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Original Research Article

Interdental cleaning where we stand today: a questionnaire study

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ABSTRACT

Background: Bacterial plaque is etiological factor for initiation of periodontitis. Toothbrushing is necessary for maintaining oral hygiene. However, toothbrushing alone is not enough in interproximal areas. The use of interdental aids was important to clean interdental areas of plaque that forms frequently.
Methods: A 35 items questionnaire was structured and distributed among 422 dental under graduate students. The distribution of responses was presented as frequencies and percentage.
Results: A total of 422 participants out of whom 5.7% below 20 years 94.3% were 20-25 years. 83 interns and 339 undergraduate students, frequency (%) was more in under graduates compare to interns. The mean knowledge score among undergraduates was 6.80 and in interns was 5.67. Knowledge about interdental cleaning aids was highly significant ($p<0.01$) among undergraduate students.
Conclusions: The overall knowledge and awareness about interdental aids was good. But meticulous planning regarding awareness needs to be followed. The practice regarding interdental aids should be improved, dentist should work closely with the patient to convey message about usage of interdental aids.

Keywords: Oral hygiene, Periodontal disease, Toothbrushing, Interdental aids, Floss, Interdental brush

INTRODUCTION

Oral, gingival and periodontal diseases are major factors of public health problems throughout the world.[1] The main etiological factor for gingivitis and periodontitis is oral biofilm. Mechanical removal is considered the most effectual method to control the growth of the oral biofilm.[2,3] Toothbrushing is the most common mechanical plaque control method however, it is incomplete in the interdental areas.[4] Interdental areas are hard to acquire with a toothbrush, thus preventing potent cleaning, and becomes the principal sites of residual plaque, allowing the formation of plaque with. Clinically, gingivitis and periodontitis usually get initiated and is more severe in interproximal areas than facial aspects. That is why interdental cleaning is a part of oral health education during dental treatment and maintenance strategy in cases of gingivitis and periodontitis.[5] Good interdental oral hygiene, requires something that can penetrate between adjoining teeth.[6] To attain this various interdental cleaning aids are used, like dental floss, interdental brushes, wooden interdental aids, and oral irrigators. This broad range of commercially available interdental cleaning aids make various state for their valuable effects in terms of reduction in plaque and gingival inflammation.[7]

Traditionally, self-care commendations for inter-dental cleaning consisted of flossing which is probably the most ubiquitously applicable method. However, interdental brush was found to be more efficacious than dental floss in the removal of plaque in open interproximal spaces.[8] The oral irrigators are particularly useful in terms of gingival health to a large part of the general public that does not clean the interproximal spaces on an even basis.[2]

Given the vital role interproximal plaque plays in the initiation and progression of gingival and periodontal diseases, interdental cleaning should be a dominant part of oral health education during dental treatment.[9,10] Patient motivation and education in selection of the interdental aids by dentists will definitely impact in improving the oral health habits of individuals.[11] As there is a lack of awareness regarding oral hygiene maintenance especially the use interdental aids among the people in India, the dentists should play the central role in creating consciousness about interdental aids.[4] So, we-designed a questionnaire survey to collect data and assess the knowledge, awareness and practices and the use of interdental aids in daily oral hygiene among dental under graduate students.

METHODS

Study design

A self-designed questionnaire written in English language was made containing 35 questions. Development and refinement of the questionnaire was divided into 3 domains. The first containing demographic data of the participants, the second regarding their knowledge about interdental aids and the third on the awareness and practice among dental under graduate students.

Sample size was determined using a single proportion formula. We estimated n=384 at 5% confidence limit for p=0.05. Due to non-respondents, we recruited a larger no of subjects (5-25% more than the estimated sample size) at the start so that this minimum number completed the survey, keeping α error at 5% β error at 20%, the power of the study was 80%.

Method of collection of data

This study was carried out at the P. M. N. M. dental college and hospital, Bagalkot, Karnataka, India, within a period of August 2021 to October 2021.

Subjects were asked to respond to all items according to the response format provided during the study. Response format included options in which subjects choose one option from a provided list of options. Participation was volitional and all participants remained anonymous. The participants were always encouraged to approach the investigator whenever they needed clarification at any point.

The dental population included those who were interns and under graduate students were included and those who were not agreed to participate in the study were excluded from the survey.

