

Original Article

Efficacy of Chlorhexidine v/s Herbal mouthwash mouth wash in college students: A comparative study

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ABSTRACT:

Background: Dental plaque is the major etiologic agent for the initiation of gingivitis. Gingival disease can progress to periodontitis which if left untreated may eventually compromise the entire periodontium. Various mouth rinses are available in the market, amongst which Chlorhexidine is the most popular. It is recognized as the primary agent for chemical plaque control, its clinical efficacy being well known to the profession. But it cannot be used on a long term basis because of various side effects like brown discoloration, taste perturbation, oral mucosal lesions, parotid swelling, enhanced supragingival plaque formation and sometimes unacceptable taste. **Aim of the study:** To study efficacy of Chlorhexidine vs Herbal mouthwash mouth wash in college students. **Materials and methods:** The study was conducted on students of the college with each group having 40 students. Gingival index (GI) and plaque index (PI) index score differences were analyzed in the students. All the recordings were done by the same examiner, the baseline scores were brought down near to 0 by supragingival scaling and polishing and it was confirmed with the of disclosing agent. Subjects were randomly allocated via simple random sampling technique (lottery method) to the two groups and were asked to refrain from mechanical plaque control (tooth brushing and flossing) but to rinse with mouthwashes as per prescribed therapeutic dose for 5 days. **Results:** We observed that both the groups had significant improvement in mean plaque index over 6 days. The result in improvement of plaque index in both the groups is comparative and is statistically significant. We observed that significant improvement in mean GI of the patients was observed in both the groups. The results were statistically significant. **Conclusion:** Within the limitations of the present study, it can be concluded that chlorhexidine mouthwash and herbal mouthwash are effective in prevention of gingivitis and periodontitis. Thus, herbal mouthwash can be effectively used in place of chlorhexidine mouthwash to avoid its long term side effects.

Keywords: Chlorhexidine, herbal mouthwash, plaque, gingival health

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INTRODUCTION:

Dental plaque is the major etiologic agent for the initiation of gingivitis. ¹ Gingival disease can progress to periodontitis which if left untreated may eventually compromise the entire periodontium. ² Regular plaque control helps in controlling the progression of gingival diseases. Mechanical plaque control remains the gold standard of periodontal therapy. However, mechanical plaque control by means of tooth brushing and flossing is not always completely effective as it is based on the dexterity and motivational level of individual. ²

Moreover, bacteria present in the soft tissues can re-colonize the tooth surfaces even after mechanical plaque control. ³ Adjunctive use of chemical plaque control agents had shown better efficacy in the control of plaque and gingival inflammation. ⁴ Various mouth rinses are available in the market, amongst which Chlorhexidine is the most popular. It is recognized as the primary agent for chemical plaque control, its clinical efficacy being well known to the profession. It has also been recognized by the pharmaceutical industry as the positive control against which the

efficacy of alternative antiplaque agents should be measured, and has earned its eponym of gold standard. But it cannot be used on a long term basis because of various side effects like brown discoloration, taste perturbation, oral mucosal lesions, parotid swelling, enhanced supragingival plaque formation and sometimes unacceptable taste.^{5, 6} Hence, the present study was conducted to study efficacy of Chlorhexidine vs Herbal mouthwash mouth wash in college students.

MATERIALS AND METHODS:

A randomized controlled clinical study was conducted in the Department of Public Health Dentistry, Dasmesh Institute of Research and Dental Sciences, Faridkot, Punjab, India. The study was conducted on students of the college with each group having 40 students. The study was approved from ethics committee of college and an informed written consent was obtained from each student after explaining them the protocol and procedure of the study. Gingival index (GI) and plaque index (PI) index score differences were analyzed in the students. Materials used were chlorhexidine mouthwash and herbal mouthwash (Hiora, Himalaya, India), disclosing agent, scalars and polishing cups. Indices recorded were GI8 on all teeth except third molars with four sites per tooth-mesial, distal, facial/buccal and palatal/lingual and PI. Systematically healthy subjects with GI<1, at the time of examination, presence of 20 teeth with minimum of 5 teeth were enrolled in the study. Subjects with severe mal-aligned teeth, orthodontic appliances, fixed partial denture, removable partial denture, tobacco chewers, smokers and those individuals medically compromised were excluded. At

the beginning of the study the GI and PI scores were recorded in order to assess the oral hygiene status of the subjects. All the recordings were done by the same examiner, the baseline scores were brought down near to 0 by supragingival scaling and polishing and it was confirmed with the of disclosing agent. Subjects were randomly allocated via simple random sampling technique (lottery method) to the two groups and were asked to refrain from mechanical plaque control (tooth brushing and flossing) but to rinse with mouthwashes as per prescribed therapeutic dose for 5 days. 10 ml of 0.2% chlorhexidine and 5 ml of Hiora were assigned to Group 1 and Group 2 respectively for rinsing twice daily for 1 min for 5 days. GI and PI scores were recorded by same examiner who was unaware of the mouthwashes, on the 6th day.

