

Knowledge, attitude, and practices of interdental aids among medical professionals in Davangere district, Karnataka

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ABSTRACT

Objectives: The purpose of this study was to evaluate awareness regarding interdental aids in medical population. **Materials and Methods:** This study included 337 medical professionals living in Davangere district, Karnataka, India. A dental health questionnaire was distributed to all subjects consisting of 18 questions. **Results:** Total 337 people with 187 females and 150 males who were of mean age 27.6 ± 9.0 years participated in the study. The significant positive response (<0.05) in females as compared to males was observed for two items (4 and 7). **Conclusions:** The low positive response towards interdental aids should focus to conduct mass educative programs providing information regarding different interdental aids.

Key words: Interdental aids, medical population, oral hygiene

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INTRODUCTION

The two most prevalent oral diseases, dental caries, and periodontal diseases are largely preventable through a combination of professional and self-care activities and the people's attitude and behavior play an important role in development and prevention of oral diseases.^[1] Concern has been expressed that improvements in oral health has been taking place in many western countries; whereas, deterioration of oral health has been taking place in many developed countries.^[2] Personal oral hygiene and periodic professional care remain the actions of choice to prevent periodontal diseases. The American Dental Association (ADA) recommends that brushing and flossing be performed thoroughly at least once a day, with brushing duration being optimally about 3min.^[3] Further, the ADA advises that dental visits should be made on a regular basis. Although the efficacy of these preventive practices has been demonstrated in controlled clinical settings,^[4] there is some question about the consequences of these behaviors as they are performed by the general public in "natural" settings.^[5]

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Epidemiological surveys have indicated that bacterial plaque is the dominant etiological factor in periodontitis.^[6] Furthermore, it has been convincingly demonstrated that gingivitis is most frequent and most severe in the interproximal areas.^[7] Generally, these areas are inaccessible to the toothbrush. Available data have shown that gingivitis can be prevented buccally and lingually by the correct use of a toothbrush,^[8] but the toothbrush alone has limited effect in the interdental spaces. With this shortcoming in view, several other materials have been devised to supplement the toothbrush.^[9] Promising results have been reported by some investigators, following the use of dental irrigators;^[10] whereas, others have not been able to demonstrate any beneficial effects.^[11] Dental floss, toothpicks, and single tufted brushes are some of the tools recommended for interdental cleaning.^[12] Trials have failed to substantiate their effectiveness as an aid in oral hygiene.^[13]

The periodontal medicine is gaining popularity wherein periodontitis is pointed out as a probable reason to initiate or exaggerate medical conditions such as cardiovascular accidents, preterm low birth weight, and diabetes mellitus. The link between medical professional and periodontitis is on the rise. The awareness regarding the prevention of dental diseases is becoming must for medical population. The patient approach towards the systemic health through medical profession has a convincing effect than a dentist/

periodontists act. It is imperative that if the medical professionals begin to address the need for good dental care using oral hygiene aids plays an important role in preventive measures for the concept of periodontal medicine. Considering the role of periodontal infection affecting systemic health, it has become mandatory to assess the awareness of medical population regarding dental diseases, preventive measure, and tools used for it. Hence, this study was attempted for the first time. The knowledge, attitude, and practice for interdental aids oriented survey amongst dental students and professionals demonstrated significantly higher responses for dental professionals than the dental students(unpublished data).^[14]

Based on this attributing nature of periodontitis, it is essential to find out or evaluate the oral hygiene measures using regular aids or interdental cleaning aids by medical professionals. The knowledge, attitude, and behavior towards oral hygiene measures by the medical professionals could serve as an important motivational and educational tool for those patients seeking treatment for medical diagnosis.

PubMed search using oral hygiene, brush, and interdental aids awareness revealed no literature. Hence, the present survey was attempted to assess the knowledge, attitude, and behavior towards interdental aids amongst medical professionals.

MATERIALS AND METHODS

The subjects of this study were selected from the medical professionals from medical college of Davangere. The study which was based on knowledge, attitude, and practice about interdental aids was presented in the form of questionnaire. This questionnaire which was based on Likert scale included 18 items designed to evaluate knowledge, attitude, and practice among medical students and professionals regarding the interdental aids [Table 1].

