

# Evaluation of Oral Hygiene Instructions' Awareness during Orthodontic Treatment among Syrian Orthodontists

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## Abstract

**Introduction:** Insufficient information are available regarding the presentation of oral hygiene instructions by orthodontists. The aim of this study was to investigate the oral hygiene instructions given to patients during orthodontic treatment in a sample of Syrian orthodontists. **Materials and Methods:** The sample of this study consisted of 100 dentists specialized in orthodontics in Damascus city. Questionnaires were sent to them including one question: "What are the oral hygiene instructions you give to your patients after the placement of an orthodontic appliance?" **Results:** Our results demonstrated that almost every orthodontist (97%) advises his/her patients to use the classic manual toothbrush, while only (6%) of them advise the patients to use the electric toothbrush. It was also shown that the orthodontists recommend Chlorhexidine mouthwashes (38%), Fluoride mouthwashes (53%), dental floss (12%), disclosing tablets (16%), and the oral irrigator (21%) as additional aids to maintain the patients' oral hygiene within good levels. **Conclusion:** The concept of establishing "very good" to "excellent" level of oral hygiene in patients, during orthodontic treatment, among the orthodontists in this sample of study is still not totally understood. Further education for orthodontists in this field is still needed.

## INTRODUCTION

The importance of paying special attention to oral hygiene in orthodontic patients to prevent periodontal disease was always suggested (1). Without good oral hygiene, plaque accumulates around the appliance, causing several problems for the neighboring tissues.

The greater the area of tooth covered by a bracket (2) and the greater the complexity of other appliance components (3), the harder it becomes for the patient to clean the teeth properly. Plaque build-up during orthodontic treatment may lead to chronic hyperplastic gingivitis with increased pocket depths (4) and slight, but significant loss of periodontal support (4-6).

To avoid such problems, the orthodontist has a double obligation; namely to advise the patient about methods of plaque control during treatment, at routine visits, and to monitor the effectiveness of the oral hygiene regime. The three main methods of patient instruction used in medicine and dentistry are verbal, printed materials, and videotapes. Written instructions appear to be the least effective (7). The advantages of video presentation have been described as convenience and clarity of demonstration of relevant

material, with the opportunity for self-learning in privacy and comfort (8).

However, despite receiving appropriate advice, many patients who undergo orthodontic treatment fail to maintain adequate standard of plaque control. It is important for the orthodontist to be able to sufficiently declare the importance of oral hygiene for the patients in order to motivate them toward maintaining an accepted standard of oral hygiene during orthodontic treatment.

The aim of the current study is to find out whether orthodontists have extensive education in the field of oral hygiene instructions to be given to patients during orthodontic treatment phases in order to obtain excellent results. This investigation was limited to a sample of Syrian orthodontists in Damascus.

## MATERIALS AND METHODS

The sample of the study consisted of 100 dentists specialized in orthodontics in Damascus. Names, addresses and phone numbers of those dentists were obtained from "The Medical Index of Dentists in Syria - Version 2008". Only orthodontists who were practicing for 5 years or more were selected. The sample of this study is referred to as systemic

sample, which was obtained by first enumerating the population (all the dentists' names listed) and then by selecting the sample by a preordained periodic process by taking every second name listed in the index of the dentists until we got 100 names.

Suitable questionnaires were prepared and consisted of one simple question which was:

"What are the oral hygiene instructions you give to your patient after placement of the orthodontic appliance in his/her mouth?" This question was followed by several choices; a normal manual toothbrush, an electric toothbrush, Chlorhexidine mouthwashes (0.12%), Fluoride mouthwashes, dental floss, disclosing tablets, an oral irrigator, other techniques, none of the above.

The orthodontists had to cross out one or more answers from the choices listed above. Every questionnaire was mailed with a pre-addressed stamped envelope to simplify the return.

All questionnaires were sent to the chosen addresses within two weeks.

### RESULTS

After 2 months, 78 letters returned back from all the orthodontists. Before analyzing the results, the researcher decided to call back -by telephone- the orthodontists who did not send the questionnaire in order to get an instant answer for completing the data collection. The number of the questionnaire papers then became 100 with full answers.

The results were subjected to a simple descriptive analysis in order to demonstrate a clear view of the ratios.

It was shown that 97% of the orthodontists advise their patients on using the normal manual toothbrush during the orthodontic treatment phases, while only 6% of them mentioned the electric toothbrush as an aid.

Thirty-eight percent (38%) of the orthodontists were shown to advise their patients on using the Chlorhexidine mouthwashes. Fifty-three percent (53%) of orthodontists indicated their advice on using Fluoride mouthwashes as an adjunct during the orthodontic treatment. In the area of additional aids for the enhancement of oral hygiene during the orthodontic treatment, 12% of orthodontists were shown to advise the use of dental floss, 16% mentioned the use of disclosing tablets and 21% of the orthodontists advice their

patients on using an oral irrigator. None of them (0%) selected the choice of 'None of the above'. The results of the questionnaire are described in Table (1).