The statistical analysis of the data was done using SPSS version 11.0 for windows. Chi-square and Student’s t-test were used for checking the significance of the data. A p-value of 0.05 and lesser was defined to be statistical significant.

RESULTS:

Table 1 shows comparison of PI between group 1 and 2. We observed that both the groups had significant improvement in mean plaque index over 6 days. The result in improvement of plaque index in both the groups is comparative and is statistically significant (p<0.05). [Fig 1] Table 2 shows the comparison of GI between group 1 and 2. We observed that significant improvement in mean GI of the patients was observed in both the groups. The results were statistically significant.

Table 1: Comparison of PI between group 1 and 2

Groups	Mean Plaque Index (Mean + SD)		p-value
	Day 0	Day 6	
Group 1 (n=40)	2.65±0.29	1.78±0.39	0.02
Group 2 (n=40)	2.59±0.63	1.83±0.32	0.01

Fig 1: Mean Plaque index in Group 1 and 2 participants on day 0 and day 6

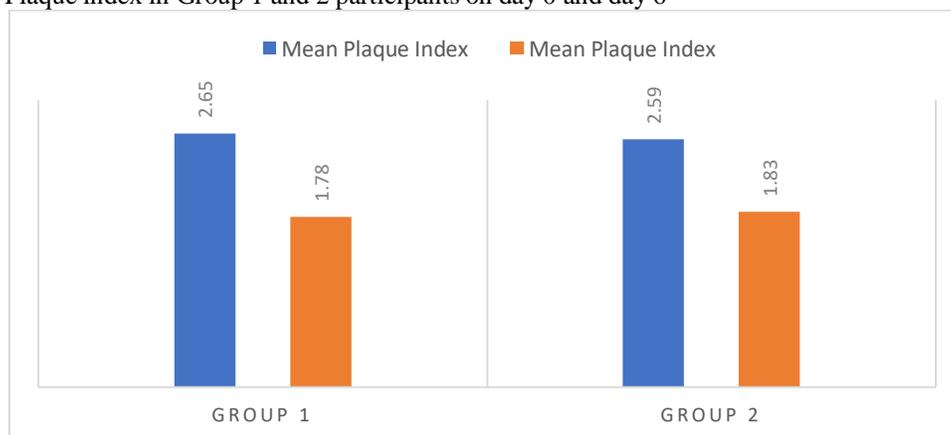
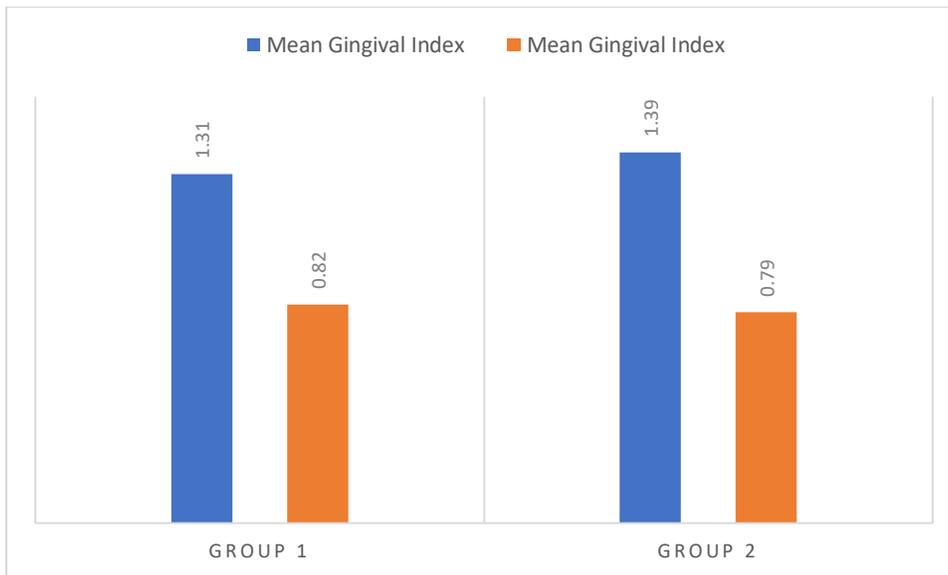


