it is extremely important to maintain good conditions for oral health as it will help a person in proper maintenance of good general health. Oral health both directly as well as indirectly affects the quality of life of an individual. [7, 8]

Poor oral hygiene can result in permanent damage to dental and oral tissues that range from white spots to the development of dental caries. [9] There may be an increase in the levels of dental plaque following the application of fixed orthodontic appliances. [10] Inability or failure in removing the accumulated dental plaque especially during orthodontic therapy is harmful to periodontal tissues and can result in establishing either gingivitis or periodontitis. [11, 12, 13]

Oral health is considered an integral part of a person's overall health and quality of life.^[14]

The level of knowledge, attitude along behavior of subjects are the key factors for evaluating and indicating their depth of understanding. These may strongly affect their behavior related to oral health. The exact nature of inter-relationships existing among healthcare-related attitudes, subjective beliefs, and personal behaviors is complicated. Insufficient knowledge regarding oral health may contribute to patients' who are maintaining lesser degrees of oral hygiene and self-care practice which also, increase risks of developing oral along with dental complications. Additionally, misconceptions regarding maintaining the level of oral hygiene may result in harmful behavior especially among patients requiring dental treatment and who are also, suffering from a variety of systemic and chronic disease conditions. Most of the patients are unaware of the fact that oral health closely influences the general physical health of an individual.

MATERIALS AND METHODS

A total of 300 subjects aged above 18 years were recruited in the study. A pre-validated questionnaire was evaluated for feasibility and was tested in a pilot study. Based upon the results of the pilot analysis, it was furthered for a complete survey study. The final and revised form of the questionnaire was comprised of three domains a) Oral hygiene; b) Dietary habits and c) Perception regarding oral health. A total of 19 itemed questions were included and each of the questions was having various types of agreements or categorical options for any subject to choose the appropriate answer. The study questionnaire was sent by electronic mail to study participants and responses were recorded in Microsoft Excel WorkBook and percentages were observed.

RESULTS AND OBSERVATIONS

A total of 300 respondents of which 180 were males and 120 were females aged between 25 to 65 years of age (mean age 55 ± 12 years) participated in this questionnaire-based study.

(A) ORAL HYGIENE STATUS

The domain concerning oral hygiene, the questionnaire was comprised of points regarding frequencies of brushing of teeth, use of appropriate dentifrice, cleaning of inter-proximal areas along with the use of appropriate mouth-washes and any other additional products (Table 2).

Overall, 47 % of study respondents brushed their teeth three times per day whereas 13% brushed twice daily

40 % of study participants brushed their teeth once daily. 96 % of study subjects were using toothpaste while the remaining 4 % were making use of any other form of dentifrice. Only one-third (15 %) of study respondents reported regular cleaning of inter-proximal areas regularly using interdental brushes or a dental floss

(B) DIET-RELATED HABITS

Overall, no visible problems associated with any habits related to the diet could be identified among the studied population of the respondent. On analyzing the frequency of intake of meals, a vast majority of study respondents (87 %) reported having food three times a day while the remaining study subjects, ate twice daily (Table 2).

90 % of study respondents reported the habit of eating snacks in between meals on an average of one time daily. Upon Self- evaluation of the dietary habits, 89 % rated their eating habits as either good or as fair while 13% rated them under the 'poor' category.

(C) PERCEPTIONS REGARDING CONDITIONS OF THE ORAL CAVITY

In this question domain, the study participants were asked regarding their frequency of self-examination of oral cavity i.e., by looking into one's mouth, 69 % of these respondents reported performing self-examination at least once every week (Table 2). Most of the study participants (84 %) indicated a strong willingness towards maintaining their teeth for a long duration. On enquiring these individuals about various other expectations, they expressed their desires to continue to enjoy eating food along with fresh breath as the most frequently obtained answers. 80 % of study respondents indicated their willingness to undergo treatment or follow preventive measures for improving the health of the oral cavity.

Implementing the recommended oral health care protocol along with accepting the required dental and oral health cares were the most frequent behavior and attitudes.

It was found that only 10 % of the study respondents regularly used the existing dental health care facilities i.e., an average of one dental care visit within one year. 25 % of the study respondents reported that they may never implement or receive any professional advice regarding oral and periodontal health care whereas everybody acknowledged the significance of preventing periodontitis. The majority of them expressed the opinion that they were open to receive professional dental advice on oral and periodontal care products

Table 1: Various domains and question items within the questionnaire

Domains	Question items
(A) Oral hygiene habit:	1. Frequency of brushing of teeth 2. Use of dentifrice or toothpaste 3. Whether using devices for proximal space cleaning?
(B) Dietary habit:	1. Frequency of consumption of the meal 2. Self-assessment of intake of type and frequency of diet 3. Frequency of consumption of in between meals or snacks 4. Types of snacks being consumed
(C) Perception of oral health or condition:	1. How often does one check their teeth or condition of mouth while looking in the mirror? 2. How does one rates his or her's desire for retaining or keeping their teeth? 3. How do you hope regarding your own oral health status? 4. How much does one has the will for improving their oral health status? 5. What actions does one must take for improving his or her's oral health? 6. Do you routinely visit a dental professional for regular dental examination or check-up? 7. How much does one follow their dentist's advice on the importance of care of oral hygiene? 8. How significant is the prevention of dental caries and diseases of gums? 9. Do you want your attending dentist to prescribe or recommend any oral health care products? 10. Are you willing to undertake any novel challenges and make changes to daily dental care routine? 11. How often does one perceive the consequences of one's habits of maintaining oral health care over the long term?