Statical analysis

Data obtained was compiled on a MS office excel sheet (v 2019, Microsoft Redmond Campus, Redmond, Washington, United States). Data was analysed using SPSS v 26.0, IBM software. Descriptive statistics like frequencies and percentage for categorical data, mean and SD for numerical data has been depicted and a comparison of frequencies of categories of variables with groups was done using the Chi square test. Knowledge scores were coded as 0 for a wrong response and 1 for a correct response and the mean knowledge score was compared using t test between 2 groups using t test. For all the statistical test, $p<0.05$ was considered statistically significant.

RESULTS

Demographic data

A total of four hundred forty-two participants, 83 interns and 339 undergraduates completed the survey out of whom 5.7% were below 20 years, 94.3% were 20-25 years.

Table 1: Inter education comparison of knowledge scores.

Education		N	Mean	Std. deviation	Std. error mean	T value	P value of t test
Total K	UG	339	6.80	1.794	0.097	4.694	0.000**
	Int	83	5.67	2.538	0.279		

**Statically highly significant difference (p<0.01).

Table 2: Inter education comparison of awareness scores.

Education		N	Mean	Std. deviation	Std. error mean	T value	P value of t test
Total Att	UG	339	4.05	1.215	0.066	1.443	0.150#
	Int	83	3.83	1.248	0.137		

#Non significant difference (p>0.05).

Frequency (%) was more in under graduates compared to interns (Figure 1). Among the participants 268 were females and 154 males. 19.7% of the participants were interns remaining 80.3% were undergraduates.

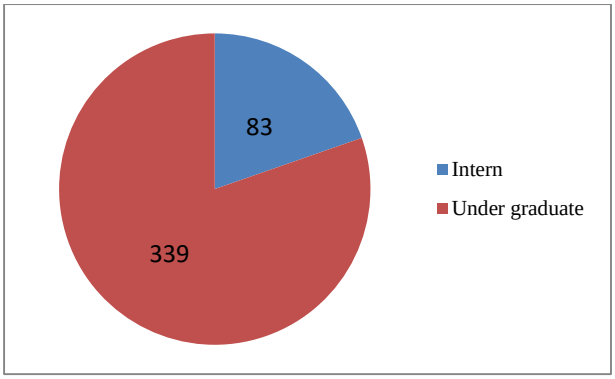

Figure 1: Distribution as per education.

Knowledge about interdental aids

Total knowledge score was 5.67 for interns and 6.80 for under graduate students and their comparison are depicted in (Table 1).

There was a statistically highly significant difference seen for the values between the groups ($p<0.01$) with higher values in undergraduates compared to interns.

Awareness about interdental aids

Total awareness score was 3.83 for interns and 4.05 for under graduate students and their comparison are depicted in (Table 2).

There was a statistically non-significant difference seen for the values between the groups ($p>0.05$).

Majority of people responded (86.3%) brushing alone was not sufficient in interproximal area, they knew (80.1%) interdental cleaning aids, through dentist (81.0%) from family (2.6%) from mass media (6.6%) and other sources (9.7%). Only few people brush their teeth twice daily on regular basis (41.5%), uses mouth wash twice daily (40.5%). Most of responders were aware of why interdental aids are used (80.8%) and use it on a regular basis (74.2%), 88.4% responders recommend others to use interdental aids and educate people about oral hygiene aids (85.3%). Majority thought interdental aids are adequately/regularly prescribed by dental professionals in practice (83.4%), its easily available (82%), essential for maintaining periodontal health (89.6%) and give awareness/advice about interdental aids to patient's (97.2%).

DISCUSSION

Bacterial plaque is the causative factor in the development of inflammatory periodontal disease. Enhancement of oral hygiene will lead to reduction of the frequency of gingival inflammation.[12] Since inceptive lesion in periodontal disease was usually seen in interproximal, conservation of interproximal gingival health was of prime importance in the prevention of periodontal disease. Numerous cleansing devices had been developed to maintain interproximal gingival health.[13] The regular toothbrushing removed plaque from the facial and lingual surfaces, but not from the proximal surfaces. Proximal cleaning in maintaining oral hygiene was considerable as gingivitis usually started interdentally.[14] The potentiality of the toothbrush to clean interdental surfaces was scanty. For this purpose, several interdental aids had been developed like dental floss, toothpicks, interspace and inter dental brush.[15]

