

Effectiveness of Two Different Oral Health Education Methods on Oral Hygiene Status of Orthodontic Patients

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ABSTRACT

AIM: Through this research we are trying to find out the difference in oral hygiene between patients who are given oral hygiene instructions by verbal and hand written means.

METHODOLOGY: A cross sectional clinical survey was conducted among patients aged 10-25 years for undergoing orthodontic treatment at the Department of Orthodontics and Dentofacial Orthopaedics, Sri Sankara Dental College, Varkala, Trivandrum. Descriptive statistics and Chi Square tests were used to analyze the collected data.

RESULT: 17.9% of patients who were given instructions verbally showed good oral hygiene while it is only 8.9% of patients who were given instructions by handwritten means showed the same.

CONCLUSION: Orthodontists should give instructions verbally as it may help the patients in understanding and practising the brushing techniques easily.

KEY WORDS: Oral hygiene, Orthodontic plaque index, good, inadequate, mediocre

position and thus indirectly improving the health of periodontium and durability of teeth. Orthodontic treatment can both improve and harm the periodontium.[3] Fixed orthodontic appliances such as orthodontic braces and arch wires also increase retention sites for plaque accumulation.[4] All these factors make self cleaning and oral hygiene maintenance difficult.[4] In order to maintain good oral and periodontal health orthodontic patients are required to practice optimal oral hygiene measures such as brushing their teeth atleast twice a day and using additional tools including interdental aids and mouthwash.[2] The aim of the study is to evaluate oral hygiene of patients using fixed orthodontic appliances with special emphasis on effectiveness of visual and verbal methods of oral hygiene instructions.

In a study, most of the patients used fluoride toothpaste but still orthodontists and dental assistants should increase their awareness for instructing their patients in oral hygiene care to prevent caries and periodontal disease during fixed orthodontic treatment.[5] Oral hygiene instructions are essential in all cases of orthodontic treatment and the use of adjuncts must be reinforced.[5] A study shows 68% did not visit a dental hygienist during their orthodontic treatment. Consequently oral hygiene instructions and reinstructions are given to those to remind them to concentrate on cleaning the cervical area of their teeth below the brackets.[6] Most of the patients had knowledge about orthodontic treatment and were aware about

I. INTRODUCTION

Malocclusion is a major predisposing factor to plaque accumulation.[1] Orthodontic treatment is widely recognised because of the effects it has on the dentofacial complex as it helps in improving aesthetics, establishing functional occlusion and improving overall health.[2] The main principle of orthodontic therapy is to correct any dental or facial anomaly such as tooth and jaw

what food to eat and had the knowledge that sticky and sugary drinks were not good for them.[7] A study conducted among medical students showed 40 % changed their toothbrush once in 6 months while 44% changed once in 3 months.[8] Many studies have shown that the proper use of the dental floss in patients with fixed orthodontic appliances affects the health of the interproximal gingiva. However the daily use of the dental floss by patients in numerous studies show low percentages.[9] For patients undergoing such orthodontic treatment, daily oral hygiene presents a particular challenge. To minimize the increased risk of caries and gingivitis, patients should receive regular oral hygiene check-ups with oral hygiene motivation and instruction. During the checkups, recording Plaque Indices (PIs) and inflammation indices serves to monitor home oral hygiene[10,11,12]

Oral hygiene indices serve to assess the oral hygiene situation and evaluate oral health status.[13] The currently available indices do not adequately meet the special requirements of patients with fixed orthodontic appliances, since they evaluate only the smooth surfaces or approximal spaces of the teeth in terms of plaque accumulation and signs of inflammation of the marginal gingiva. [13] However, these indices do not meet the demands of orthodontics.[14] In patients with fixed orthodontic appliances, predilection sites for plaque accumulation are found surrounding the bracket. Accordingly, a special hygiene index is required for daily use in orthodontic practices that can document changes in oral hygiene. To evaluate both plaque colonization of tooth surfaces bearing multibracket appliances and signs of inflammation of the neighbouring marginal gingiva, as well as to evaluate oral hygiene and derive the treatment need, a new hygiene index was developed for these patients.[14]