Table 2: Summary of responses to various domains of the questionnaire

(A) Oral hygiene:	
1. Brushing frequency:	
None	0 %
Once-daily	40%
Twice Daily	13%
Thrice daily	47%
2. Whether using any toothpaste	
Yes	96%
No	04%
3. Whether using aids for interdental cleaning	
Yes	15%
No	75%
(B) Dietary habits:	
1. Frequency of consuming food?	
None	0%
Once-daily	0%
Twice Daily	13%
Thrice daily	87%

2. Self-evaluation of diet:	
a. Good	89%
b. Fair	11%
3. Frequency of in-between snacking?	
None	0%
Once-daily	90%
Twice Daily	06%
Thrice daily	04%
(C) Perception regarding oral conditions:	
1. Frequency of self-examination of the oral cavity?	
Everyday	0%
Few times daily	0%
On weekly basis	69%
Never	0%
2. Do you want to retain your teeth?	
Yes	84%
No	16%
3. Do you have the willingness for undertaking any fresh challenges that might cause alterations in one's daily routine?	
Yes	80%
No	20%

DISCUSSION

Periodontal disease has been linked with numerous systemic diseases, for example, cardiovascular disorders, diabetes mellitus, pre-term low-birth-weight childbirths, rheumatoid arthritis, and pulmonary diseases among others. Thus, maintaining good oral health is important for the maintenance of the health status of teeth and oral cavity not only for maintaining one's systemic health. The main etiological reason underlying periodontal diseases is bacterial biofilm though there are a variety of factors like the habit of smoking, type II diabetes, cytotoxic drugs, stressors, hematological diseases, and hormonal alterations that might significantly affect initiation as well as the progression of gingival and periodontal diseases.^[15]

In the current study, 47% of study subjects reported brushing thrice daily while 13% brushed on a twice basis. Our findings are supported by Habib et al (2020) who in their questionnaire-based analysis evaluated oral hygiene-related practices along with the oral health status of dental health care professionals. They found statistical significance in comparison between male and female study participants concerning frequencies of tooth brushing ($P = 0.001$) and any history of dental visits ($p = 0.013$). Also, gender-related differences among study participants regarding attitude towards oral health and related behavior showed that the female dental practitioners were more aware of their oral health. Both Gingivitis, as well as bruxism, were found to be

more prevalent in both the male and female study participants.^[16]

Kanan et al (2020) in their analysis observed that 72.7 % i.e., 328 out of 451 children regularly used toothbrushes as well as any toothpaste for brushing their teeth, however, 14.6 % (66 out of 451 subjects) made use of any other form of oral hygiene tool. Among various study participants with a sound level of oral hygiene, 75.1 % (142 out of 189 children) cleaned their teeth by using toothbrushes as well as any toothpaste. 14.3 % of children i.e., 27 out of 189 used any other type of oral hygiene technique for brushing. On the contrary, of those study participants with the poor status of oral hygiene, 53.8 % (49 out of 91 subjects) were using a toothbrush along with toothpaste while 25.3 % (23 out of total 91 participants) used any other form of oral hygiene technique. 2.2 % (i.e., 10 out of 451 children were using dental floss and only a small percentage (1.6% i.e., 3 out of 10 children participating in this study had a good status of oral hygiene.^[17]

47% of our study participant's demonstrated frequent use of oral hygiene methods thus, had awareness. Farghally et al (2019) in their study reported that patients suffering from high blood pressure and high blood levels of glucose had more chances of disagreement with regards to any relationship existing between general systemic health and dental/oral health status (correlation coefficient (r) = - 0.159; probability value $P < 0.001$ and correlation coefficient

(r) = - 0.257, probability value $P < 0.001$), respectively.^[18]

Subait et al (2016) in their survey base on assessment of knowledge regarding Oral health, attitude as well as behavior among students in the age range of 10 to 18 years in Riyadh reported significant differences in comparing brushing habits between both the genders ($P = 0.001$). Female students showed good dental health behavior when compared to boys. Also, higher awareness regarding bleeding from gums (P -value = 0.001) along with effects of oral health over general health (P -value = 0.004) and the significance of routine dental examination was evaluated. (P -value = 0.001).^[19]

Zhu et al in 2005 described the oral health-related behavior, behavior towards illnesses, knowledge regarding oral health, and attitudes among Chinese individuals aged between 35 to 44 and 65 to 74 years old for analyzing behavior profiles related to the oral health status of two studied age groups in terms of the province to which they belonged and level of urbanization of the place of residence. 32% of 35 to 44-year-old subjects and 23% of 65 to 74-year individuals performed brushing of teeth twice on a day to day basis however, only 5% made use of fluoridated toothpaste. 25% of subjects visited a dental professional in the past twelve months while 6% underwent dental examination within the last two years. Approximately, 15% of study subjects visited any dentist on experiencing bleeding from gingival while 60% of subjects paid minimal attentiveness to the presence of dental caries in absence of pain as a symptom. Two-thirds of urban subjects and one-fifth of rural study participants could afford dental treatment. Significant variability's in oral health care practices was found according to urbanization and province.^[20]

CONCLUSION

The use of the study questionnaire results in facilitating the inclusion of various aspects related to information. Based upon the present study results, it can be concluded that there remains a significant scope of improvement in oral hygiene practices and self-care among various individuals in terms of increasing their knowledge level and awareness regarding appropriate behavior related to good periodontal health.

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