

Evaluation Of Oral Hygiene By Using Different Intraoral Cleaning Aids: A Comparative Study

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ABSTRACT:

Aim: Purpose of our study was analyse the status of oral hygiene in patients using various oral hygiene aids apart from normal mechanical tooth brushing.

Methodology: 40 patients were divided into groups of four with 10 individuals in each group. Control group where only regular tooth brushing was undertaken was compared with other groups where apart from regular tooth brushing, use of mouthwashes, tongue cleaners, as well as interdental aids were encouraged for 3 months and regular oral examinations were carried at 1-month intervals. Plaque index as well as gingival index scores were calculated for each patient and the data was subjected to descriptive statistical analysis as well as comparative analysis using SPSS 25.0.

Results: Significant difference was observed in plaque scores ($p=0.04$) after 3 months of usage of combined oral hygiene techniques and similar improved scores were observed in gingival index as less bleeding on probing was evident in the patients ($p=0.043$).

Conclusion: It was evident that combined adjunctive methods helped improve general oral health as well as prevented further occurrence of gingival as well as periodontal diseases.

Keywords: Plaque Index, Gingival Index, oral health, interdental aids.

1. INTRODUCTION

Oral hygiene has been practiced by different populations and cultures round the world since antiquity. Oral hygiene maintenance through regular removal of bacterial plaque and food debris is a necessary think about prevention of oro-dental disease. Oral hygiene practices may vary from region to region and are full of the local cultures and spiritual beliefs.¹ As we all know that dental problems are quite common like cavity, periodontitis and tooth loss, which constitute major public oral health problems within the world today. So, primary prevention - oral health promotion is that the key to scale back these problems. plaque is one in all the key cause for gingival and disease. If left untreated, disease may result in tooth loss. Oral prophylaxis will help in removing plaque and inturn maintain the balance of microflora in the

oral cavity. Oral Hygiene Aids are the things which are used home to assist with one's oral hygiene maintenance procedures, like brushing teeth, flossing, mouth wash, tongue cleaners, etc. Daily oral self-care to regulate the supra-gingival plaque may assist in slowing or reducing the shift to a pathogenic environment. Toothbrushes are unable to penetrate intact interdental areas, where disease is prevalent necessitating the utilization of an interdental aids.² Human oral fissure has been identified with over 700 species of bacteria. Whereas a median individual may carry 100–200 species of bacteria; this shows vast heterogeneity between the individuals. The dorsum of the tongue carries a particular status by providing an outsized area which helps to push the acquisition of microorganisms together with food debris, saliva, and degenerated epithelial cells which might be to blame for metabolism and growth of those entities. Further, the bacterial metabolism may enter the assembly of volatile molecules like short-chain organic acids, volatile sulphur, diamine and phenyl derivatives. A tongue cleaner (also called a tongue scraper or tongue brush) is an oral hygiene device designed to scrub the bacterial build-up, food debris, fungi, and dead cells from the surface of the tongue.³ Van der Weijden et al. found that, in adults with gingivitis, self-performed mechanical plaque removal with a manual toothbrush wasn't sufficiently effective.⁴ More frequent tooth cleaning (up to twice daily) was shown to significantly improve gingival health.⁵ the fact is that brushing alone may only remove up to 60% of overall plaque at each episode of cleaning.⁶ A newer systematic review by Slot et al. estimated that the efficacy of plaque removal following a brushing exercise averages around 42%.⁷ Brushing is additionally thought to be more optimal for cleaning facial surfaces of teeth compared to interproximal surfaces.⁸ to assist in plaque control, various interdental cleaning aids are used. These include yarn, interdental brushes, wooden interdental aids, and oral irrigators. A recent study by Marchesan et al. provides convincing data to support the utilization of interdental cleaning devices for promoting good oral health outcomes. The study found that interdental cleaning is related to less disease, less coronal and interproximal caries, and fewer missing teeth; the next frequency of interdental cleaning 4–7 times per week) was also related to less interproximal periodontitis.⁹ Mouthwashes are antibacterial in nature and help in preventing carious bacteria to flourish within the mouth. they'll be broadly classified as chemical mouthwashes and herbal mouthwashes. Chemical mouthwashes containing: chlorhexidine, a bis-biguanide which is that the most typically used and is gold standard in antimicrobial efficacy.¹⁰ Plaque is intimately associated with the assembly and progress of decay and inflammatory gingival and periodontal diseases. Good plaque control facilitates the return to health for patients with gingival and periodontal diseases. Daily use of a toothbrush and other oral hygiene aids is that the most dependable thanks to achieve oral health benefits for all patients.

