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**USAGE OF INTERDENTAL BRUSHES IN EVERYDAY STUDENTS' ORAL HYGIENE**

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**Abstract: Introduction:** The interdental spaces are the areas that are most frequently accumulated with dental plaque. The toothbrush, which is successful in removing plaque at buccal, lingual and occlusal surfaces, seems not to be completely successful in removing plaque at interdental sites. Interdental devices for oral hygiene are frequently recommended by dental professionals to patients in order to achieve a good dental and periodontal health. An **interdental brush** is a small brush, typically disposable, either supplied with a reusable angled plastic handle or an integral handle, used for cleaning between **teeth** and between the wire of **dental braces** and the teeth.

**Aim:** The aim of this study was to determinate the maintenance of oral hygiene and the use of interdental brush and to compare the use of an interdental brush and dental floss for controlling the dental biofilm around teeth of the Dental Medicine's students.

**Material and Method:** Eighty students of Dental Medicine aged 19 to 22 year were included in the study. The examinations were made twice: before enrolling the subject Prophylaxis of oral disease and after, in fourth semester and after in the next semester.

During the first thirty days, students used the conventional Bass method of brushing associated with cleaning the interproximal space only with dental tape. At the end of the semester, a new plaque index was measured. At the beginning of the next semester, the students were instructed to use conventional brushing, and then only interproximal cleaning with interdental brushes. At the end of this semester, a new plaque index was measured.

**Results:** The analysis revealed a significant difference in the effectiveness of the two cleaning methods used for controlling the interproximal biofilm, showing that the plaque index was significantly lower (24.3%) with the interdental brush than when dental floss was used. Evaluation was made how their attitude has been changed in maintaining oral hygiene after learning about prophylaxis of oral disease and oral health.

**Conclusion:** The results showed that the usage of interdental brushes is more effective at controlling the interproximal dental biofilm around teeth compared with using dental floss. Knowledge and training how to usage interdental cleaning products and devices for better oral health has important role in maintains oral hygiene and reduce the level of plaque around the teeth.

**Keywords:** interdental cleaning, interdental brush oral health, oral hygiene.

**INTRODUCTION**

Oral cleanliness is very important for the preservation of oral health as it removes microbial plaque, preventing it from accumulating on teeth and gingivae. There are several reasons for teeth brushing: to feel fresh and confident, to have a nice smile, and to avoid bad breath and disease (Choo *et al* 2001). The toothbrush, which is successful in removing plaque at buccal, lingual and occlusal surfaces, seems not to be completely successful in removing plaque at interdental sites. Namely, the interdental spaces are the areas that are most frequently accumulated with dental plaque. Interdental devices for oral hygiene are frequently recommended by dental professionals to patients in order to achieve a good dental and periodontal health. An interdental brush is a small brush, typically disposable, either supplied with a reusable angled plastic handle or an integral handle, used for cleaning between **teeth** and between the wire of **dental braces** and the teeth. There are different definitions in the scientific literature with respect to the of *approximal*, *interproximal*, *interdental*, and *proximal* sites. Commonly used indices are not suitable for assessing interdental plaque (directly under the contact area), and thereby limit interpretation of interdental plaque removal. The European Workshop on Mechanical Plaque Control in 1999 proposed the following definitions: *approximal* (proximal) areas are the visible spaces between teeth that are not under the contact area. The terms *interproximal* and *interdental* may be used interchangeably and refer to the area under and related to the contact point. Many different commercial products are designed to achieve this goal, including floss, woodsticks, rubber-tip simulators, interdental brushes, single-tufted brushes, and recently introduced electrically powered cleaning aids (i.e. oral irrigators). Interdental brushes were introduced in the 1960s as an alternative to woodsticks. The interdental brush consists of soft nylon filaments twisted into a fine stainless steel wire. This 'metal' wire can prove uncomfortable for patients with sensitive root surfaces. For such patients the use of plasticcoated metal wires may be recommended. The support wire is continuous or inserted into a metal/plastic handle. Interdental brushes are manufactured in different sizes and forms. The most common forms are cylindrical or conical/ tapered (like a Christmas tree). Slot et

al. [10] conducted a systematic review to evaluate the efficacy of IDBs and other interdental cleaning devices on plaque and parameters of periodontal inflammation. Regarding plaque, additional use of IDBs resulted significantly more plaque reduction compared to toothbrushing alone. Comparing IDB to dental floss, most of the studies revealed significant difference on plaque index parameter in favor of the IDB. Also, IDBs were detected to remove more plaque than woodsticks.

**AIM**

As dental health is vastly an individualized notion, the aim of this study is to prevent, control/arrest oral diseases. The knowledge and practices of dental students toward their oral health care reflect their understanding the importance of dental procedure and improving the oral health of their own, & their families. The aim of this study was to determinate the maintenance of oral hygiene and the use of interdental brush and to compare the use of an interdental brush and dental floss for controlling the dental biofilm around teeth of the Dental Medicine’s students.

