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INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/19956
DOI URL: <http://dx.doi.org/10.21474/IJAR01/19956>



RESEARCH ARTICLE

ORAL HYGIENE AWARENESS REGARDING FLOSSING AMONG DENTAL INTERNS: A CROSS-SECTIONAL STUDY

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Manuscript Info

Manuscript History

Received: 17 September 2024
Final Accepted: 27 October 2024
Published: November 2024

Key words:-

Dental Devices, Dental Health Survey,
Dentist, Home Care, Oral Hygiene

Abstract

Background: Dental floss is an important part of home dental care. It helps in the maintenance of oral hygiene by effectively cleaning interdental areas, thereby lowering the risk of periodontal diseases and dental caries. The dental professionals have a major role in educating and motivating patients in maintaining oral hygiene. However, use of dental floss among young dental professionals remains unknown.

Aim: To assess knowledge, awareness and self-reported practices regarding flossing among dental interns in Navi Mumbai.

Design: A closed-ended 15-item questionnaire was formulated and circulated to dental interns through Google Forms in Navi Mumbai region. A total of 170 responses were obtained during the period from April 2024 to September 2024.

Results: The statistical analysis using mean and average reported that 59.41% participants used dental floss, 27.65% were using it before joining dentistry and only 18.23% used it everyday, 80% reported that flossing reduces halitosis, though 34.71% considered that it was not necessary to use, majorly due to lack of awareness.

Conclusion: The study concludes that awareness should be created regarding flossing, and adequate training should be imparted to young dental professionals. Along with it recommended home dental care should also be practiced in order to act as role models for the general population and to increase the prescription practices.

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Introduction:-

Periodontal disease is one of the major oral health issues affecting people worldwide. Though preventable, the prevalence of it is increasing in developing countries.[1] In India, its prevalence ranges from 50 to 100% and therefore, is of grave concern.[2]

Dental plaque or biofilm is the chief causative agent for development of periodontal disease and effective removal of it has been considered as gold standard for prevention. The most common, easy and effective means of plaque removal is the mechanical method, which consists of toothbrushing. [3,4] However, implementation of additional oral hygiene measures like dental floss is recommended for effective plaque removal from the interdental region.[5] Several reports have suggested that the use of dental floss on a daily basis is limited to a small section of the population [6-9]

Studies have suggested that regular use of dental floss helps in preventing periodontal diseases along with reducing the risk of developing certain systemic diseases, particularly cardiovascular disease.[10] One of the major challenges for dental personnels is to modify patient's oral hygiene behaviour.[11,12] Therefore, to improve patient compliance for oral hygiene maintenance, emphasis should be given on association between periodontal disease and systemic diseases.[10,13] Considering this, it is important for dental professionals to advocate use of dental floss to increase its usage by general population. [14,15]

Despite the proven benefits, prevalence of flossing, even among dental professionals including dental interns, has been the subject of various studies. However, revealing a paradox, that those associated with promoting oral health may themselves not adhere to recommended oral hygiene measures. As dental interns transition from theoretical learning to patient care, it is essential to understand the extent to which they practice flossing in their daily routines. Understanding the prevalence of flossing among dental interns can provide insights into their health behaviours, attitudes toward preventive care, and identify potential barriers in their own oral hygiene practices.[16]

Therefore, the present study was conducted to assess the knowledge, attitude, self-reported practices regarding dental floss use among dental interns in Navi Mumbai.

Materials and Methods:-

This cross-sectional study was conducted following the approval by Ethical Committee of the Institution (IREB/2024/UG/01). The data was collected from April 2024 to September 2024. Since no standardized questionnaire was available, a 20-item questionnaire was formulated. It was validated by 5 dentists with a clinical experience of 2 years. After collecting and analyzing the data, 15 questions fulfilling objectives of the research were finalized. The 15 questions were grouped into different categories which included knowledge about oral hygiene practices and dental floss, attitude towards use of dental floss and practices being followed by participants themselves.

The present study was carried out amongst dental interns across 5 dental schools in Navi Mumbai, India. The rationale of study, informed consent, and 15-item questionnaire were circulated via google forms.

The collected data were analyzed in Microsoft excel and google form results using average number and percentages.

Results:-

The questionnaire was filled by 197 participants from the target respondents, with a response rate of 39.4%. After scrutinizing, incomplete forms were excluded, and final sample included 75 males (average age 24.27 ± 1.57 years) and 95 females (average age 24.62 ± 1.93 years), with a total of 170.

The knowledge, attitude, self-reported practices regarding dental floss among participants have been described in Table 1.