The Orthodontic Plaque Index (OPI) is a special index for patients with fixed orthodontic appliances.[13] The OPI focuses on the tooth area in the immediate vicinity of the bracket, since additional and relatively inaccessible plaque niches arise at these sites. To record the OPI, the dentition is divided into sextants. Plaque scores (0 to 4) are assigned. The plaque accumulation on each tooth surface adjacent to the bracket base is evaluated (mesial, distal, occlusal/ incisal, and cervical). In addition, signs of gingival inflammation are recorded. The highest score per sextant is entered into a sextant table. Increased risk of caries and

gingivitis is assumed as of score 3.[13] The OPI can be used for both buccal and lingual multibracket appliances. In patients with fixed orthodontic appliances, the OPI assesses oral hygiene in the bracket vicinity and thus provides differential findings. As a result, the OPI is recommended for clinical use.[7] However, these indices do not meet the demands of orthodontics. In patients with fixed orthodontic appliances, predilection sites for plaque accumulation are found surrounding the bracket.[14] The assessment of oral hygiene in these cases is frequently performed with modifications of the indices mentioned above[14,15,16]

II. MATERIALS AND METHODOLOGY

This is a cross-sectional study conducted between October 2022 to November 2022. Participants were selected using convenience sampling. The study was conducted among the natives of Kerala State, India. The study was conducted among 56 patients aged between 10 and 25 years after having their verbal consent. They have started their orthodontic treatment at the Department of Orthodontics and Dentofacial Orthopaedics, Sri Sankara Dental College, Varkala.

A study was conducted among patients who are undergoing orthodontic treatment at the Department of Orthodontics and Dentofacial Orthopaedics, Sri Sankara Dental College, Varkala.

INCLUSION CRITERIA

- 1) Patients undergoing fixed orthodontic treatment
- 2) No systemic diseases
- 3) No history of taking antibiotics for last 1 month
- 4) No history of oral prophylaxis done in the last 1 month

EXCLUSION CRITERIA

Patients who did not consent to the survey were excluded from the survey.

Plaque index was evaluated in all patients after scaling and root planing procedure prior to orthodontic treatment. The patients were divided randomly into 2 groups. One group was given oral hygiene instructions verbally and other group in written format immediately after the placement of brackets. After 3 weeks, patients were recalled and their oral hygiene status was evaluated using Orthodontic Plaque Index (OPI).[13] The status were indicated as a score from 0 to 4.

Scoring criteria of OPI:

0 : No plaque deposits on tooth surface surrounding bracket base

1 : Plaque deposits on one tooth surface at the bracket base
 2 : Plaque deposits on two tooth surfaces at the bracket base
 3 : Plaque deposits on three tooth surfaces at the bracket base
 4 : Plaque deposits on four tooth surfaces at the bracket base and/or gingival inflammation indicators (plaque deposits near the gingiva do not necessarily have to be present)
 The plaque scores of 2 groups were compared and the effectiveness of 2 different oral health education methods were assessed

III. STATISTICAL ANALYSIS

The collected data was analysed using SPSS [17] software 25.0. The data was analysed using descriptive analysis and association among the variables were done using Chi square test.

IV. RESULTS

The study was completed with 56 responses out of which 70 percentage of participants were female and rest 30 percentage participants were males as given in the figure 1.

As shown in the figure 2, 32 percentage of responses were recorded from the age group 10-19 years and 68% of people belong to the age group 20-25 years.

