



RESEARCH ARTICLE

KNOWLEDGE OF AN ORTHODONTIST TOWARDS PERIODONTAL HEALTH CARE DURING ORTHODONTIC TREATMENT

*Dr. Kavarthapu Avinash and Dr. Kaarthikeyan Gurumoorthy

Saveetha Dental College, Chennai, India

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ABSTRACT

Aim: orthodontic corrections are required to maintain the periodontal tissues in health. When doing such treatment, there is a more chance of causing periodontal destruction which is a result of plaque present surrounding the orthodontic materials used. It is the duty of the orthodontist to reinforce the patient in maintaining the oral hygiene. The purpose of the present study was to evaluate the knowledge of an orthodontist towards the periodontal health care during orthodontic treatment.

Materials and Methods: The questionnaire was distributed to a total of 120 orthodontists randomly that includes clinical practitioners and post graduate students in South India Population. The questionnaire included a total of 16 questions describing the common gingival problems encountered during the course of treatment, control measures to prevent them and the duration of the follow up.

Results: Approximately three-quarters of responding orthodontists stated that gingival diseases are common during the orthodontic treatment while only 64.2% subjects know the ideal indicator for gingival diseases. However, half of the subjects believe that cervical third of the teeth is more prone for plaque accumulation in healthy subjects. The minority of subjects (27.5%) recommend scaling every time they change the wire and only 31.7% subjects recommended both oral prophylaxis and use of mouthwash in eliminating halitosis

Conclusion: The present study shows that there is a lack of awareness among orthodontic practitioners towards periodontal health. Hence, there is a need for every orthodontist to be aware of gingival diseases that prevail during the course of the treatment and the ways to prevent them from occurring.

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INTRODUCTION

It is an undeniable fact that sound periodontal health is a prerequisite for successful orthodontic therapy. The orthodontic treatment aimed at achieving acceptable function and aesthetic correction with functional teeth movements. Such movements are strongly associated with alterations in supportive periodontal tissues and the teeth as such (Gkantidis *et al.*, 2010). Currently, there was a tremendous increase in number of patients seeking orthodontic treatment to correct their malocclusion and if untreated there were reports of periodontal destruction (Gusmão *et al.*, 2011). As this treatment requires placement of brackets which are bonded to tooth structure, act as a site of more plaque accumulation. Therefore, the rate of periodontal problems is increasing in patients seeking orthodontic treatment at the point when contrasted with the past (Profit, 2007). Presently, there was no data accessible on the extent of oral health or periodontal

knowledge among the orthodontists in Asian countries. Orthodontic appliances, and additional mechanical procedures that are used to correct malocclusions are inclined to irritate gingiva and evoke an inflammatory response. The proximity of orthodontic appliances to the gingival tissues can lead to more plaque accumulation around the appliances and gingival sulcus as well. In addition to this, etching of the tooth surface favours plaque accumulation. Due to these obstructions, maintaining oral hygiene becomes very difficult and furthermore complicate the process of proficient orthodontic care (Zachrisson and Zachrisson, 1972, Boyd, 1983, Willmot, 2008). Unlike patients with well aligned teeth, those undergoing orthodontic therapy cannot effectively remove plaque due to the hindrance of these appliance. Cooperation of orthodontic patients is very essential as it is a prolonged treatment and thus involves keeping appointments and the maintenance of adequate oral hygiene and refraining from hard and sticky foods (Becker *et al.*, 2001). During fixed orthodontic therapy, technique and duration of tooth brushing and constant motivation of a patient plays a key role in oral hygiene maintenance. To adapt patients towards better oral

*Corresponding author: Dr. Kavarthapu Avinash,
Saveetha Dental College, Chennai, India.