**MATERIAL AND METHOD**

A briefing was given about the nature of the study, and the procedure of completing the questionnaire was explained to every participant individually. Students who refused to participate in this research were excluded. Prior to fill the pre-designed questionnaire their consent was obtained. The study is part of the national University project named “Significance of proper oral hygiene for oral health condition of medical science students” at the Faculty of Medical Science, “Goce Delcev” University, Stip, Macedonia. Eighty students of Dental Medicine aged 19 to 22 year were included in the study. The examinations were made twice: before enrolling the subject Prophylaxis of oral disease and after, in fourth semester and after in the next semester.

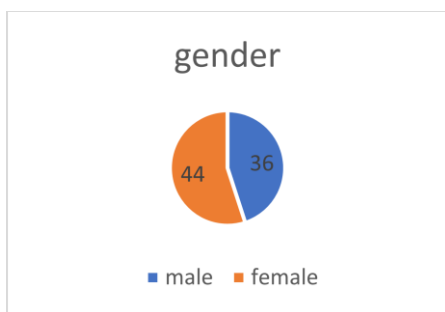
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**RESULTS AND DISCUSSION**

A total of 80 students of the 2nd year BDS class were surveyed. Out of 80 students, 36(45%) were boys and 44 (55%) were females as in Figure-1. The analysis revealed a significant difference in the effectiveness of the two cleaning methods used for controlling the interproximal biofilm, showing that the plaque index was significantly lower (24.3%) with the interdental brush than when dental floss was used (Table 1. and Fig. 2. Evaluation was made how their attitude has been changed in maintaining oral hygiene after learning about prophylaxis of oral disease and oral health. Dental students should be a good example of positive oral health attitudes and behavior to their families, patients and friends. In general, they have been found to be motivated about maintaining a good oral health. This study

showed that approximately 63% students knew what dental floss was effective in removing plaque. Interdental area is the most common site of plaque retention and the most inaccessible to toothbrushes; this could be complemented by the use of dental floss and interdental brushing daily.



**Table 1:** Means and standard deviations of the plaque index according to the cleaning method used to control the interproximal biofilm

Interproximal biofilm	Mean	Standard Deviation	Maximum value	Minimum value
Cleaning method				
Interdental brush	44%	17%	8.5%	63%
Dental floss	63%	20%	24%	98.1%

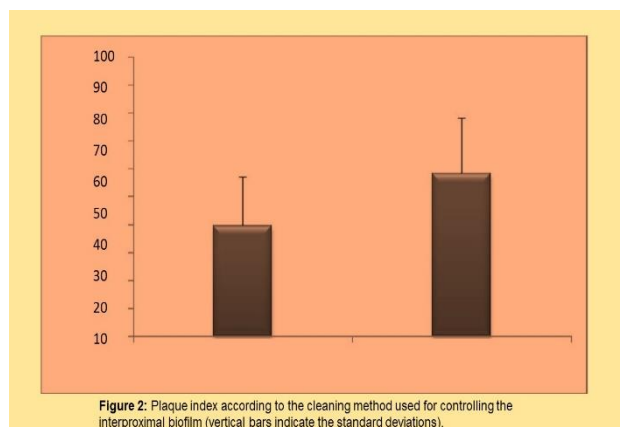


Figure 2: Plaque index according to the cleaning method used for controlling the interproximal biofilm (vertical bars indicate the standard deviations).

In present survey approximately 18.57% of the students used interdental brushes and dental floss; this was comparable to other medical students. Evidence in the literature suggests that there is a general lack of use of flossing and interdental brushing as a preventive measure by the various population of the world. Interdental brushes are shown to have a positive effect on parameters such as bleeding, plaque and pocket reduction. They are also superior to other manual interdental cleaning devices in subjects, who either suffered from periodontitis or were included in a maintenance program after periodontal treatment (Kiger et al. 1991, Christou et al. 1998, Jared et al. 2005, Jackson et al. 2006, Rösing et al. 2006). In a systematic

review based on nine articles, it was concluded that interdental brushes used as an adjunct to toothbrushing removed more plaque than just toothbrushing, and that dental floss and wood sticks are surpassed by interdental brushes in plaque removal. Zimmer et al (2006) compared the use of different oral hygiene devices/aids. The results showed there were no significant difference in plaque index or gingival bleeding index between using toothbrush alone and combined use of it with dental floss. Furthermore, the review showed a positively significant difference in using interdental brushes with respect to plaque scores, bleeding scores, and probing pocket depth, compared to other interdental cleaning devices.

## CONCLUSION

Based on the available literature with respect to interdental cleaning, the best available data suggest the use of interdental brushes. These brushes should therefore be the first choice in patients with open interdental spaces. The findings from this study showed that a significant percentage of dental students recognize dental flossing and dental brushing as an essential interdental aid and agree that its routine use is necessary. The results showed that the usage of interdental brushes is more effective at controlling the interproximal dental biofilm around teeth compared with using dental floss. Knowledge and training how to usage interdental cleaning products and devices for better oral health has important role in maintains oral hygiene and reduce the level of plaque around the teeth.

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