**Figure 1**

Table (1): Results of the questionnaire

The oral hygiene technique	Manual toothbrush	Electric toothbrush	Chlorhexidine mouthwashes	Fluoride mouthwashes	Dental flossing	Disclosing tablets	Oral irrigator
Percentage of orthodontists who advice this sort of use	97%	6%	38%	53%	12%	16%	21%

### DISCUSSION

It is well recognized that the patients who undergo orthodontic treatment are more likely to suffer gingivitis and different levels of periodontal breakdown during the orthodontic treatment phases (4-6). In most cases, patients do not know exactly how they can maintain a high level of oral hygiene which is conducive to excellent orthodontic treatment results. It is the orthodontist's responsibility to teach the patients the right way to perform different methods needed for oral hygiene maintenance.

The results of the current study showed that almost every orthodontist (97%) in Damascus city advises his/her patients to use a normal manual toothbrush in order to achieve cleaning during periods of the orthodontic treatment.

Manual tooth brushing, one of the oldest methods of plaque removal, remains the basis of oral hygiene and plaque control. It is often used as the standard or control against which other methods of plaque removal are assessed.

The results of this questionnaire, regarding the use of manual toothbrush, are logic since the manual toothbrush is known as the oldest and the most common method to clean the teeth. Moreover, due to the huge number of companies which produce toothbrushes, the later can be considered a cheap instrument in the field of oral hygiene.

A number of clinical studies have demonstrated that power (electric) toothbrushes deliver greater plaque removal compared to manual toothbrushes, leading to growing acceptance in the dental community that power toothbrushes offer superior plaque control efficacy compared to manual toothbrushes (9-11). However, the results of our study demonstrated that only 6% of orthodontists recommend the use of powered toothbrushes.

Numerous clinical trials have compared the effectiveness of manual and powered toothbrushes for their effectiveness in improving oral health and the results are often conflicting. Recent systematic reviews by the Cochrane Oral Health Group (12) have distilled this information and provided unbiased conclusions, namely that: powered toothbrushes with an oscillating rotating action are more effective than manual toothbrushes in reducing plaque and gingivitis; other types of powered toothbrushes produced less consistent reductions in plaque and gingivitis than manual brushes.

It was shown that 38% of the orthodontists have chosen the use of Chlorhexidine mouthwashes (0.12%) as an adjunct to maintain a good oral hygiene in their patients, and 53% mentioned Fluoride mouthwashes.

The mouth rinse, as a chemical agent, could be a useful clinical adjunct for reducing the bacterial plaque accumulation during the active phase of orthodontic treatment. Such chemical agents also help orthodontic patients who have difficulties in maintaining plaque control by mechanical means alone. These patients should be reminded that chemical agents are not substitutes for thorough brushing and interproximal cleaning (13-15).

However, sufficient data about the dosages of these mouthwashes prescribed by the orthodontist in our study could not be obtained. It is supposed that orthodontists may have mentioned Fluoride mouthwashes because of the well-known effects of Fluoride in reducing the prevalence of dental carries and the gingival inflammation (16, 17).

The likelihood that the prescription of disclosing tablets, a self motivation tool, may improve oral hygiene seems not to be supported in the results of our study since it was shown that only 16% of the orthodontists advise the use of these tablets. It is possible that the orthodontist her/himself is less educated about the importance of using such (home-methods) in order to maintain a good oral hygiene.

Twenty-one percent (21%) of the orthodontists advise their patients to use an oral irrigator.

Braces and banded teeth have many tiny recesses that a toothbrush and other cleaning aids have difficulty reaching. Oral irrigators, or the so-called water irrigating devices, irrigate these hard-to-clean areas to remove food and other debris. Pulsating jets of water very gently lift the free gingiva to rinse out crevices. The water irrigator also pulses into areas between teeth and gums to flush out trapped food

and debris. Water irrigating devices cannot by any means be regarded as substitutes for more effective plaque-removing methods, such as tooth-brushing and flossing; rather, they should be considered as an adjunct to the total oral hygiene program (18).

In the current study, the low percentage of orthodontists who advise such kind of devices may be due to their perceptions of the patients' financial situation, or, due to their lack of information about the effectiveness of such devices in maintaining oral hygiene.

Since plaque build-up at interproximal sites has been reported to be more acidogenic than in other areas of the mouth (19), and since dental floss has the ability to disrupt and remove some interproximal plaque (20), it appears plausible that the use of dental floss should reduce interproximal caries risk. However, it was a little bit surprising that only 12% of the orthodontists in Damascus mentioned dental flossing as an effective aid for plaque removal.

## CONCLUSION

It seems to be that oral instructions alone, at the orthodontist's office, would not be sufficient when a high level of oral hygiene is required during orthodontic treatment. Other methods for patients' motivation should be taken into consideration.

More studies are needed to uncover the real factors which determine the relationship between the dentist and the patient, and also to learn how to control the patient's behavior in the dental clinic.

According to the results of this study, and within the limitations of sample size, it could be stated that the orthodontists in Damascus need more education and awareness in the field of oral hygiene instructions which must be given to the patients during any orthodontic treatment.

Further investigations in this field with larger sample are needed to prove related results.

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