In the present study many uses toothbrush as daily oral hygiene practice (70.6%), only few people brush their teeth twice a day, regularly (41.5%). This could be due they were capable of removing a considerable amount of interproximal plaque using the brush alone and lack of commitment. This was in contrast with the study conducted by Bennadi et al in which 84.6% of students brushed twice daily.[16] In another study by Al-Omari et al two-third of Jordanian students brushed their teeth twice a day respectively.[17]

Majority students in our study agreed that tooth brushing alone was not sufficient to clean all the surfaces (86.3%), they knew about interdental cleaning aids (80.1%) but it was contrast with study conducted by Bennadi et al. Only 18% of the students practiced interdental aids (dental floss, interdental brush) on a regular basis and 80.8% students thought to remove food accumulation cleaning aids were used.[16] Study conducted by Graziani et al also depicted similar results which showed that in young subjects, with no interdental attachment loss, toothbrushing or toothbrushing and adjunctive interdental cleaning devices such as dental floss, interdental brushes can significantly reduce both plaque and gingival inflammation and use of interdental brushes reduces more interdental plaque in comparison with toothbrushing alone.[18]

Many studies showed that interdental brush was more effective than dental floss in the removal of proximal plaque in open interproximal spaces.[8] In other studies, interdental brushes had been identified a suitable alternative to dental floss for interdental cleaning because of its ease of use and client acceptance.[8-19] In our study about 8.1% of participants reported to use dental floss once daily, 20.9% twice daily and 1.9% three times a day. Interdental brush 7.6% once daily, 12.6% twice daily, 3.1% three times daily. About 3.6% students used any other cleaning aids once daily. Only few people thought interdental aids are time consuming (45%).

Majority responders in our study were aware of dental floss and its technique. It was contrast with study conducted by Bennadi et al. Awareness regarding the use of dental floss was low among students.[16] In some studies Christou et al showed subjects reported the use of interdental brushes easier than dental floss. Also, the perception of efficacy was higher for the interdental brushes.[12]

Many responders believed tooth picks were used to remove food particles (77%) and 56.4% used tooth pick to clean. Studies Bergenholtz et al showed that compared to round and rectangular tooth picks triangular tooth picks in adjunct with dental floss were effective on proximal surfaces.[15]

In the present study 95.3% students cleaned their tongue as daily oral hygiene measure, 18.7% students felt bad breath only after taking food, 50% sometimes, 5.9% always. Whereas study conducted by Mahtani et al which was 8.93% use of mouthwash alone as an adjunct to other aids.[4-20]

50.5% students consumed sugar containing snacks between meals once daily, 25.6% twice daily, 18.7% were quite often so after snacks 51.2% rinsed with water, 28.4% brushed their teeth.

Majority of students in the study recommended others to use interdental aids (88.4%), educated about oral hygiene aids (85.3%), they thought they were adequately prescribed by dental professionals (83.4%) and inexpensive (82%). 71% of unawareness about interdental aids found by Mahtani et al.[4] 89.6% students thought cleaning aids were essential for maintaining periodontal health, any gum diseases that began in between teeth (83.2%), gave awareness/advice about interdental aids to patient's (97.2%). The studies by Jackson et al and Christou et al had provided that by use of interdental cleaning aids, periodontal patients were able to improve clinical outcomes and reduced clinical signs of disease and inflammation.[10-12]

It can be assumed that students studying in higher level will have a better knowledge and behaviour of taking care of their oral hygiene. Similar results were also achieved by Kumar et al.[22] But surprisingly in our study majority of the dental interns were have less knowledge than under graduates. This finding could be due to dental interns who might perceive self-care measures as less significant than professional treatment in managing periodontal condition.[21] Limitations of this study would be due to a smaller number of interns participants. Majority knew that brushing alone was not sufficient to clean all the surfaces and also, they knew about interdental cleansing aids. But it was not included in daily oral hygiene maintenance. However, there was no single cleaning aid that worked best for all patients. The option of a suitable interdental cleaning aid was also affected by the ease of use, size of interdental space, acceptability, dexterity and motivation of the individual.[9]

Limitations

Sample size should have been larger, it could have been done in other professionals. Also, majority knew that brushing alone was not sufficient to clean all the surfaces and also, they knew about interdental cleansing aids. But it was not included in daily oral hygiene maintenance.

CONCLUSION

Dentists play a vital role in the oral hygiene of an individual. The present study assessed the knowledge and attitude of interdental aids among dental students. The overall knowledge and awareness about interdental aids was good. But meticulous planning regarding awareness needs to be followed. The practice regarding interdental aids should be improved, dentist should work closely with the patient to convey message about usage of interdental aids.

