

ORAL HYGIENE MEASURES IN ORTHODONTIC TREATMENT IN NORTHERN JORDAN

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ABSTRACT

A cross-sectional study spread over 3 months was carried out among subjects undergoing orthodontic treatment in Prince Rashid Hospital, Northern Jordan. A specially designed short questionnaire was given to each patient to determine the oral hygiene practice in a sample of 243 patients (170 females, and 73 males). The study was also aimed to establish baseline data as part of oral health recording system. Consent of the patients / parents was obtained.

97.1% of the subjects claimed they use the standard toothbrush. 67% brushed twice daily. 71.6% spent less than two minutes brushing their teeth. More patients reported using standard toothbrushes compared to those using the chewing stick (22.6%). Females brushed more frequently than males ($P < 0.05$). Only 14.4% of the subjects used interdental brush while 18.1% used the dental floss. Use of mouth wash was reported by 25.9% of the subjects.

More than half of the subjects brushed their teeth twice daily with the standard tooth brush being more frequently used however, only one fourth of subjects spent an adequate time on brushing.

Key words: Oral hygiene, orthodontic treatment, tooth brushing

INTRODUCTION

Orthodontic treatment has many forms, including the use of fixed, removable, functional appliances or surgical correction of severe malocclusion. Good oral hygiene (OH) is essential for successful orthodontic treatment and it is an essential element of preventive measures to minimize damage during treatment. OH and dietary instructions should be given at each visit.

Orthodontic appliances are associated with greater plaque build-up due to the difficulty in cleaning teeth.^{1,2} Plaque, if not removed, can lead to several adverse conditions such as the occurrence of hyperplastic gingivitis, periodontal breakdown (in severe cases), enamel decalcification and white spots caused by the highly acidic plaque, and carious lesions.³ Continual plaque

build-up may thus jeopardize the continuity of orthodontic treatment and the achievement of successful treatment. It is estimated that 5% to 10% of orthodontic patients do not complete treatment due to poor oral hygiene.⁴

OH involves mechanical and chemical removal of plaque accumulation in the mouth. Mechanical removal of plaque by the process of tooth brushing is the most commonly used method of self-administered cleaning.⁵ However, brushing does not remove interdental plaque.⁵ Therefore, it has to be coupled with other interdental plaque removal techniques such as flossing and interdental brushing.

Oral hygiene instructions are given by orthodontists and their teams routinely to patients to motivate

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them in order to maintain a high standard of OH prior to appliance bonding and to help prevent plaque build-up,² and which should continue well beyond the time of appliance removal. Mitchell 2001 considered the maintenance of high levels of OH to be the first condition to be fulfilled by the patient to provide orthodontic treatment.⁶ Moreover, non-compliance or lack of cooperation by the patient can lead to unfavorable consequences which may at times be severe enough to discontinue treatment.⁶

METHODOLOGY

This was a prospective cross sectional study among a selected group. The subjects were patients undergoing orthodontic treatment in the Department to Dentistry in Prince Rashid Hospital (PRH) located in Irbid city, Northern Jordan. Subjects undergoing different orthodontic treatment procedures were included in this study and no subject was excluded.

A short specially designed questionnaire was given to each patient, parents or guardian asking certain questions concerning demographic status and OH practice of the patients. The proforma included questions about age, gender, marital status, level of education and smoking status. The subjects were also asked about their OH practice, use, frequency and duration of: standard toothbrushes, interspace/ interdental brushes, dental floss, chewing stick (Miswak), mouth washes and other means if present. The aims of the study were explained to the patient, parent or guardian and written consent was obtained.

Processing and analysis of data were carried out by means of the statistical package for the social sciences (SPSS – PC Version 16.0). Descriptive statistics, including means, standard deviations (SD) and frequency distribution, were calculated. Cross tabulation and Pearson Chi-square test used for analysis of data $P < 0.05$ was considered statistically significant.

RESULTS

A total of 243 subjects (170 females and 73 males) participated in the present study, whose ages ranged from 9 to 37 years. Demographic profile of the study group (Age group, gender, marital status, education, smoking) can be seen in Table 1.

Oral hygiene measures (use of standard tooth brush (9.1%), interdental brush (14.4%), dental floss (18.1%), chewing stick (22.6%), use of mouth by (25.9%) are shown in Fig 1.

Table 2 shows the relationship between the use of standard tooth brush and sociodemographic characteristics.

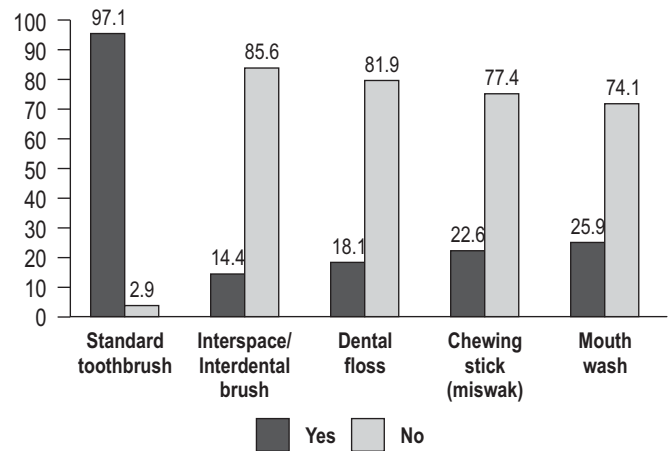


Fig 1: Oral hygiene measures of the study group

TABLE 1: DEMOGRAPHIC PROFILE OF STUDY GROUP

Characteristic	Number	Percent
Age group (years)		
7-12	14	5.8
13-18	159	65.4
≥19	70	28.8
Gender		
Female	170	70.0
Male	73	30.0
Marital Status		
Married	5	2.1
Single	238	97.9
Education		
Illiterate	1	0.4
Basic School	90	37.0
Secondary School	110	45.3
College/ University	42	17.3
Smoking		
No	241	99.2
Yes	2	0.8