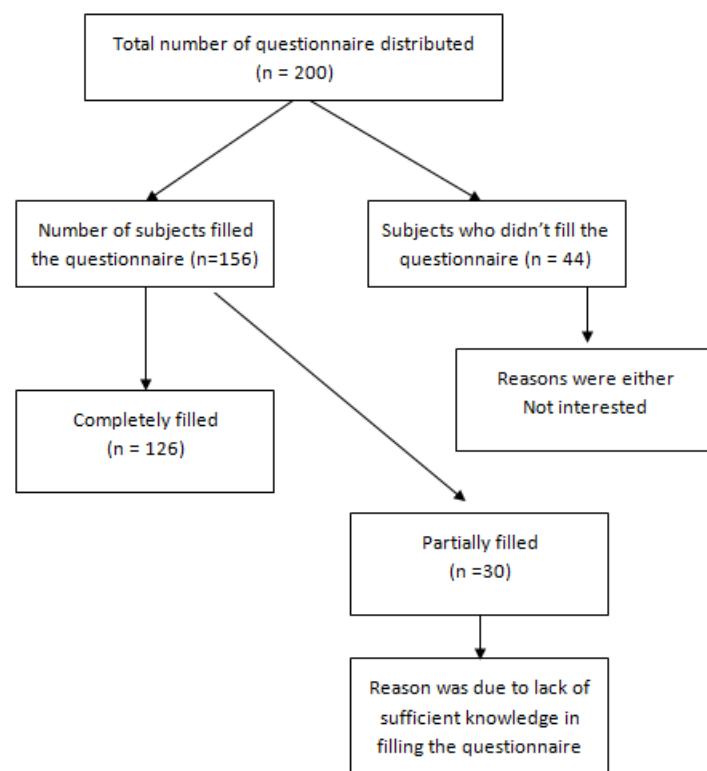
hygiene practices, it is the responsibility of the orthodontist to educate, motivate and reinforce the patient in maintaining oral hygiene. Also during every recall visit, the orthodontist should not only evaluate the tooth movement per se, but should also evaluate periodontal status and oral hygiene practices as well. To do this, the orthodontist should have an adequate knowledge about the relation of periodontal health and orthodontic appliance. As there was no literature our aim of the present study was to evaluate the knowledge of an orthodontist towards the periodontal health care during orthodontic treatment.

MATERIALS AND METHODS

The present survey was conducted by simple random sampling. This was a questionnaire based study. The questionnaire was distributed to a total of two hundred orthodontist specialist and scholars in South India. Other specialty dentists and general dentists were excluded from the study. The questionnaire was prepared under the guidance of periodontist and an orthodontist. It consists a total of sixteen questions describing common gingival problems encountered during the course of orthodontic treatment, control measures to prevent them, motivating patients about maintaining oral hygiene and duration of follow up. Prior to finalizing the questionnaire, a pilot study was done on ten subjects to check the feasibility, language and clarity. Ethical clearance was obtained from the ethical committee and systematic review board of Saveetha dental college holding a number STP/SDMDS15PERI8. The research was conducted in accordance with the Declaration of Helsinki. Written informed consent that was approved by ethical committee, stating the willingness of participating in the study was taken from each subject. The information obtained was entered into a Microsoft Excel Spreadsheet. Statistical analysis was done using a proprietary windows program software IBM. SPSS Statistics version 20. Statistical tests that are applied were chi-square test and frequency test with a confidence interval of 95%.