AIM OF THE STUDY

Purpose of our study was analyse the status of oral hygiene in patients using various oral hygiene aids like tongue cleaners, flossing and mouthwashes; except normal mechanical tooth brushing.

2. METHODOLOGY

Group of 40 patients were selected during this research, which was administrated for around 3 months. These patients reported to the department of periodontology in the Department of

Preventive Dental Sciences, College of Dentistry, Prince Sattam Bin Abdulaziz University in Alkharj, Riyadh, Saudi Arabia. study subjects were categorized into 4 group of 10 patients each comprising of-

Group A- Patients using only mechanical tooth brushing

Group B- Patients using mouthwashes along with daily tooth brushing

Group C- Patients using tongue cleaners along with daily tooth brushing

Group D- Patients using interdental aids like- flossing combined with tooth brushing on a routinely basis.

These patients were thoroughly examined to rule out medical conditions and complete oral exam was also administrated and was followed up regularly at the interval of 1 month each. Amount of plaque deposition was calculated supported Plaque Index (PI) (Silness and Loe) and Gingival Index (GI). Data was recorded on a Microsoft excel spread sheet and was subjected to descriptive statistical measures like mean, frequency percentages, variance and intergroup comparisons were disbursed with the assistance of t-test utilizing SPSS 25.0.

3. RESULTS

We observed that in Groups B, C, D where manual tooth brushing was combined with usage of mouthwashes, tongue cleaners, interdental aids fared better as compared to control group A where daily oral hygiene was carried out with only manual tooth brushing; when plaque index scores were considered. (Table 1) It was noted that plaque index was best in case of Group B, where along with manual tooth brushing was accompanied with regular usage of mouthwashes; possibly due to mechanical dislodgement of plaque deposits due to swishing motion of the mouthwashes. Gingival index also had similar results where all the groups had improved oral hygiene as compared to control group. However, the scores were best in the group D where interdental brushes or flossing was used along with tooth brushing, denoting that gingival health had improved where interproximal cleaning was done regularly, decreasing chances of gingivitis in future. (Table 2) Significant difference was observed in plaque scores ($p=0.04$) after 3 months of usage of combined oral hygiene techniques and similar improved scores were observed in gingival index as less bleeding on probing was evident in the patients ($p=0.043$). (Table 3)

Table 1- Plaque index scores recorded in various groups.

Time interval	Group A (Mean \pm SD)	Group B (Mean \pm SD)	Group C (Mean \pm SD)	Group D (Mean \pm SD)
1 month	1.24 \pm 0.76	1.44 \pm 0.35	1.55 \pm 1.33	1.37 \pm 0.93
2 months	1.83 \pm 0.76	0.88 \pm 0.71	1.26 \pm 0.87	1.11 \pm 0.75
3 months	1.69 \pm 0.67	0.73 \pm 0.27	1.32 \pm 0.61	0.841 \pm 0.311

Table 2- Gingival Index scores recorded in various groups.