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REFERENCES

1. WHO. Oral health. Fact sheet n°318, 2012. Available at: http://www.who.int/mediacentre/factsheets/fs318/en/. Accessed on 15 January 2022.
2. Rosema NAM, Hennequin-Hoenderdos NL, Berchier CE, Slot DE, Lyle DM, Weijden GA. The effect of different interdental cleaning devices on gingival bleeding. J Int Acad Periodontol. 2011;13(1):2-10.
3. Gufran K, Indrajit MG, Aljeaidi Z, Hamza MOB. Self-care of oral health status and uses of interdental aids among dental students: a cross-sectional study. Int J Dent Med Spec. 2015;2(4):5-9.
4. Mahtani AA, Lakshmanan R. Awareness of interdental aids and their regular use in daily oral hygiene-a questionnaire based study. J Pharm Sci Res. 2017;9(2):202-4.
5. Gjermo P, Flotra L. The effect of different methods of interdental cleaning. J Periodontal Res. 1970;5(3):230-6.
6. Slot DE, Dorfer CE, Weijden GA. The efficacy of interdental brushes on plaque and parameters of periodontal inflammation: a systematic review. Int J Dent Hyg. 2008;6(4):253-64.
7. Tarannum F, Faizuddin M, Swamy S, Hemalata M. Efficacy of a new interdental cleaning aid. J Indian Soc Periodontol. 2012;16(3):375-80.
8. RD Kiger, Nylund K, RP Feller. A comparison of proximal plaque removal using floss and interdental brushes. J Clin Periodontol. 1991;18(9):681-4.
9. Ng E, Lim LP. An overview of different interdental cleaning aids and their effectiveness. Dent J (Basel). 2019;7(2):56.
10. Jackson MA, Kellett M, Worthington HV, Clerehugh V. Comparison of interdental cleaning methods: a randomized controlled trial. J Periodontol. 2006;77(8):1421-9.
11. Abdullah AS, Pavithra S, Ahmed N. Interdental aids-a literature review. J Dental Sci. 2018;3(2):000182.
12. Christou V, Timmerman MF, Veiden U, Fridus A, Weijden V. Comparison of different approaches of

interdental oral hygiene: interdental brushes versus dental floss. J Periodontol. 1998;69(7):759-64.
13. Vogel RI, Sullivan AJ, Pascuzzi JN, Deasy MJ. Evaluation of Cleansing Devices in the Maintenance of Interproximal Gingival Health. J Periodontol. 1975;46(12):745-7.
14. Nayak RP, Wade AB. The relative effectiveness of plaque removal by the Proxabrush and rubber cone stimulator. J Clin Periodontol. 1977;4(2):128-33.
15. Bergenholtz A, Bjorne A, Vikstrom B. The plaue-removing ability of some common interdental aids. An intraindividual study. J Clin Periodontol. 1974;1(3):160-5.
16. Bennadi D, Halappa M, Kshetrimayum N. Self-reported knowledge and practice of interdental aids among group of dental students, Tumkur, India. J Interdiscip Dent. 2013;3(3):159-62.
17. Al-Omari QD, Hamasha AA. Gender-specific oral health attitudes and behavior among dental students in Jordan. J Contemp Dent Pract. 2005;6(1):107-14.
18. Graziani F, Palazzolo A, Gennai S, Karapetsa D, Giuca MR, Cei S, et al. Interdental plaque reduction after use of different devices in young subjects with intact papilla: a randomized clinical trial. Int J Dent Hyg. 2018;16(3):389-396.
19. Imai PH, Hatzimanolakis PC. Encouraging client compliance for interdental care with the interdental brush: The client's perspective. Can J Dent Hyg. 2010;44(2):71-5.
20. Paul B, Basu M, Dutta S, Chattopadhyay S, Sinha D, Misra R. Awareness and practices of oral hygiene and its relation to sociodemographic factors among patients attending the general outpatient department in a tertiary care hospital of Kolkata, India. J Family Med Prim Care. 2014;3(2):107-11.
21. AlQahtani NA. Knowledge regarding use of oral hygiene aids among dental interns in Saudi Arabia. KKU J Health Sci. 2017;2(2):1-7.
22. Kumar PG, Kakodar P, Peeran S, Abdalla KA. Oral self-care practices and self-assessment of dental health reported by the dental students from Sebha. J Dent Res Sci Dev. 2014;1:46-50.

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