

Self-care of Oral Health Status and Uses of Interdental Aids among Dental Students: A Cross-Sectional Study

Khalid Gufran¹, M G Indrajit¹, Zaid Aljeaidi², Mariam Omer Bin Hamza³

¹Department of Preventive Dental Sciences, Faculty, College of Dentistry, Prince Sattam Bin Abdulaziz University, Al Kharj, KSA, ²Department of Conservative Dental Sciences, College of Dentistry, Prince Sattam bin Abdulaziz University, Al Kharj, KSA, ³Registrar, Endodontist, Al Kharj Armed Forces Hospital, Al Kharj, KSA

ABSTRACT

Aim: The purpose of this study was to evaluate the knowledge and practice regarding interdental aids among dental students. **Materials and Methods:** The cross-sectional survey was conducted using a self-administered, structured, and pre-validated close ended questionnaire among dental students studying at the College of Dentistry, Prince Sattam Bin AbdulAziz University, Al Kharj, and alfarabi college of Dentistry, Riyadh, Saudi Arabia. **Results:** Total of 752 dental students from 1st, 2nd, 3rd, 4th, and 5th year and interns who completed the questionnaire and participated in the study. About 88.2% interns recommend brush, paste, and floss, whereas 52% the 1st year students recommended brush, paste, floss, and mouthwash. 94.1% interns and maximum percentage of students from 1st, 2nd, 3rd, 4th, and 5th year used dental floss for removal of plaque and debris from the interproximal area, whereas 82.4% of the interns brushed their teeth twice daily. **Conclusion:** The present study demonstrated the knowledge and practice of interdental aids among dental students. The overall knowledge about the interdental aids, i.e. dental floss was good, but they had less knowledge about the other interdental aids available. The practice regarding the usage of dental floss improved with increasing levels of dental education. Additional comparisons should be conducted to evaluate the oral hygiene and periodontal status of those subjects including dental students and practitioners using toothbrush alone, interdental aids and a combination of toothbrush along with the interdental aids.

Key words: Dental floss, interdental aids, knowledge, oral hygiene


INTRODUCTION

When it comes to oral health care, dental students play a vital role in educating and promoting public oral health. It is found that the dental students project a positive attitude toward dental health.^[1-3] To serve as leaders and positive models for the patients, friends, and family, it is important for the dental students to improve their oral health behavior.^[4]

Oral health can be defined as “a standard of health of oral and related a tissue that enable an individual to eat, speak and socialize without active disease, discomfort or embarrassment and which contributes to general well-being.” It is considered as an essential component of general health.^[5]

Presently it has been found that though periodontal diseases are preventable, they are one of the major chronic infections affecting the population with their prevalence constantly on the rise.^[6]

Formation of biofilm or dental plaque acts as the chief etiological factor for the occurrence of periodontal disease and proximal caries. This, however, can be prevented by effective bacterial plaque removal, with the mechanical method of plaque control serving as the most effective and the easiest method.^[7,8]

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Address for Correspondence:

Khalid Gufran, Department of Preventive Dental Sciences, Faculty, College of Dentistry, Prince Sattam Bin Abdulaziz University, Al Kharj, KSA. Phone: +966502294308. E-mail: khalidg08@gmail.com

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Toothbrush alone is not capable of achieving an effective mechanical plaque control and hence it has been reported that other aids of oral hygiene such as dental floss become mandatory.^[9]

Toothbrush and dental floss, when used in combination acts as an effective mechanical means of plaque control and hence, can promote the oral health by reducing the incidence of proximal dental caries and gingival inflammation.^[10]

Studies have shown that dental floss alone is more effective than a manual toothbrush for effective interdental plaque removal but still its use even as an adjunct is not encouraged throughout the world.^[11] In fact, reports show that only a small part of the population uses dental floss on a daily basis.^[12,13]

It has been elaborated by Khami *et al.* in his paper that more importance should be given to the personal oral hygiene and attitude of the dental students to improve their knowledge regarding oral health status and preventive dental practice as they play an important role in health promotion and for spreading the awareness of the family, patients, and society. It is hence mandatory that dental students have a sound knowledge of oral health and their oral health behavior conforms to the expectation of the general population.^[11]

Several studies have been conducted to access the oral health behavior of professional students, but very little attention has been given to the awareness and the practice of use of interdental aids among dental professionals. Hence, this study was undertaken to assess the knowledge and practice of interdental aids among dental students.