Time interval	Group A (Mean ±SD)	Group B (Mean ±SD)	Group C (Mean ±SD)	Group D (Mean ±SD)
1 month	2.93±1.41	2.08±0.93	2.14±1.27	2.11±1.12
2 months	1.95±1.22	1.76±0.91	1.68±1.2	1.66±0.87
3 months	1.99±1.56	0.13±0.01	0.48±0.71	0.46±0.89

*SD= Standard Deviation

Table 3- t-test recorded in the present study

Time interval	t-test		p-value	
	For PI between the groups	For GI between the groups	For PI between the groups	For GI between the groups
1 month	1.1818	1.033	0.6	0.76
2 months	1.92	1.54	0.032	0.0210
3 months	2.01	1.89	0.04	0.043

* $p < 0.05$ is significant

4. DISCUSSION

Good oral health is crucial to boost an individual's overall health and well-being.¹¹ The dental community, who supposedly are the role models as far as oral health is anxious, play a pivotal role in promoting behavioral change within the society. Tooth brushing is taken into account because the primary mechanical means of removing substantial amounts of plaque so as to forestall oral disease, including gingivitis and cavity and halitosis while also maintaining dental esthetics. It's also used as a way of delivering chemotherapeutic agents via dentifrice.^{12,13} Brushing methods including Bass, Stillman's, Fones, Charter's, horizontal, vertical, scrub etc., are taught for many years, with Bass and Roll method most ordinarily recommended. However, nobody method of brushing has been found superior to others.¹² Poyato-Ferrera et al. observed during a 3 min comparison between modified Bass and therefore the normal brushing technique that the modified Bass method removed more supra gingival plaque for all sites and in the least times examined, especially on the lingual surfaces which commonly show high plaque scores.¹⁴ It has been reported that individuals typically brush for about 1 min or less but the general public significantly over estimate this duration. Studies have shown ranges of brushing times from 56.7 s to 83.5 s, whereas estimated brushing times by these subjects range from 134.1 to 154.6 seconds.^{15,16} Dentifrices are adjuncts to tooth brushing and vehicles for various chemotherapeutic agents to inhibit calculus, reduce plaque, prevent caries, whiten enamel and desensitize exposed root surfaces.¹⁷ The removal of interproximal plaque is taken into account to be important for the upkeep of gingival health, prevention of periodontitis and also the reduction of caries. Unfortunately, the toothbrush is comparatively ineffective at removing interproximal plaque, and so, patients have to resort to additional techniques. Floss, wood sticks, rubber tips and interdental brushes currently represent the first methods available for interproximal cleaning. Floss is that the most generally used method of interdental cleaning and therefore the American Dental Association reports that up to 80% of interdental plaque is also removed by

this method.¹⁸ Positive attitude still as consistency in following of a routine is also a causal factor in maintenance of oral hygiene using various cleansing aids as seen in study done by Sharda and Shetty et al.¹⁹ Two systematic reviews found that the adjunctive use of interdental brushes leads to significant improvements on clinical parameters like plaque scores, bleeding scores, and probing depth, in comparison to brushing alone.^{20,21} Another review by Salzer et al. found that interdental brushes were the foremost effective method for interdental plaque removal, compared to other interdental cleaning aids.²² The prevalence of interdental brushes is assumed to flow from to higher efficacy of plaque removal and high patient acceptance, likewise as easy use.²³⁻²⁶ Thus, it's clear that the utilization of interdental brushes as an adjunct provides a clinical benefit over brushing alone. Consequently, instructions should incline individually in keeping with contour and consistency of the gingival tissues, the scale and morphologies of the interproximal embrasures, tooth position and alignment, and also the ability and motivation of the patient.²⁷ Furthermore, to achieve maximum effectiveness, the interdental oral hygiene instructions as advised to the patient should provide enough information to enable the patient to spot each site and also the appropriate device to be ready to clean all interdental surfaces effectively.²⁸ Patients must remember that bleeding in and of itself isn't a reason for cessation of interdental cleaning but is an indicator of inflammation that has to be treated by interdental cleaning.²⁹ Evidence associated with contemporary practices for mechanical oral hygiene to stop periodontitis mainly relies on studies with gingivitis patients. General recommendations concerning the perfect oral hygiene devices and procedures are still inconclusive.³⁰

5. CONCLUSION

General established recommendations should be maintained, as these are anchored in patients' minds. So as to enhance the amount of oral hygiene the first approach presumably remains an individually tailored instruction to a scientific oral hygiene procedure which has combination of various oral cleansing aids.

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