Table 1:- Number and percentage of responses regarding knowledge trends among participants regarding flossing

| | Number[n] | Percentage [%] |
|-------------------------------------|-----------|----------------|
| Do you floss your teeth? | | |
| Yes | 101 | 59.41 |
| No | 69 | 40.59 |
| Total | 170 | 100.00 |
| When did you start flossing? | | |
| Before joining dentistry | 47 | 27.65 |
| After joining dentistry | 60 | 35.29 |
| Never | 63 | 37.06 |
| Total | 170 | 100.00 |
| How often do you floss? | | |
| Everyday | 31 | 18.23 |
| Occasionally | 87 | 51.18 |
| Never | 52 | 30.59 |
| Total | 170 | 100.00 |

| How many times a day do you floss? | | |
|---|-----|--------|
| Once a day | 83 | 48.82 |
| Twice a day | 23 | 13.52 |
| More than twice a day | 03 | 1.77 |
| Do not floss | 61 | 35.89 |
| Total | 170 | 100.00 |
| What type of floss do you use? | | |
| Dental floss thread | 70 | 41.18 |
| Water flosser | 10 | 5.88 |
| Floss picks | 30 | 17.65 |
| None | 60 | 35.29 |
| Total | 170 | 100.00 |
| What is the reason for not flossing? | | |
| Not necessary | 59 | 34.71 |
| May create gaps between teeth | 20 | 11.76 |
| May cause bleeding of gums | 22 | 12.94 |
| Difficult to use | 16 | 9.42 |
| Expensive | 3 | 1.76 |
| Other | 50 | 29.41 |
| Total | 170 | 100.00 |
| Do you think flossing helps to enhance oral hygiene? | | |
| Yes | 131 | 76.79 |
| No | 11 | 5.95 |
| Not sure | 28 | 17.26 |
| Total | 170 | 100.00 |
| Do you think flossing helps in reducing halitosis? | | |
| Yes | 136 | 80.00 |
| No | 10 | 5.88 |
| Not sure | 24 | 14.12 |
| Total | 170 | 100.00 |
| According to you floss picks are re-usable? | | |
| Yes | 29 | 17.06 |
| No | 100 | 58.82 |
| Not sure | 41 | 24.12 |
| Total | 170 | 100.00 |
| Do you think are water flossers are effective? | | |
| Yes | 92 | 54.11 |
| No | 14 | 8.25 |
| Not sure | 64 | 37.64 |
| Total | 170 | 100.00 |
| Does dental floss have expiry date? | | |
| Yes | 51 | 30.00 |
| No | 40 | 23.53 |
| Not sure | 79 | 46.47 |
| Total | 170 | 100.00 |

Discussion:-

Flossing was introduced by Levi Spear Parmly in 1819. He advised use of a filamentous piece of silk thread to clean interdental region along with conventional oral hygiene aids for prevention of dental diseases. Codman and Shurtleff produced unwaxed silk floss in 1882 from leftover sterile sutures. This silk thread has undergone significant improvement in the present times, with various kinds of dental flosses being commercially available. [17]

Flossing as an adjunct to regular toothbrushing has been advocated routinely for preventing diseases of periodontium. However, significantly lower prevalence of flossing has been reported worldwide [6-9], therefore it is necessary to

assess the knowledge, attitude and self-reported practices among dental interns to recognize insufficiencies so as to help plan appropriate measures. The current study was undertaken with a similar intent and to our knowledge, this is the first survey to be conducted among dental interns in Navi Mumbai.

Several factors influencing the prevalence of flossing are education and awareness about benefits of flossing; access to dental care- regular access to dental professionals will emphasize the advice on flossing; convenience, alternatives and cost- flossing is considered time-consuming, uncomfortable, or difficult to perform correctly, which may deter individuals from adopting it. However, the rise in popularity of alternatives like water flossers, interdental brushes, and floss picks has provided people with more accessible and user-friendly options for maintaining oral hygiene. For those with limited income, dental floss or flossing tools can be seen as an unnecessary expense. In contrast, toothbrushes and toothpaste are often prioritized. [16]

The present study reported that 59.41% interns floss their teeth among which 13.52% floss twice daily, while only 27.65% flossed before joining dentistry. Though 80% considered that flossing would reduce halitosis, 34.71% did not consider it as a necessary oral hygiene aid. Other reasons for not using it were that it may create gaps between the teeth (11.76%), may cause gingival bleeding (12.94%), difficulty in using (9.42%) and high cost of it (1.76%). 54.11% considered water flossers to be effective in removing dental plaque from interdental areas.

The results of survey done by Madan et al., [16] stated that 22% of dental professionals used a dental floss daily. However, our study showed relatively lower prevalence of daily flossing among interns. Also, the proportion of female interns using dental floss were higher in comparison to male interns, similar findings were reported by Khami et al., [18] among Iranian dental school educators. Nakamura et al. [14] reported that dental professionals who received illustration of flossing techniques at dental schools prescribed it more frequently to their patients than the ones who did not receive. Therefore, educating and motivating dental interns to implement recommended dental hygiene measures, like flossing, is of utmost importance. Higher proportion of dental interns using dental floss occasionally in the present study is analogous to results reported by Zadik et al. [19] Hence, awareness and encouragement among dental interns seems to be optimum in dental schools in Navi Mumbai. However, low number of daily users of floss in the present study, might affect the prescription pattern among patients, as reinforcement for oral hygiene maintenance by dental professionals have a significant role on positive oral hygiene behaviour among patients. [20]

A limitation of the present study was limited sample size as only interns from dental schools in Navi Mumbai were included. Therefore, future surveys which include interns from dental schools all over India can be helpful in arriving at broader conclusions.

Conclusion:-

This survey concluded that most dental interns considered dental floss as an essential dental hygiene measure, however limited number of interns have incorporated it into their routine dental hygiene practice. The study also reported understanding of attitude towards flossing. This will help in improving dental education and setting personal health standards. Given the critical role of oral hygiene in preventing dental disease, fostering healthy flossing habits among dental interns is an essential step in preparing them to be effective, knowledgeable, and responsible dental professionals.

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