MATERIALS AND METHODS

The study design was a cross-sectional survey using a self-administered, structured and pre-validated close ended questionnaire that assessed the self-reported knowledge and practice of interdental aids among the group of dental students at the college of dentistry, prince Sattam bin Abdul Aziz University, Al Kharj, and alfarabi college of dentistry, Riyadh, Saudi Arabia. Before the data collection, primarily the questionnaire was pre-tested on a group of 10 students as a pilot study.

The study population comprised dental students studying from 1st to 5th year including interns of dental course were involved in the research [Table 2]. The questionnaire-based study proposal was accepted by the Ethical Committee of the Institutions. The informed consent was obtained from the study participants. The preformed questionnaires were distributed to the dental students in their respective classrooms. The forms were collected, checked for completeness and doubts were clarified whenever required

and it was seen that the questionnaire was filled completely. The participants were always encouraged to approach the investigator whenever they needed clarification at any point. The completed questionnaire was collected and was subjected to statistical analysis.

Statistical Analysis

Discrete data were summarized as number and % and compared by Chi-square (χ^2) test. A two-tailed $P < 0.05$ was considered statistically significant. The analysis was performed on SPSS (windows version 17.0) software.

RESULTS

The distribution of six different year (1st to 5th year and interns) dental students is summarized in Table 1. There were total 752 students. The age of students ranged from 18 to 30 years. Of total, 126 (16.8%) were 1st year student, 125 (16.6%) 2nd year, 129 (17.2%) 3rd year, 126 (16.8%) 4th year, 129 (17.2%) 5th year, and 117 (15.6%) were interns. Furthermore, among students, there were 539 males and 213 females and the frequency (%) of males (72%) was higher than females (28%). Comparing the year wise sex distribution of students, χ^2 test showed similar frequency (%) of males and males among the groups ($\chi^2 = 6.42, P = 0.267$), i.e., did not differed significantly.

The distribution and comparison of self-reported knowledge and practice of interdental aids among different years of dental students are summarized in Table 3. On comparing, χ^2 test showed significantly different and higher frequency (%) of oral hygiene method, i.e., toothbrush and toothpaste as compared to tooth brush, tooth paste and floss/tooth brush, toothpaste, floss and mouth was ($\chi^2 = 23.13,$

Table 1: Year wise distribution of dental students (n=752)

Dental students	Number of students (n)	Number of students (%)
1 st year	126	16.8
2 nd year	125	16.6
3 rd year	129	17.2
4 th year	126	16.8
5 th year	129	17.2
Interns	117	15.6

Table 2: Sex wise distribution dental students (n=752)

Year	Number of students (n)	Male n (%)	Female n (%)	χ^2 value	P value
1 st	126	95 (75)	31 (25)	6.42	0.267
2 nd	125	80 (64)	45 (36)		
3 rd	129	97 (75)	32 (25)		
4 th	126	87 (69)	39 (31)		
5 th	129	92 (71)	37 (29)		
Interns	117	88 (75)	29 (25)		

Table 3: Distribution and comparison of self-reported knowledge and practice of interdental aids among different years of dental students (n=752)