RESULTS

Out of two hundred copies of questionnaire distributed, only one hundred fifty-six subjects responded to the questionnaire. The reason for not responding could be due to lack of time or not interested or because of insufficient knowledge towards periodontal health. Among one hundred fifty-six responders, thirty-six subjects completed the questionnaire partially and were therefore excluded from the study. Hence, a total number of one hundred twenty subjects filled the questionnaire completely and was depicted as flow Chart 1. Approximately three-quarters of orthodontists stated that gingival diseases are common during the orthodontic treatment while only 64.2% subjects were aware of the ideal indicator for gingival diseases. However, half of the subjects believe that cervical third of the teeth is more prone for plaque accumulation in healthy subjects. The responses of participants about the knowledge of oral hygiene showed that a minority of them had knowledge of or ability to define about the ideal brushing techniques during the treatment (15%) and the oral hygiene aids (28.3%) that were being used during the orthodontic treatment. The majority of the subjects (70.8%) reported not using any disclosing solution to detect the presence of plaque which is useful for educating the patient about the status of their oral hygiene maintenance. Only 45.5% subjects never recorded any index to check the status of gingival health. On prescribing the tooth brush, orthodontic brush was prescribed by less than half of the orthodontists for regular maintenance. In addition to toothbrush, other oral hygiene aids like interdental brushes were being recommended for use by only 57.5% of subjects, but only 28.3% of subjects recommended the combined use of dental floss and interdental brush along with regular toothbrush for removal of the plaque. On probing about the type of mouthwash being prescribed, 47.5% have been prescribing a mouthwash with a combination of chlorhexidine and fluoride which is essential to prevent periodontal infection and caries as well and the values are depicted in Figure 1. Surprisingly, orthodontists are not aware of the type of mouthwash to be



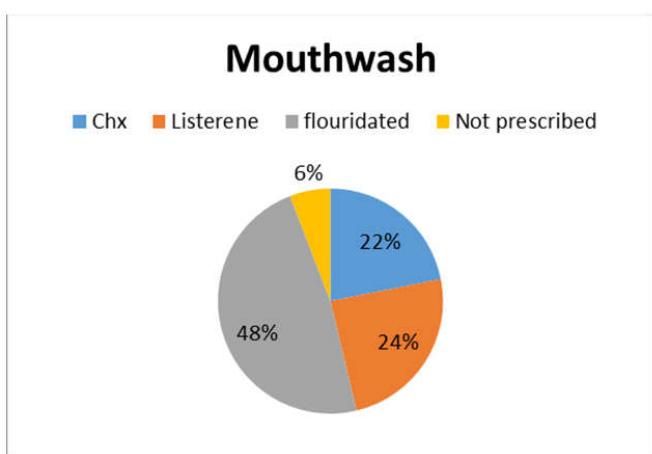


Figure 1. Percentage description of prescription of different kind of mouthwashes

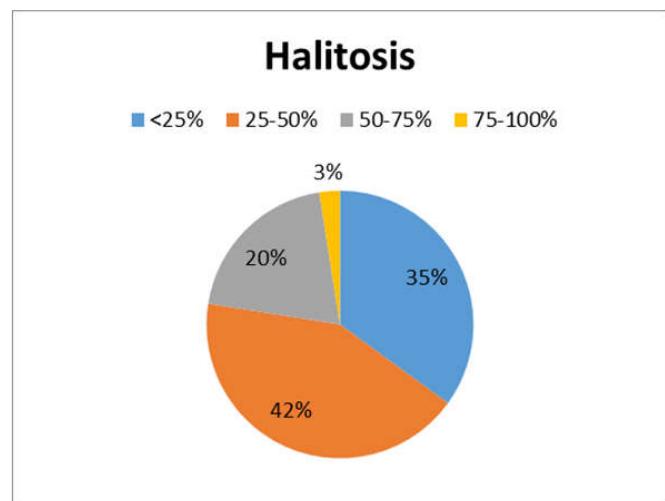


Figure 2. Percentage distribution of patients reported with halitosis

used during the course of treatment and duration of its usage. 15% of the subjects knew about the unfavorable effects of chlorhexidine mouthwash utilization for a more drawn out length of time like altered taste sensation, teeth staining etc. 42% of orthodontists reported that halitosis during the treatment was reported at a rate of 25-50% of the patients that were treated and is depicted in Figure 2. The minority of subjects (27.5%) recommend scaling every time they change the wire as the probability of plaque deposition around the brackets and gingival sulcus is high. Only 31.7% subjects recommended both oral prophylaxis and use of mouthwash in eliminating halitosis. Gingival thickness and health is influenced by the massage over the tissue. Hence, it should be a part of the oral hygiene regimen and pleasingly half of the subjects recommend two ways of stimulating the gingiva such as using the brush bristles and finger pressure as well.

