



Orthodontology

A STUDY TO EVALUATE THE ORAL HYGIENE MAINTAINENCE OF PATIENTS ALONG THE COURSE OF ORTHODONTIC TREATMENT- A QUESTIONNAIRE BASED SURVEY

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ABSTRACT Orthodontics is a basic dental practice that includes a patient, orthodontist, assistants, cleaners, medical coordinators, front desk staff and sometimes a dentist or periodontist. While undergoing orthodontic treatment, it is even more vital because the braces, invisalign aligners and other orthodontic appliances you wear during treatment create nooks and crannies that can trap food and create perfect hiding spots for bacteria and plaque, spelling bad news for teeth. **AIM:** The aim of this study was to identify the various protocols followed by orthodontists to maintain the oral hygiene status of patient along the course of orthodontic treatment by means of a survey. A web-based questionnaire (google form, google Inc., California, USA) was created and sent to various orthodontic professionals that included post graduate trainees, faculty and private practitioners **RESULTS:** Before starting orthodontic treatment 80% did compulsory oral hygiene prophylaxis for the patient. 50% preferred ultrasonic scaling after bracket placement if the patient is in need of oral prophylaxis. All most 77% opinion was that oral prophylaxis should be done as and when required and did not specify a time period Inter dental brush and mouth wash was the preferred cleaning aid by 83.3%. 100% reported that malocclusion can worsen the oral hygiene status and after debonding oral prophylaxis was compulsory. **CONCLUSION:** Orthodontists should increase their awareness and commitment for instructing their patient on how to maintain good oral hygiene in order to prevent caries and periodontal disease during orthodontic treatment.

KEYWORDS : Orthodontic treatment, oral hygiene, questionnaire study

INTRODUCTION:

Orthodontics is a basic dental practice that includes a patient, dentist, or orthodontist, assistants, cleaners, medical coordinators, front desk staff and sometimes a dentist or periodontist. On removal of the braces, this can also leave stains and white marks on the teeth. There are habits and techniques that can be utilized to minimize such risks and complications in the course of orthodontic treatment. Foods trapped near the tooth area can lead to the formation of plaque - a small combination of pollutants and organic debris containing harmful bacteria. Dental decay usually occurs on smooth surfaces and is a common complication in orthodontics, affecting 2% to 96% of all orthodontic patients.¹

Oral hygiene education is essential in all aspects of orthodontic treatment and the use of compounds such as powered or electric toothbrushes, interproximal brushes, chlorhexidine mouthwashes, fluoride mouthwashes and regular professional cleaning must be reinforced. An excellent system of communication between the general dentist, paediatric dentist and dental hygienist is crucial to reinforcing oral hygiene.

AIM:

The purpose of this study was to conduct research on protocols followed by orthodontists that help to maintain the patient's oral hygiene status during orthodontic treatment.

MATERIALS AND METHODS:

A web-based questionnaire (google Inc., Abc alphabet, California, USA) was created and submitted to various orthodontic professionals like postgraduate trainees, faculties and private practitioners.

RESULTS:

Prior to initiating orthodontic treatment 80% of the responses suggested doing compulsory oral hygiene prophylaxis for the patient. 50% preferred ultrasonic scaling after bracket placement if the patient is in need of oral prophylaxis. 77% opinion was that oral prophylaxis should be done as and when required and did not specify a time. Inter-dental brush and mouthwash was the preferred cleaning aid by 83.3%. 100% reported that malocclusion could significantly exacerbate the condition of oral hygiene and after debonding oral prophylaxis was compulsory. Fixed lingual retainer was preferred by 45.5% for retention while 36% suggested the use of a removable Hawley's retainer.