Subjects were asked to respond to each item according to the dichotomous response format provided to them. Response format included choices in which subjects chose one response from a provided list of options. Furthermore, the investigator was always available during completion of the questionnaire and the participants were encouraged to approach hint whenever they needed the clarification of any point. This study was conducted at the College of Dental Sciences, after approval from Institutional Review Board (IRB). A dental health questionnaire was distributed to all subjects. The questionnaire was developed to gain information on demographic information and knowledge, attitude, and practices towards interdental aids. All subjects were requested to complete a comprehensive questionnaire. Subjects were asked to respond each item according to the response format provided at the

end of each. The subjects received the full explanation how to sort and one of the investigators was always available during the completion of the questionnaire. The participants were always encouraged to approach the investigator whenever they needed clarification at any point. The questionnaire was pretested with 30 selected medical subjects who were requested to complete the questionnaire and was found suitable for application among study population.

Statistical analysis

Data analysis was performed by using Statistical Package for Social Sciences (SPSS) version 11.5 for Windows (SPSS Inc, IL).

Data analysis was performed by using chi-square test, mean age ± standard deviation (SD); percentage.

Chi-square formula: $\chi^2 = \sum (O-E)^2$

E

RESULTS

The medical population includes those who had completed basic medical degree (MBBS) who were interns, post graduate students, and faculty. The questionnaire consisted of 18 items; with two options on frequency and types of toothbrush in 1 and 2 items; the remaining 16 items has dichotomous response (yes or no).

Variable = gender

Totally 337 medical students and professionals with 187 (55.48%) females and 150 (44.51%) males who were of mean

Table 1: Questionnaire
How many times do you brush daily
What kind of brush do you use
Are you able to clean all the tooth surfaces with the toothbrush
Do you know about importance of cleaning interdental area(in between teeth apart from chewing surface)
Do you know any gum disease that begins in between teeth
Do you any aid which cleans the surface between sides of teeth
Do you about interdental cleaning done other than tooth paste
Do you know about the thread which is used to clean in between the teeth
Do you know what is dental floss
Have you seen any person using floss or any other brush to clean surface between the teeth
Do you know about the technique of flossing
Do you know about electric dental flossing
Do you know about other interdental cleaning devices other than dental floss
Are you aware of brush that goes in between teeth which looks like small bottle brush
Do you know that toothpicks can be used as an interdental cleaning aids
Do you know about wooden or rubber interdental tooth picks
Do you know about water irrigation is not a replacement for toothbrushing
Do you know that the usage of sharp objects like pins are harmful to gums

age of 27.6 ± 9.0 years (range 17-69 years) participated in the study (the population age ranged from new medical students to old practitioners, due to which age range was 17-69) [Table 2].

The significant positive response (<0.05) was seen in females as compared to males for two items (4 and 7). The responses were nonsignificant (>0.05) for 16 items (1,2,3,5,6, and 8-18).

The male versus female genderwise “yes” responses are presented in Table 3. The significant positive response (<0.05) was seen in females as compared to males in for two items (4 and 7). The responses were nonsignificant (>0.05) for 16 items (1,2,3,5,6,8-18).

Male versus female response has been compared in this study, as already mentioned in the discussion that girls are more concerned about their personal hygiene than boys. It might also be more difficult to change the behavior of boys than of girls, because girls tend to have more health-directed behavior than boys, so a genderwise comparison was taken even both being medical professional.

There were two practice-based questions, items 1 and 2. For overall medical population in item 1 (How many times do you brush daily), percentage of yes response, that is, twice daily was 41%. And in item 2 (What kind of brush do you use) percentage of yes response, that is, twice daily was 10.1%.

Knowledge-based items were from items 3 to 18. It was seen that the percentage of yes response was higher for items 3-9 and items 15-18; whereas, percentage of yes response was lower for items 10-14.

DISCUSSION

The term periodontal medicine, as first suggested by Offenbacher,^[15] to be a broad term that defines a rapidly emerging branch of periodontology focusing on the wealth of new data establishing a strong relationship between periodontal health or disease and systemic health or disease. This means a two-way relationship in which periodontal disease in an individual may be a powerful influence on an individual's systemic health or disease as well as the more customarily understood role that systemic disease may have in influencing an individual's periodontal health or disease. In many ways, certain aspects of periodontal medicine have been part of dentistry for a long time. The possible contribution of oral bacteria in periodontal pockets to bacterial endocarditis has been acknowledged for decades. It is the recent research

that increasingly substantiates a role for periodontitis in affecting systemic health is a probable risk factor for cardiovascular disease, including atherosclerosis, myocardial infarction, and stroke.^[16-20] Furthermore, preliminary studies suggest that periodontitis may also contribute to adverse pregnancy outcomes, diabetes, and other conditions.^[21-24]