DISCUSSION

Periodontal disease progresses unnoticed, and most people probably recognize it only when it reaches an advanced stage of disease. Several risk factors are attributed to causing periodontal diseases. One among them are the orthodontic appliances. Therefore, knowledge and awareness of such periodontal disease is important to control and maintain periodontal health.

Although there were many studies that stress on the importance of maintaining oral hygiene, it has still remained an unnoticed and unrealized problem in our society (Haumschild and Haumschild, 2001; Abdellatif and Burt, 1987). The present study also proved that there is a lack of knowledge about maintaining oral hygiene and confirmed that oral hygiene still remained ignored and unrealized major social problem. Hence, in this study attempts were made to assess the knowledge and attitude of orthodontic practitioner towards maintaining oral hygiene during the course of orthodontic treatment. The reason behind the initiation and progression of gingival diseases are primarily due to the accumulation of bacterial plaque in and around the gingival sulcus (Cochran, 2008). Various orthodontic appliances that are being used to correct malocclusion act as a retentive factor for plaque retention as these appliances do not favour complete removal of plaque from them using any of the oral hygiene aid, thereby bringing about bacterial aggregation (Alexander, 1991; Paolantonio *et al.*, 1999; Sallum *et al.*, 2004; Türkkahraman *et al.*, 2005). Gingival bleeding is the primary indication for either of gingival diseases which includes gingivitis and periodontitis. Since it can be effortlessly self-detected by gently probing the pocket and hence it acts as the most reliable indicator for active disease identification (Walsh, 1985). Therefore, to prevent the development and progression of periodontal problems, it is the role of the dentist to create awareness about the disease and also public needs guidance in relating gingival bleeding with these diseases (Murtomaa H, 1987). In the present study, large number of subjects (64.2%) identified the gingival disease based on presence of bleeding on probing. It is also reported that very few subjects (15.8%) came across gingival enlargement during the course of the treatment. A study was conducted to assess the impact of various plaque control measures on gingivitis and it was found that a structured plaque control program was necessary in decreasing the dental plaque and thus preventing gingival diseases. It can be performed in cases where there was a periodic reinforcement at every 4 to 7 week intervals. Failing to follow this leads to increase in bleeding scores thereby discontinuance of orthodontic treatment (Boyd, 1983).

Disclosing solutions are commonly used dyes to identify the presence of dental plaque that helps patients to identify the plaque retentive areas and also motivates them in early removal (Chowdhary *et al.*, 2015). This study shows that very less number of subjects used disclosing solution to detect plaque and thus failed in motivating the patients about their oral hygiene maintenance. The use of orthodontic tooth brush effectively removes the plaque around the metallic materials as it got two level filament design which will clean the areas where plaque and debris hide (Imai *et al.*, 2012). In addition to regular brushing, interdental brush is the most effective way of removing dental plaque in interproximal areas. And also it is safe to use around the teeth orthodontic brackets and mini-implants as well. Unfortunately, in the present study the use of orthodontic brush and interdental brush were limited.

Earlier methods described that mechanical methods do not completely remove the plaque as it is difficult to access the areas hindered by orthodontic attachments (Brightman *et al.*, 1991). Hence, in addition to mechanical methods of cleaning, the use of antimicrobial mouthwash gives better results. Among the various mouthwashes prescribed, chlorhexidine in combination with sodium fluoride showed effective plaque removal around the brackets. Surprisingly in this study, less

than half of the subjects prescribed this combination mouthwash for their patients. It may be concluded that, the findings from the survey was attributable to the fact that subjects were not completely aware of the plaque control measures to be checked and prescribed. Therefore, there is a lack of patients' awareness in appropriately following the oral hygiene methods for better periodontal health care during orthodontic therapy.

Conclusion

Orthodontists should increase their awareness and commitment for instructing patients on how to maintain oral hygiene in order to prevent periodontal diseases during orthodontic treatment.

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