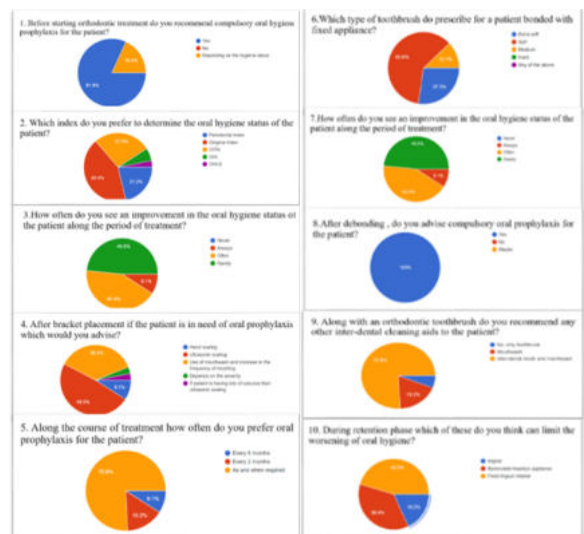


Figure A

Figure B

DISCUSSION:

Tooth brushing is the first line of defense for most patients but unless there is attention to placement and positioning of the bristles, plaque may remain on the teeth, especially around the brackets or bands. The introduction of fixed orthodontic appliances induces a rapid increase in the volume of dental plaque, which has a lower pH than the plaque found in nonorthodontic patients.²

The gingival and periodontal health status of young patients undergoing fixed appliance therapy has to be monitored during orthodontic tooth movement as it may initiate gingivitis or cause periodontal attachment loss.³ Various reports have shown that orthodontic patient's knowledge on their gingival health was poor. Without proper guidance, many people fail to follow these instructions. Also, many of them lack knowledge on the maintenance of oral hygiene.⁴ Public awareness of gum disease and particularly the role of dental plaque in relation to periodontal disease is poor,

presumably due to inadequate health education concerning these conditions. Majority of orthodontic patients did not know what plaque is and what does it cause. This was in agreement with Azodo and Umoh, who reported that only 12.6% of the participants knew dental plaque as soft debris on teeth.⁵ There is clear evidence that cessation of all oral hygiene during orthodontic treatment allows plaque accumulation and initiates gingival inflammations.

Among the various indices used to evaluate the oral hygiene status of patients in orthodontic treatment, gingival index (GI-42.4%) was preferred by most practitioners.

Flossing with braces can be a little more difficult, it is however extremely important for maintaining optimal oral health and oral hygiene during orthodontic treatment. Less expensive oral hygiene aids, floss threaders and other flossing aids designed for use during orthodontic treatment, should be dispensed during every orthodontic visit. Flossers and floss tools that feature age-appropriate designs and characters may improve compliance.

Interproximal brushes are interdental hygiene tools with various indications and have multiple benefits. Not only are they indicated for the initial stages of treatment but they also play a relevant role in maintaining oral health in the long term. Interdental brushes were recommended by 75.8% to clean around orthodontic appliances, as well as, open interdental spaces.⁶ Interdental brushes have shown better reductions in plaque and gingival inflammation compared to other devices such as wood sticks and floss in subjects without braces. Studies have shown their effectiveness in reducing biofilm and inflammation in interproximal spaces and underneath orthodontic devices, as compared to brushing and flossing.⁷ They have also been proven to remove biofilm up to 2-2.5 mm beneath the gingival margin. There is limited data on the effectiveness of toothpaste in the registry with orthodontic patients. While research shows that power toothbrushes are highly effective in plaque removal, manual toothbrushes—when used with the correct technique, frequency and duration—can be equally effective.⁸ Providing an average of 2 minutes for patients who prefer manual toothbrushes may encourage them to brush for the recommended amount of time. A systematic review on non-orthodontic individuals showed that a single brushing produced an average of 43 percent plaque removal.⁹ Some authors have found electric toothbrushes to be more effective than manual toothbrushes as mechanical cleaning aids in multi bracketed patients¹⁰, while others could not confirm this superior effect¹¹ or found manual toothbrushes to be superior to electric toothbrushes.¹²

There are risk factors associated with orthodontic appliances that may impact the final outcome such as white spot lesions (WSL) and others that are exacerbated such as gingivitis which can cause increased bleeding and discomfort.¹³ If WSLs are left untreated, they may progress to produce carious lesions and may present aesthetic problems. Thus, the prevention, diagnosis and treatment of WSLs is crucial to minimize tooth decay as well as tooth discoloration that could compromise the aesthetics of the smile.