Variables	Characteristics	1 st year n=126 (%)	2 nd year n=125 (%)	3 rd year n=129 (%)	4 th year n=126 (%)	5 th year n=129 (%)	Interns n=117 (%)	χ ² value	P value
Oral hygiene method	Tooth-brush and tooth paste	109 (87)	113 (90)	99 (77)	104 (83)	115 (89)	105 (90)	23.13	0.010
	Tooth brush, tooth paste and floss	7 (6)	4 (3)	17 (13)	14 (11)	11 (9)	10 (9)		
	Tooth-brush, tooth-paste, floss AND mouth wash	10 (8)	8 (6)	13 (10)	8 (6)	3 (2)	2 (2)		
Tooth brush changing interval	Monthly	31 (25)	38 (30)	60 (47)	51 (40)	72 (56)	95 (81)	105.7	<0.001
	Quarterly	42 (33)	35 (28)	25 (19)	32 (25)	25 (19)	14 (12)		
	Half-yearly	37 (29)	39 (31)	30 (23)	27 (21)	24 (19)	6 (5)		
	Yearly	16 (13)	13 (10)	14 (11)	16 (13)	8 (6)	2 (2)		
Type of tooth brush used	Manual	115 (91)	101 (81)	119 (92)	121 (96)	122 (95)	103 (88)	21.81	0.001
	Electronic	12 (10)	24 (19)	10 (8)	5 (4)	7 (5)	14 (12)		
Duration of brushing	2 min	50 (40)	20 (16)	28 (22)	27 (21)	31 (24)	11 (9)	113.9	<0.001
	3 min	40 (32)	50 (40)	34 (26)	35 (28)	37 (29)	21 (18)		
	5 min	24 (19)	38 (30)	56 (43)	21 (17)	32 (25)	37 (32)		
	More than 5 min	12 (10)	17 (14)	11 (9)	43 (34)	29 (22)	48 (41)		
Frequency of brushing	Once	119 (94)	121 (97)	115 (89)	98 (78)	118 (91)	113 (97)	44.67	<0.001
	Twice	7 (6)	4 (3)	12 (9)	26 (21)	9 (7)	3 (3)		
	Occasionally	0 (0)	0 (0)	2 (2)	1 (1)	1 (1)	1 (1)		
	Don't brush	0 (0)	0 (0)	0 (0)	1 (1)	1 (1)	0 (0)		
Types of inter-dental aids used	Dental floss	2 (2)	6 (5)	3 (2)	3 (2)	4 (3)	3 (3)	19.23	0.507
	Unitufted brushes	2 (2)	4 (3)	8 (6)	3 (2)	4 (3)	4 (3)		
	Miniature inter-dental aids	5 (4)	2 (2)	2 (2)	4 (3)	4 (3)	9 (8)		
	Tooth pick	16 (13)	10 (8)	11 (9)	9 (7)	8 (6)	14 (12)		
	Mouthwash	101 (80)	103 (82)	105 (81)	107 (85)	97 (75)	99 (85)		

P = 0.010), toothbrush changing interval, i.e., monthly/quarterly/half yearly as compared to yearly ($\chi^2 = 105.70$, $P < 0.001$), type of truth brush used, i.e. manual as compared to electronic ($\chi^2 = 21.81$, $P = 0.001$), duration of brushing i.e. 2 min/3 min/5 min as compared to more than 5 min ($\chi^2 = 113.90$, $P < 0.001$) and frequency of brushing, i.e., once as compared to twice/occasionally/do not brush ($\chi^2 = 44.67$, $P < 0.001$) in all years of dental students. However, in all years of dental students, the frequency (%) of types of interdental aids did not differed significantly ($\chi^2 = 19.23$, $P = 0.507$), i.e. found to be statistically the same.

The distribution and comparison of does floss remove plaque and debris from interdental area among different year dental students is summarized in Table 4. On comparing, χ^2 test showed significantly different and higher frequency of correct answer, i.e., “yes” in higher year students (3rd/4th/5th interns) than a lower year (1st/2nd) students ($\chi^2 = 149.80$, $P < 0.001$).

