

## Assessment Of Effectiveness Of An Essential Oil Mouth Rinse In Improving Oral Health In Orthodontic Patients

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### ABSTRACT

**Background:** During orthodontic treatment, the development of white spot lesions is almost inevitable when oral hygiene is poor. The present study was conducted to assess effectiveness of an essential oil mouth rinse in improving oral health in orthodontic patients.

**Materials & Methods:** 60 patients undergoing orthodontic treatment of both genders were divided into 2 groups. Group I patients underwent brushing and flossing and group II underwent brushing, flossing and use of listerine. Parameters such as bleeding (BI), gingival (GI) and plaque indices (PI) that provided baseline values (T1) were recorded at baseline and at 3 months (T2) and 6 months (T3).

**Results:** Group I had 14 males and 16 females and group II had 15 males and 15 females. Bleeding index at baseline was 0.183 and 0.28, at 3 months was 0.141 and 0.86 and at 6 months was 0.261 and 1.04 in group I and II respectively. The marginal gingival index at baseline was 0.781 and 0.891, at 3 months was 0.892 and 1.43 and at 6 months was 0.961 and 1.92 in group I and II respectively. Plaque index was 0.793 and 0.832 at baseline, 0.931 and 1.781 at 3 months and 1.051 and 2.171 at 6 months in group I and II respectively. The difference was significant ( $P < 0.05$ ).

**Conclusion:** Listerine found to be effective in reducing plaque and gingivitis development in orthodontic patients.

**Key words:** Listerine, mouth wash, orthodontics

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### Introduction

During orthodontic treatment, the development of white spot lesions is almost inevitable when oral hygiene is poor.<sup>1</sup> Demineralization is more commonly seen on the buccal surfaces of orthodontically

treated teeth than on untreated teeth. This is due to the prolonged plaque retention around the brackets, which causes a decrease in pH when certain bacteria interact with sugars.<sup>2</sup> These incipient lesions can appear in as little as 2 to 3 weeks after plaque accumulation in bucco-gingival areas of the teeth.<sup>3</sup> The presence of white spot lesions may lead to patient dissatisfaction at the end of orthodontic treatment and may necessitate cosmetic intervention by a dentist. If these lesions progress to decay, more extensive dental procedures may be needed.<sup>4</sup>

Tooth brushing with a dentifrice containing anti-plaque agents and interdental cleaning with toothpicks and dental floss has been proven to control plaque and gingivitis. A proximal brush is recommended in order to access open interdental spaces.<sup>5</sup> Studies indicate that regular professional plaque control by a hygienist can offer maintenance of a healthy periodontium.<sup>6</sup> In addition, mouthrinses can prevent plaque growth and improve oral health by inhibiting the proliferation rate of bacteria in plaque or by preventing attachment of bacteria to dental surfaces. Over the past 100 years, phenolic compounds have been acknowledged to be germicidal and effective in reducing plaque and gingivitis.<sup>7</sup> The present study was conducted to assess effectiveness of an essential oil mouthrinse in improving oral health in orthodontic patients.

### Materials & Methods

The present study comprised of 60 patients undergoing orthodontic treatment of both genders. All were enrolled with their written consent.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups. Group I patients underwent brushing and flossing and group II underwent brushing, flossing and use of listerine. All patients received a prophylaxis and instructions on how to brush and floss. Parameters such as bleeding (BI), gingival (GI) and plaque indices (PI) that provided baseline values (T1) were recorded at baseline and at 3 months (T2) and 6 months (T3). Results thus obtained were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

### Results

**Table I Distribution of patients**

Groups	Group I	Group II
Status	Brushing and flossing	brushing, flossing and listerine
M:F	14:16	15:15

Table I shows that group I had 14 males and 16 females and group II had 15 males and 15 females.

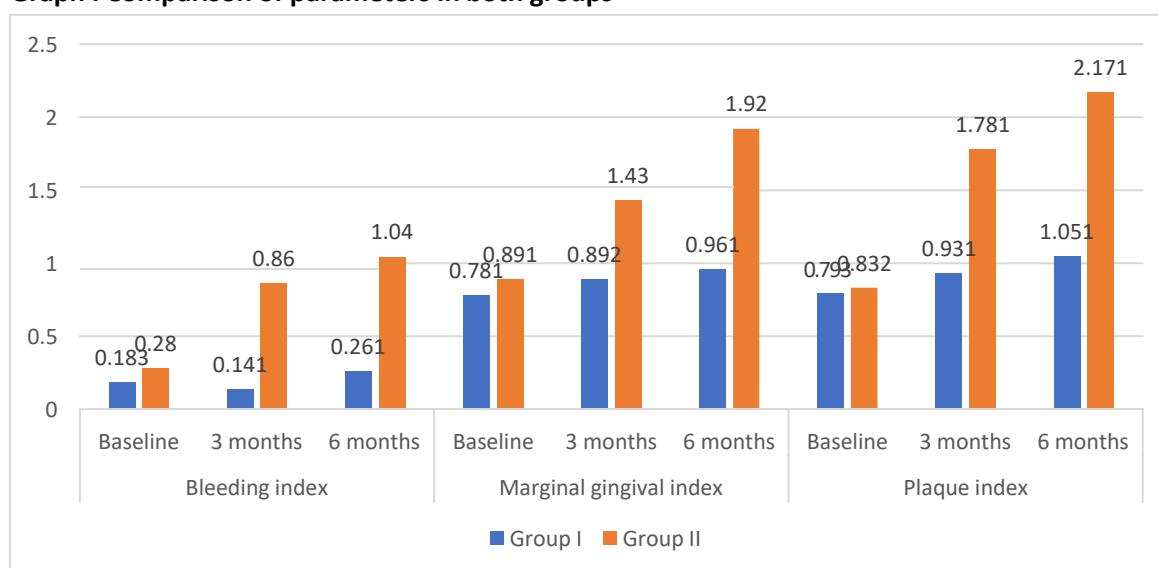
**Table II Comparison of parameters in both groups**