Fixed lingual retainer was the choice for 45.5 % of the participants that helped to limit the worsening of oral hygiene. Fixed retainers are most commonly used in the orthodontic retention phase as they have a number of advantages, such as better aesthetics, no need for patient cooperation, effectiveness, and suitability for lifelong retention. However, their need for precision in bonding technique, fragility and tendency to cause periodontal problems by reducing oral hygiene are some of their disadvantages.

The benefits of fluoride are well known and it is a key part of any caries reduction protocol. Fluoride and good plaque control are important in reducing white spot lesions. It can be delivered via toothpaste, gels, rinses, and varnishes. Applying fluoride gel or other products containing a high concentration of fluoride to the teeth leaves a short-lived layer of calcium fluoride-like material on the enamel surface. The fluoride in this material is released when the pH drops in the mouth in response to acid production and is available to remineralize enamel¹⁴. Used properly, fluoride is a safe and effective agent that can be used to prevent and control dental caries. Studies suggest it may help reduce or eliminate the incidence of decalcification during orthodontic treatment but no delivery method has been shown to be superior to another¹⁵.

Patients undergoing orthodontic treatment are linked with significant

biofilm accumulation, thus exposing them to a greater risk of caries and gingivitis. Probiotic therapy is a new concept gradually emerging in the today's antibiotic dominated field and is being used for recurrent diseases. It relies on the concept of using harmless or good bacteria to suppress or eradicate pathogenic or bad bacteria that cause harmful diseases. The most commonly used probiotic bacterial strains belong to the genera *Lactobacillus* and *Bifidobacterium*.¹⁶ Although only a few studies have been conducted so far, the results of these studies have identified the positive role of probiotics in preventing and treating oral infections like dental caries, periodontal diseases and halitosis.¹⁷ As the resistance to antibiotics is emerging these days, it is wise to consider the unique concept of probiotic therapy in oral health.

Significant improvement in oral hygiene standards among orthodontic patients receiving periodic reading and oral hygiene assessment during orthodontic administration was observed compared to patients who received only oral hygiene instructions at the beginning of treatment. Ongoing research validates the need for repetitious instructions provided by oral health professionals to improve oral health outcomes among orthodontic patients.¹⁸

It is a challenge to motivate orthodontic patients for maintaining optimal oral health. Parental influence is decreasing and peer group influence is increasing. The solution must be personalized for individual patients, who should be coached by their oral health professionals to incorporate adequate oral health behaviour into their daily lives. Clinical specialists should also consider the psychological development of orthodontic patients. Erickson reports that adolescent orthodontic patients typically fall into one of these two groups: industry vs inferiority (age 7 to 11) and identity vs role confusion (age 12 to 17). In the younger group, children are more interested in competition and may value a reward system which makes contests highly appropriate.¹⁹

As orthodontic patients require continuous and rigorous oral hygiene control, caries prevention and maintenance of gingival health, more high-quality studies, involving different combinations of probiotic strains and of longer durations of intervention and follow-up are warranted.

CONCLUSION:

Orthodontic practitioners must live by the adage of “Do no harm,” being concerned first with patients' overall oral health and second with the correction of malocclusions. Orthodontists should increase their awareness and commitment to teaching their patient how to maintain oral hygiene to prevent caries and periodontal disease during orthodontic treatment. There is no perfect strategy in place to combat these ill effects. Practitioners have to develop, implement and periodically evaluate the efficacy of their strategies for keeping this “collateral damage” of orthodontic treatment to a minimum.

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