

## ORIGINAL ARTICLE

# EFFICACY OF CONVENTIONAL DENTIFRICE IN CONTROLLING DENTAL PLAQUE, GINGIVAL BLEEDING AND PERIODONTAL DISEASE: A CLINICAL STUDY

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### ABSTRACT:

**Background:** Elimination of microbial dental plaque biofilm prevents gingivitis, periodontitis, and dental cavities. Although, brushing teeth twice a day and daily flossing is highly effective in plaque reduction, over 50% of adults have gingivitis on an average of 3 to 4 teeth. The present study was conducted to assess the efficacy of conventional dentifrice in controlling dental plaque, gingival bleeding and periodontal diseases. **Materials & Methods:** This study was conducted in the department of periodontics in 2015. It consisted of 100 patients with periodontal diseases. Plaque index was scored on all four surfaces (buccal, lingual, mesial, and distal) of six teeth (16, 12, 24, 44, 32, 36). The mean index was calculated by dividing the sum of number from scale by the total number of sites scored within the mouth. Bleeding index was measured by guiding probe through the gingival sulcus in the first and third quadrants from the buccal aspect and in the second and fourth quadrant from the oral aspect. Gingival index was scored on the buccal marginal gingiva of the Ramfjord teeth. By summing the individual GBI scores and dividing that sum by the number of sites graded for each subject. All the indices will be evaluated using a visual analogue score of 0-3. The score for the assessment was nil - 0, mild - 1, moderate - 2, and severe - 3. **Results:** Out of 100 patients, 50 were males and 50 were females. The difference was non - significant ( $P > 0.05$ ). The plaque index was 1.6, 1.52, 1.12 and 1.02 at baseline, 2 weeks, 4 weeks and 6 weeks respectively. There was significantly reduction in plaque index from baseline to 2 weeks, 4 weeks and 6 weeks ( $P < 0.05$ ). The gingival index at baseline, 2 weeks, 4 weeks and 6 weeks was 2.52, 1.58, 1.00 and 0.84 respectively. There was significant reduction in gingival index from baseline to 2 weeks, 4 weeks and 6 weeks ( $P < 0.05$ ). The bleeding index was 2.14, 2.01, 1.53 and 0.82 at baseline, 2 weeks, 4 weeks and 6 weeks respectively. There was significant reduction in gingival index from baseline to 2 weeks, 4 weeks and 6 weeks ( $P < 0.05$ ). **Conclusion:** Conventional tooth paste found effective in treating gingivitis and periodontitis. There is need to motivate the general population regarding usefulness of tooth brushing with conventional tooth paste. Hence it can be used as an adjunct in periodontal therapy.

**Key words:** Bleeding, Conventional tooth paste, Periodontal diseases

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## INTRODUCTION

Elimination of microbial dental plaque biofilm prevents gingivitis, periodontitis, and dental cavities. Although, brushing teeth twice a day and daily flossing is highly effective in plaque reduction, over 50% of adults have gingivitis on an average of 3 to 4 teeth. Dental plaque is a soft, non- mineralised, microbial biofilm that consists of complex communities of bacterial species that reside on tooth surfaces or soft tissues. It accumulates on and adheres to teeth, dental restorations and artificial appliances in the mouth. It is composed of bacteria,

salivary glycoproteins arranged in matrix of extracellular material.<sup>1</sup> Dental plaque appears as yellowish or grey deposits which can be only removed mechanically. Its removal is necessary in controlling disease activity. Regular removal of the plaque is, therefore, essential and has been the cornerstone of disease prevention. It can be subgingival or supragingival depending upon their location.<sup>2</sup>

If there is complete removal of plaque, then only caries can be prevented. For removal of plaque, approaches such as mechanical removal of plaque, local or systemical use of

antimicrobial drugs, alteration in plaque biochemistry, prevention of bacterial attachment to the tooth surface; and alteration of plaque ecology is important. The removal of plaque from interdental surfaces remains an important life-long objective for dental patients.<sup>3</sup> Bacteria in dental plaque are one of the main factors causing periodontal inflammation, therefore, careful plaque control is very important. However, mechanical plaque removal is inadequately performed by most members of the population. The need for additional help in controlling bacterial plaque provides the rationale for patients to use antimicrobial dentifrices in addition to their mechanical oral hygiene regimens. A common problem with all interdental cleaning aids is patient dexterity and motivation.<sup>4</sup> Various antiplaque agents such as tooth paste, tooth powder are of paramount importance in preventing accumulation of plaque and hence dental caries. In market various dentifrices are available. All provides significant results. It should have anti-inflammatory, antioxidant, and antiplaque activity. A good quality tooth paste should be able to remove dental plaque effectively.<sup>5</sup> The present study was conducted to assess the efficacy of conventional dentifrice in controlling dental plaque, gingival bleeding and periodontal diseases.