Parameters	Variables	Group I	Group II	P value
Bleeding index	Baseline	0.183	0.28	0.01
	3 months	0.141	0.86	
	6 months	0.261	1.04	
Marginal gingival index	Baseline	0.781	0.891	0.04
	3 months	0.892	1.43	
	6 months	0.961	1.92	
Plaque index	Baseline	0.793	0.832	0.02

	3 months	0.931	1.781
	6 months	1.051	2.171

Table II, graph I shows that bleeding index at baseline was 0.183 and 0.28, at 3 months was 0.141 and 0.86 and at 6 months was 0.261 and 1.04 in group I and II respectively. The marginal gingival index at baseline was 0.781 and 0.891, at 3 months was 0.892 and 1.43 and at 6 months was 0.961 and 1.92 in group I and II respectively. Plaque index was 0.793 and 0.832 at baseline, 0.931 and 1.781 at 3 months and 1.051 and 2.171 at 6 months in group I and II respectively. The difference was significant ( $P < 0.05$ ).

**Graph I Comparison of parameters in both groups**



**Discussion**

The development of gingivitis and hyperplastic gingiva is also a well-recognized problem during orthodontic treatment with fixed appliances.<sup>8</sup> The primary causative factor in the development of gingivitis is the insufficient removal of supragingival plaque.<sup>9</sup> The presence of orthodontic fixed appliances makes tooth brushing more difficult and predisposes the patient to plaque build-up on the buccal surfaces of teeth around the brackets.<sup>10</sup> Additionally, many orthodontic patients especially children and adolescents, fail to floss because they find this procedure time-consuming and tedious in the presence of orthodontic archwires.<sup>11,12</sup> Several clinical studies have shown an increase in the levels of Streptococcus mutans and lactobacilli, the main pathogens associated with the initiation and development of caries, in the dental plaque after placement of orthodontic attachments. In addition, poor oral hygiene may increase the progression of gingival hyperplasia, eventually requiring intervention or even surgical reduction in some cases.<sup>13</sup> The present study was conducted to assess effectiveness of an essential oil mouthrinse in improving oral health in orthodontic patients.

In present study, group I had 14 males and 16 females and group II had 15 males and 15 females. Tufekri et al<sup>14</sup> in their study patients within their first 6 months of orthodontic treatment were assigned either to the brushing+ flossing or brushing+ flossing+ Listerine group. Initially, all of the participants received a prophylaxis and instructions on how to brush and floss. Measurements were recorded for the bleeding, gingival, and plaque indices (BI, MGI, and PI, respectively) that provided

baseline values (T1). Subsequent measurements were taken at 3 months (T2) and 6 months (T3). Mean BI, MGI, and PI at T1, T2, and T3 were compared statistically between the groups using repeated measures analysis of variance. The response profiles for the BI, MGI, and PI over time were significantly different between the two groups. Patients who had Listerine in their daily oral hygiene regimen exhibited significantly lower scores for all three indices at T2 and T3 than the patients who only brushed and flossed.

We found that bleeding index at baseline was 0.183 and 0.28, at 3 months was 0.141 and 0.86 and at 6 months was 0.261 and 1.04 in group I and II respectively. The marginal gingival index at baseline was 0.781 and 0.891, at 3 months was 0.892 and 1.43 and at 6 months was 0.961 and 1.92 in group I and II respectively. Plaque index was 0.793 and 0.832 at baseline, 0.931 and 1.781 at 3 months and 1.051 and 2.171 at 6 months in group I and II respectively. Alshehri et al<sup>15</sup> in their study 26 studies supported the use of essential-oil-containing mouth rinse (LISTERINE) as an adjunct to daily oral health regimen. Most studies were conducted in healthy subjects, 2 studies in orthodontic patients, 1 each in xerostomia patients and mentally disabled patients. Of these, 13 studies supported the short-term (<3 months) and 13 studies supported the long-term (3–6 months) efficacy of LISTERINE mouthrinse as an adjunct to mechanical methods. It provides strong evidence of the anti-plaque and anti-gingivitis effects of essential-oil-containing mouthrinse LISTERINE as an adjunct to daily tooth brushing and inter dental cleaning.

## Conclusion

Authors found Listerine to be effective in reducing plaque and gingivitis development in orthodontic patients.

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