Baseline information on oral health, associated with adequate prevention procedures, is fundamental to promote self-preventive behavior.^[25] This latter includes many factors such as consistent modalities of oral hygiene, appropriate diet and life styles, and compliance towards professional counseling and care. It is demonstrated that plaque is an important factor in the development of hard and soft tissue diseases and that the reduction of its accumulation decreases the prevalence of dental caries,^[26] gingivitis,^[27] and periodontal diseases^[28] in the population. Toothbrushing^[29] and flossing^[30] are reported to be fundamental to reduce the amount of bacterial plaque and its virulence potential and, since they are easy, effective, and low cost; they are considered the pillar of self-strategy.^[31]

The results of the study demonstrated significant positive response (<0.05) in females as compared to males for two items (4 and 7). The responses were nonsignificant (>0.05) for 16 items (1, 2, 3, 5, 6, and 8-18).

The male versus female genderwise “yes” responses are presented in Table 3. The significant positive response (<0.05) was seen in females as compared to males for two items (4 and 7). The responses were nonsignificant (>0.05) for 16 items (1,2,3,5,6,8-18).

Item 1 (How many times do you brush daily) denotes the frequency of brushing, it will denote the attitude and behavior of the person towards oral hygiene practices. Item 2 (What kind of brush do you use) indicates the knowledge of the person and awareness regarding the effects of oral hygiene practices. In item 2 soft denotes 1 and medium as 2. These questions have been represented in different format for better understanding of oral hygiene measures, instead of the yes and no format in other items, these items are being represented differently.

The possible discussion for this study results are:

Since the response options are confusing in Likert scale, close-ended (yes or no) responses were preferred in this study.

This result indicates that improvement in knowledge toward the use of dental floss is needed. An intervention to increase the knowledge and subsequent use of flossing are essential and is in agreement with other studies.^[32]

Flossing is practiced by fewer individuals, but frequency has slowly increased over the years with women and

Table 2: Sample description genderwise

Groups	Total number	Males (%)	Females (%)	Mean age	Range
Medical	337	150(44.51)	187(55.48)	27.6 \pm 9.0	17-69 years

Table 3: Percentage analysis of “yes” response according to the gender

Item	Male (150)		Female (187)		Total (400)		Significance	
	1 n (%)	2 n (%)	1 n (%)	2 n (%)	1 n (%)	2 n (%)	1 n (%)	2 n (%)
1	60 (40.0)	90 (60.0)	81 (43.3)	106 (56.7)	141 (41.8)	196 (58.2)	0.38	0.54, NS
2	136 (90.7)	14 (9.3)	161 (89.3)	20 (10.7)	303 (89.9)	34 (10.1)	0.17	0.68, NS
3	114 (76.0)	36 (34.0)	132 (70.6)	55 (29.4)	246 (73.0)	91 (27.0)	1.24	0.27, NS
4	120 (80.0)	30 (20.0)	167 (29.3)	20 (10.7)	287 (85.2)	50 (14.8)	5.70	0.02, S
5	107 (71.3)	43 (28.7)	125 (66.8)	62 (33.2)	232 (68.8)	105 (31.2)	0.78	0.38, NS
6	91 (58.0)	59 (39.3)	118 (63.1)	69 (36.9)	209 (62.0)	128 (35.0)	0.21	0.65, NS
7	87 (58.0)	63 (42.0)	133 (71.1)	54 (28.9)	220 (65.3)	117 (34.7)	6.32	0.012, S
8	89 (59.3)	61 (40.7)	113 (60.4)	74 (39.6)	202 (59.9)	135 (40.1)	0.04	0.84, NS
9	90 (60.0)	60 (40.0)	124 (66.3)	63 (33.7)	214 (63.5)	123 (36.5)	1.43	0.23, NS
10	67 (44.7)	63 (55.3)	86 (46.0)	101 (54.0)	153 (45.4)	184 (54.6)	0.06	0.81, NS
11	50 (33.3)	100 (66.7)	66 (35.3)	121 (64.7)	116 (34.4)	221 (65.6)	0.14	0.71, NS
12	13 (8.7)	137 (91.3)	21 (11.2)	166 (88.8)	34 (10.1)	303 (89.9)	0.60	0.44, NS
13	19 (12.7)	131 (87.3)	31 (16.6)	156 (83.4)	50 (14.8)	287 (85.2)	1.01	0.32, NS
14	37 (24.7)	113 (75.3)	57 (30.5)	130 (69.5)	94 (27.9)	243 (72.1)	1.40	0.24, NS
15	91 (60.7)	59 (39.3)	131 (70.1)	56 (29.9)	222 (65.9)	115 (34.1)	3.26	0.07, NS
16	80 (53.3)	70 (46.7)	104 (55.6)	83 (44.4)	184 (54.6)	153 (45.4)	0.18	0.68, NS
17	94 (62.7)	56 (37.3)	120 (64.2)	67 (35.8)	214 (63.5)	123 (36.5)	0.08	0.78, NS
18	137 (91.3)	13 (8.7)	175 (93.6)	12 (6.4)	312 (92.6)	25 (7.4)	0.61	0.43, NS