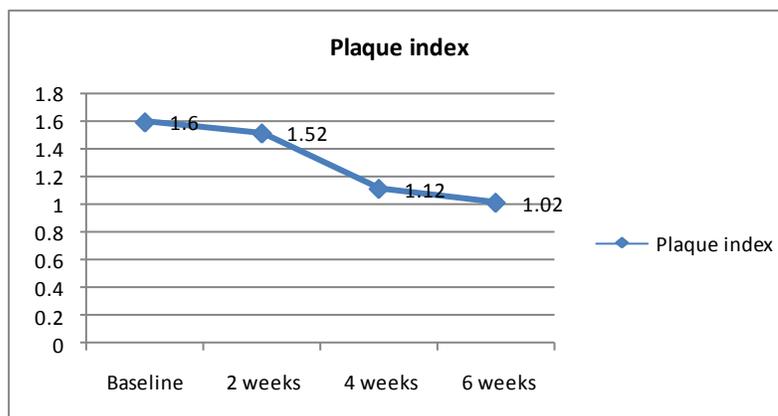
**MATERIALS & METHODS**

This study was conducted in the department of periodontics in 2015. It comprised of 100 patients having periodontal diseases. Patients were informed regarding the study and written consent was taken. Patient information such as name, age, sex, etc was recorded. Patients <18 years, pre-genetic disorder, endocrinal disorders, pregnant and lactating women were excluded from the study. Patients were evaluated at the interval of 2 weeks for a period of 6 weeks.

**Table I** Distribution of Patients

Total - 100		
Male	Female	P value
50	70	0.1

**Graph I** Assessment of Plaque Index



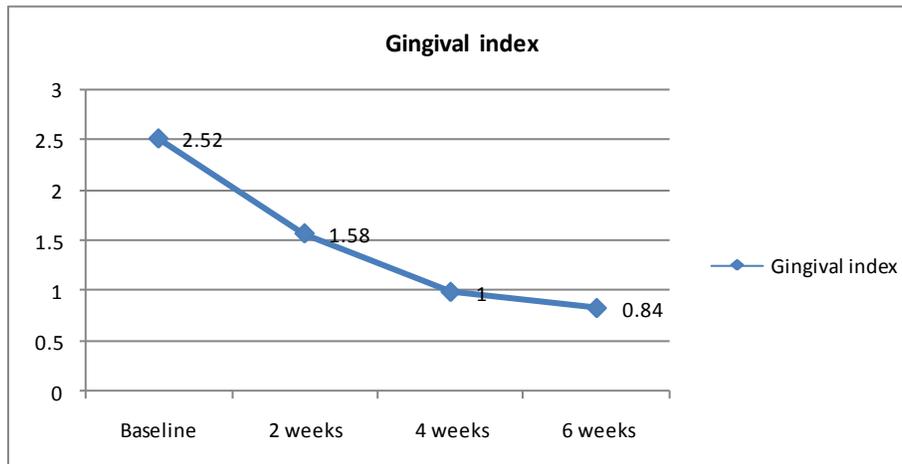
Plaque index was scored on buccal, lingual, mesial, and distal surfaces of six teeth such as 16, 12, 24, 44, 32 and 36. The mean index was calculated by dividing the sum of number from scale by the total number of sites scored within the mouth. Bleeding index was measured by guiding probe through the gingival sulcus in the first and third quadrants from the buccal aspect and in the second and fourth quadrant from the oral aspect.