DISCUSSION

Several changes have been recommended by the Federation Dental International in the dental curriculum so as to increase the knowledge, skill and attitude of the dentists that they will need in their future practice.^[14] However

Table 4: Distribution and comparison of does floss remove plaque and debris from inter-dental area among different groups of students (n=752)

Year	Number of students	Yes n (%)	No n (%)	Don't know	χ ² value	P value
1 st	126	76 (60)	40 (32)	10 (8)	149.80	<0.001
2 nd	125	91 (73)	29 (23)	5 (4)		
3 rd	129	121 (94)	8 (6)	0 (0)		
4 th	126	125 (99)	1 (1)	0 (0)		
5 th	129	123 (95)	5 (4)	1 (1)		
Interns	117	117 (100)	0 (0)	0 (0)		

over the years, not many curricular changes seems to have taken place.^[15] Comprehensive programs in preventive care, including oral self-care regimens, should be an essential part of undergraduate dental education.^[16] Professional education of dental students should create stable health behaviors that will overcome differences in personal characteristics.^[17]

In the present study, 82.4% of interns brushed their teeth twice daily, whereas in the study conducted by Bennadi *et al.*, 84.6% of students brushed twice daily.^[18] In another study by Al-Omari and Hamasha, two-third of Jordanian students brushed their teeth twice a day respectively.^[4] About 100% of the interns used dental floss in our study and majority of the students from 1st to 5th year are using dental floss

regularly, but only 18% of students were using dental floss in Bennadi *et al.* study.^[18] A study conducted by Vandana *et al.*, it was found that there was inadequate knowledge about the technique of using interdental aids especially dental floss and also other interdental aids among medical students.^[19]

Evidence in the literature proposes that there is a common lack of use of flossing for maintenance of oral health condition as a preventive measure by the various population of the world.^[20-22]

Awareness for the usage of dental floss was good among the majority of the students who participated in this study, the reason may be due to the education on prevention of oral diseases like gingivitis, and dental caries starts from the 1st year of dental curriculum in our university. Whereas in the study by Bennadi *et al.* the use of floss was very low because they explained the fact that the basic course on prevention of gingivitis and periodontitis started in the 3rd year of their dental curriculum.^[18]

About 88.2% of interns recommend the use of the toothbrush, toothpaste, and dental floss, whereas in the study done by Balabaskaran and Ramamurthy recommended 90% use of interdental brush during orthodontic treatment.^[23]

In our study, the maximum percentage of the subjects brushing twice daily and using dental floss regularly were the interns. Hence, it can be assumed that students studying in higher level will have a better knowledge and behavior of taking care of their oral hygiene. Similar results were also achieved by Naven Kumar *et al.*^[24]

Preventive methods should be integrated into all topics of the dental curriculum, and the learning environment should support such training for future dental health professionals.^[25-27]

A problem arose when cross-sectional comparisons of separate groups were compared. These investigations are not uniform in their original design and include different age for males and females. In our present study, the main drawback was the gender distribution, as our study sample includes less female students as compared to male students. Therefore, we suggest that coming studies should be aimed at a larger sample size, which can be conducted in other geographic areas including dental practitioner, dental college's students, etc. in other countries as well to arrive at broader conclusions. Therefore, it is recommended to conduct further comparative studies in the future. This comparison can act as a source to evaluate the common knowledge and practice among dental students.

On the other hand, undergraduate dental students who are exclusively pursuing bachelor dental degree do not have access to dental journals and very few undergraduate

students attend conferences and workshops to update their knowledge. This would have resulted in decreased knowledge regarding oral health condition and use of interdental aids, e.g. dental floss. Still, to have proper scientific evidence, further studies can be carried out involving undergraduate and post-graduate dental students, which our study did not attempt.

CONCLUSION

The present study showed the knowledge and practice of interdental aids among dental students. The overall knowledge about the interdental aids, i.e., dental floss was good, but they had less knowledge about the other interdental aids available. The practice regarding the usage of dental floss improved with increasing levels of dental education. Further studies should be directed to assess the oral hygiene and periodontal status of those subjects using toothbrush alone and the combination of toothbrush along with the interdental aids.

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