HS = Highly significant (<0.001); S = significant (<0.05); NS = not significant (>0.05). For item 1: 1 = twice, 2 = once; for item 2: 1 = soft; 2 = medium; for item 3-18: 1 = yes; 2 = no

educated being over the years with women and educated being more frequent flossers.^[33] Flossing has been shown to reduce gingival inflammation,^[34] but the added benefits of toothbrushing and flossing over toothbrushing alone are uncertain.^[35]

The factor most consistently associated with toothbrushing frequency seemed to be gender. The better toothbrushing behavior of girls seemed to be universal except in France. It seems that boys require more targeted education programs than girls in almost all countries. In general, girls are more concerned about their personal hygiene than boys. It might also be more difficult to change the behavior of boys than of girls, because girls tend to have more health-directed behavior than boys.^[36] The recent study conducted on awareness and use of oral hygiene practices revealed the use of interdental aids was significantly more common among females in comparison to males.^[37]

For overall medical population it was seen that they had knowledge about what are interdental aids as depicted by higher positive response for items (3-9 and 15-18), but there was inadequate knowledge about the technique of using interdental aids, especially dental floss; and also other interdental aids which are there besides dental floss as depicted by lower positive response for knowledge-based items (10-14).

For practice-based items also, it was seen that there was lesser positive response as seen for item 1 and 2.

These responses clearly suggest that the knowledge regarding the interdental aids and its uses is not well-versed among medical population group. Also the oral hygiene measures using interdental aids is not a routine from medical population also as already mentioned.

Although the current therapies used to manage periodontitis may be adequate to simultaneously manage systemic sequel, there have been no studies to measure the systemic impact of periodontal treatments. As an initial measure, it is of utmost important to prevent/control plaque using mechanical method as a routine home care measure. The inclusion of the interdental aids to remove plaque routinely from interdental areas would help prevent initiation of gingivitis in interdental area. Hence, knowledge, attitude, and practice regarding interdental aids are necessary from both personal oral hygiene care and patient education and motivation. The emerging concept of periodontal medicine directly involves both the dentist and medical professionals to pay attention to patient's oral hygiene maintenance including interdental cleaning measures. Both medical professionals and dentists will need to assume a larger responsibility for the overall health of patients, and eventually periodontal care may become a medical necessity. Knowledge of relevant systemic conditions needs to be more extensive to enable dentists to interact more meaningfully with their medical colleagues. This will place new educational goals on the profession. In fact, it is not yet known whether the relationship between periodontal infection and systemic disease is a casual or a causal relationship.

CONCLUSION

The study presents a comprehensive overview of the knowledge, attitude, and behavior regarding interdental aids to the best of our knowledge, represents the first study of its kind that explored these issues among medical population. Gaining and imparting knowledge through survey work is essential and a basic foundation to bring out strategies to elevate the oral hygiene level in the Indian sciences. In a

developing country like India, the knowledge, attitude, and behavior towards the basic tool to maintain oral hygiene, that is, frequency of brushing and type of brush are appreciably good. To enhance the oral hygiene measures using interdental aids is not a routine from medical population also. Further studies should be directed to assess the oral hygiene and periodontal status of those subjects using toothbrush alone and combination of toothbrush along with the interdental aids. This would enlighten the recommendation of interdental aids regularly. Improving public awareness of periodontal health using interdental aids along with brushing is essential public health goal in India. It is important to mention that emphasis on the link between oral health and well-being of the rest of the body.

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