Gingival index was scored on the buccal marginal gingiva of the Ramfjord teeth. By summing the individual GBI scores and dividing that sum by the number of sites graded for each subject. All the indices will be evaluated using a visual analogue score of 0-3. The score for the assessment will be nil - 0, mild - 1, moderate - 2, and severe - 3. Results thus obtained were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

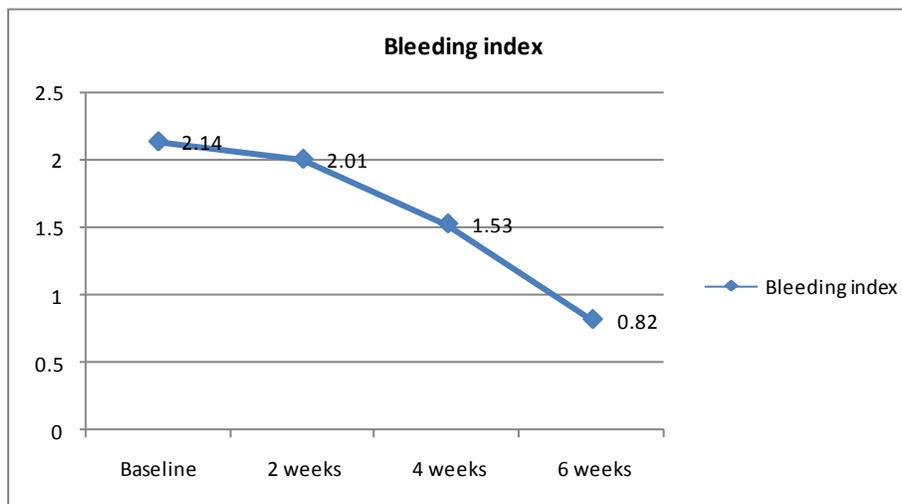
**RESULTS**

Table I shows that out of 100 patients, 50 were males and 50 were females. The difference was non - significant (P > 0.05). Graph I shows that the plaque index was 1.6, 1.52, 1.12 and 1.02 at baseline, 2 weeks, 4 weeks and 6 weeks respectively. There was significantly reduction in plaque index from baseline to 2 weeks, 4 weeks and 6 weeks (P < 0.05). Graph II shows that the gingival index at baseline, 2 weeks, 4 weeks and 6 weeks was 2.52, 1.58, 1.00 and 0.84 respectively. There was significant reduction in gingival index from baseline to 2 weeks, 4 weeks and 6 weeks (P < 0.05). Graph III shows that the bleeding index was 2.14, 2.01, 1.53 and 0.82 at baseline, 2 weeks, 4 weeks and 6 weeks respectively. There was significant reduction in gingival index from baseline to 2 weeks, 4 weeks and 6 weeks (P < 0.05).

**Graph II** Assessment of Gingival index



**Graph III** Assessment of Bleeding index



## DISCUSSION

The indication for dentifrices is mainly based on the presence of fluoride, antimicrobial agents that aim at further reducing plaque formation and/or removing a previously established plaque. Additionally, dentifrices are associated to sense of a pleasant flavor and coolness after usage. Dentifrices have also been used as plaque removal aids, especially because of their abrasive agents. The commonly used abrasive agents include silica, carbonates, alumina and more recently, perlite. In addition to fluoride release and presence of antimicrobial agents, the actual adjunct role of dentifrices to mechanical removal of dental plaque is contradictory.<sup>6</sup>

We evaluated the efficacy of conventional tooth paste in controlling plaque index. We found that there was significantly reduction in plaque index from baseline to 2 weeks, 4 weeks and 6 weeks. Our results are in agreement

with Jurenka JS et al.<sup>7</sup> Similar results were seen in the study of Lakshmi SS.<sup>8</sup>

We also evaluated gingival index in present study and found that there was significant reduction in gingival index from baseline to 2 weeks, 4 weeks and 6 weeks. Carnelio S<sup>9</sup> found similar results in his study. The bleeding index score was also showed significant reduction recorded at baseline, 2 weeks, 4 weeks and 6 weeks. Our results are in agreement with Moran J et al.<sup>10</sup>

On the other hand, Eid and Talic<sup>11</sup> compared toothbrushing with dentifrice and with water and found that the former was more efficient in removing dental plaque. In that study, the authors used parallel groups and toothbrushing was not performed by the participants, but rather by a dentist.

Regular oral hygiene is mandatory for dental plaque control. It is dependent on the individual's instruction and motivation and use of appropriate means. This way, within the available arsenal for controlling supragingival plaque,

toothbrush, dental floss, interdental brushes, and end-tufted brushes among others are often used.<sup>12</sup> Toothbrush is the most used plaque control device. As adjuncts to toothbrushing, dentifrices and rinsing solutions have been proposed, in order to enhance the plaque removal efficacy.

### CONCLUSION

Conventional tooth paste found effective in treating gingivitis and periodontitis. There is need to motivate the general population regarding usefulness of tooth brushing with conventional tooth paste. Hence it can be used as an adjunct in periodontal therapy.

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