Table 2: Comparison of GI between group 1 and 2

Groups	Mean Gingival Index (Mean + SD)		p-value
	Day 0	Day 6	
Group 1 (n=40)	1.31±0.12	0.82±0.11	0.02
Group 2 (n=40)	1.39±0.30	0.79±0.16	0.05

Fig 2: Mean Gingival index in Group 1 and 2 participants on day 0 and day 6



DISCUSSION:

In the present study, we observed that chlorhexidine mouthwash and herbal mouthwash are significantly effective in improving the gingival health and reducing plaque on the teeth. On comparing both the products, this can be inferred that both products are effective similarly. Rezaei S compared the efficacy of natural herbal mouthwash containing *Salvadora persica* ethanol extract and Aloe vera gel with chlorhexidine on gingival index (GI) of intubated patients in ICU. Seventy-six intubated patients (18–64 years old with mean age 40.35 ± 13.2) in ICU were admitted to this study. The patients were randomly divided into two groups: (1) Herbal mouthwash and (2) chlorhexidine solution. Before the intervention, the GIs was measured by modified GI device into two groups. The mouth was rinsed by mouthwashes every 2–3 h for 4 days. 2 h after the last intervention, GIs were determined. Along with mechanical methods, herbal mouthwash in reducing GI was statistically significant than that of chlorhexidine. The results of this study introduced a new botanical extract mouthwash with dominant healing effects on GI higher than that of synthetic mouthwash, chlorhexidine. Manipal S et al compared the effect of two broad categories of mouth washes namely chlorhexidine and herbal mouth washes. Eleven randomized control studies were pooled in for the meta-analysis. The search was done from the Pub Med Central listed studies with

the use keywords with Boolean operators (chlorhexidine, herbal, mouth wash, randomized control trials). The fixed effects model was used for analysis. This meta-analysis brings to light, the fact that a wide range of newer herbal products are now available. As with a plethora of herbal mouthwashes available it is the need of the hour to validate their potential use and recommendation. This study found that only two studies favor the use of herbal products and four studies favor the use of chlorhexidine, of the 11 studies that were analyzed. They concluded that more studies are required under well controlled circumstances to prove that herbal products can equate or replace the ‘gold standard’ chlorhexidine. Herbal products are heterogeneous in nature, their use should be advised only with more scientific proof.^{7, 8} Vinod KS, et al compared and analyzed the antimicrobial efficacy of 0.12% chlorhexidine and new formulated herbal mouthwash after using for 14 days. A total of 200 dental students were selected randomly, comprising of two groups, 100 in each, aged between 18 and 22 years with gingival index of score II. The first group was advised to oral rinse with 0.12% chlorhexidine mouthwash and the second group with new formulated herbal mouthwash for 14 days. Saliva samples were collected on the day 0 (baseline), followed by day 7 and 14 and microbial colony count was performed. Microbial colonies were reduced better

in chlorhexidine group on the day 7 whereas, on day 14, greater reduction was observed in the herbal group in both gender groups with high statistical significance. They concluded that herbal mouthwash formulation performed effectively well on long-term usage, could be used as an alternative mouthwash to overcome the disadvantages of chlorhexidine. Prasad KA et al compared the antiplaque efficacy of herbal and chlorhexidine gluconate mouthwash. Totally 100 preclinical dental students were randomized into three groups (0.2% chlorhexidine, Saline and herbal mouthwash). All the groups were made to refrain from their regular mechanical oral hygiene measures and were asked to rinse with given respective mouthwashes for 4 days. The gingival and plaque scores are evaluated on 1st day, and 5th day, and differences were compared statistically. There was no significant difference in the gingival index (GI) and plaque index (PI) scores of the pre-rinsing scores of three groups and mean age of subjects in the three age groups, suggesting selected population for the three groups was homogenous. Mean GI and PI scores at the post rinsing stage were least for the Group A, followed by B and C. The difference of post rinsing PI and GI scores between Group A and Group B were statistically non-significant, which means anti-gingivitis and plaque inhibiting properties are similar for both. They concluded that chlorhexidine gluconate and herbal mouthwash (Hiora) showed similar anti plaque activity with latter showing no side effects.^{9, 10}

CONCLUSION:

Within the limitations of the present study, it can be concluded that chlorhexidine mouthwash and herbal mouthwash are effective in prevention of gingivitis and periodontitis. Thus, herbal mouthwash can be effectively used in place of chlorhexidine mouthwash to avoid its long term side effects.

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