TABLE 2: RELATIONSHIP BETWEEN USE OF STANDARD TOOTHBRUSH AND SOCIODEMOGRAPHIC CHARACTERISTICS

Age group (years)	Standard toothbrush		p-value
	yes	no	
7-12	11	3	0.00
13-18	157	2	
≥19	68	2	
Gender			
Female	167	3	0.12
Male	69	4	
Marital Status			
Married	5	0	0.86
Single	231	7	
Education			
Illiterate	1	0	
Basic School	86	4	0.41
Secondary School	109	1	
College/University	40	2	
Smoking Status			
Smoker	2	0	0.94
Non-smoker	234	7	

DISCUSSION

Orthodontic treatment requires complete cooperation between orthodontist, hygienist, patient and other specialists related to skeletal and facial correction.⁷ One of the dilemmas that may accompany orthodontic treatment is the patients negligence of oral hygiene jeopardizing the treatment or even worsening the previously compromised dental situation. This negligence may also lead to dental caries, periodontitis, gingival recession, stains, and compromised aesthetic appearance. It has been emphasized that correcting malocclusions is important, but if the result of this effort is lost in a few years because of periodontal disease or caries the patient has not been helped. However, if the patient learns to practice effective plaque control, he may keep his teeth for a lifetime.⁸ If efforts at maintaining good to excellent oral hygiene are unsuccessful, orthodontic treatment should be terminated.⁹

Different cleaning devices have been used in different cultures. Tooth brushing is currently the most commonly used measure. It was suggested that the

outcome of tooth brushing is dependent on the design of the brush, skill of the individual, frequency and duration of brushing.^{10 11 12 13}

Present study has found that 97.1% of the patients used standard toothbrush. This high percentage might be the result of instructions given on OH at each assessment time which may have motivated the patients.

Attasi and Awartani showed that all orthodontic patients under study were using standard toothbrushes to clean their teeth.¹⁵ 2.9% of the patients of the present study were identified as poor compliers. One possible explanation of this behavior may be the lack of general enthusiasm and ignorance of treatment importance.

Despite the fact that most individuals claim to brush their teeth at least twice a day, it is clear from both epidemiologic and clinical studies that mechanical OH procedures as performed by most subjects are insufficient to control supragingival plaque formation and to prevent gingivitis and more severe forms of periodontal disease.¹⁹ However, increasing the frequency of tooth brushing does not automatically lead to clean teeth. Consequently, the frequency of tooth brushing alone cannot be used as a measure of the quality of OH.^{14,15,16,17,18,19,20}

The standard toothbrush does not reach the approximal surfaces of teeth as efficiently as it does for the facial, lingual, and occlusal aspects. Therefore measures for interdental plaque control should be selected.^{22,23}

Beside the standard toothbrushes, a considerable number of subjects (32.5%) were using additional means to clean their teeth (either interdental brush or dental floss).¹⁵ It was concluded that around one third of the study group patients were aware of the importance and the need for using additional means to maintain good oral hygiene.¹⁹

Interdental brushes are effective in the removal of plaque from the proximal tooth surfaces.²⁹ Like wood sticks, interdental brushes are easy to use, although they may have some drawbacks, including the fact that different types may be needed to fit different sized open interproximal spaces. Patients reported that the use of brushes was easier than the use of dental floss.^{24,25,26,27,28,29,30}

Goh et al concluded that the practice of recommending the use of interdental brushes in addition to standard toothbrushes is not supported by clinical investigations.³¹

The use of chemical mouth washes would appear a way of overcoming deficiencies in mechanical tooth cleaning habits as practiced by many individuals. Despite the encouraging improvements in OH, gingivitis and, to some extent, periodontitis is still highly prevalent. Taken with the microbial etiology of both gingivitis and periodontitis, this supports the concept of employing agents to control plaque which require minimal skill in their use.

CONCLUSION

Within the limitation of this study, it provided original information about OH practice among orthodontic patients in Northern Jordan. Patient characteristics can help orthodontists predict OH compliance before/ during treatment. The oral home care of the orthodontic patients studied was not at an optimal level, which indicated the need to establish an OH maintenance program. Oral hygiene is a paramount factor in successful orthodontic treatment. Any negligence in maintaining oral hygiene may have a negative impact on orthodontic treatment results, aesthetic appearance, and may lead to decayed teeth, gingivitis, periodontitis. The result of this study cannot be generalized to all patients receiving orthodontic treatment or treated in other dental settings / sectors in Jordan.

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