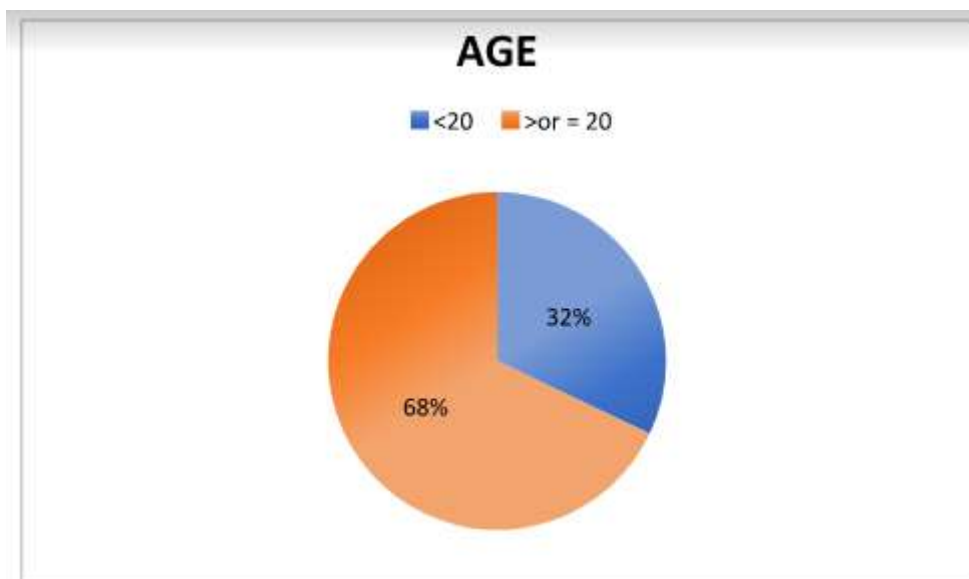


FIGURE 1: FREQUENCY OF AGE DISTRIBUTION

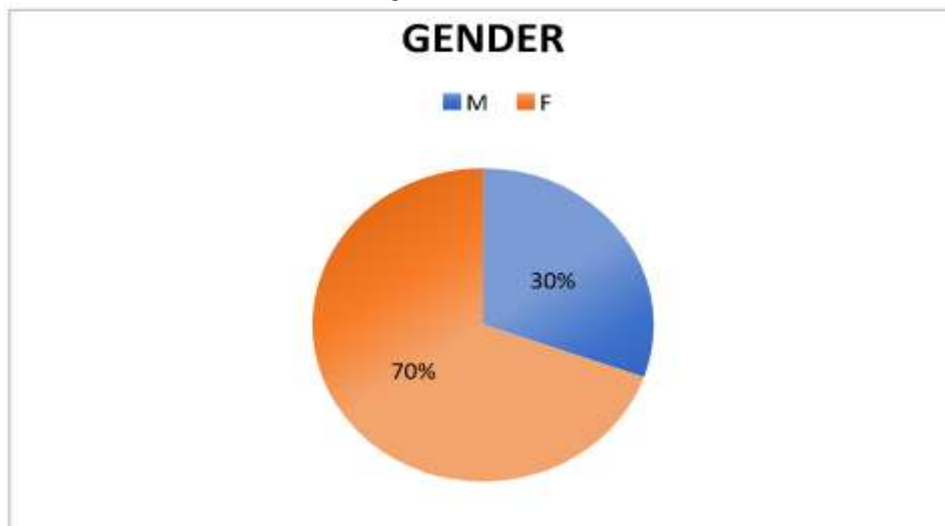


FIGURE 2 : FREQUENCY OF GENDER DISTRIBUTION

Table 1 shows that the frequency of mode of instruction and it is equal (50%) for both verbal and handwritten modes .It also shows the highest score of orthodontic plaque index for each participant .29% of them had inadequate oral

hygiene.11% of them had mediocre and while another 11% had poor oral hygiene .Only 5% had good oral hygiene. Orthodontic plaque indices were taken 3 weeks after instructions were given.

TABLE 1 : FREQUENCY OF MODE OF DISTRIBUTION AND HIGHEST SCORE OF ORTHODONTIC PLAQUE INDEX

SLNO	MODE OF INSTRUCTION	VERBAL	FREQ	PERCENTAGE
1		VERBAL	28	50.0
		HANDWRITTEN	28	50.0
2	OPI (HIGHEST SCORE)	GOOD	5	8.9
		MEDIOCRE	11	19.6
		INADEQUATE	29	51.8
		POOR	11	19.6

Table 2 shows the relationship between age, gender and mode of instruction to orthodontic plaque score.

While comparing age and orthodontic plaque index ,5.6% of the patients who were less than 20years showed good oral hygiene and 10.5% of the patients who were more than or equal to 20years showed good oral hygiene. While comparing gender and orthodontic plaque index, good oral hygiene was showed by 5.9% among males and10.3% among females. Both the values are not significant when analysed statistically.

While comparing mode of instruction and orthodontic plaque index, 17.9% of the participants

who were given verbal instructions showed good oral hygiene while it was 8.9% for the participants who were given hand written instructions. Values are significant statistically(p value=0.004*)

On comparing mode of instruction and orthodontic plaque score, poor oral hygiene was reported more(19.6%) in patients who were given handwritten instructions.

Limitations of the study was less sample size and less time period. Hence more studies can be conducted for improved results with higher sample size and time period.

TABLE 2: COMPARISON BETWEEN AGE, GENDER AND MODE OF INSTRUCTION WITH ORTHODONTIC PLAQUE INDEX

		ORTHODONTIC PLAQUE SCORE				p-value
		G	M	I	P	
AGE	<20	5.6%	16.7%	44.4%	33.3%	p=0.353
	>or = 20	10.5%	21.1%	55.3%	13.2%	
GENDER	M	5.9%	23.5%	58.8%	11.8%	p=0.695
	F	10.3%	17.9%	48.7%	23.1%	
MODE OF INSTRUCTION	V	17.9%	32.9%	35.7%	14.3%	p=0.004*
	H	8.9%	19.6%	51.8%	19.6%	

V. DISCUSSION

From the analysis of the results yielded from our study, we deciphered the following facts and information:

About half of the participants were given instructions verbally while the other half by handwritten means. The highest number of participants (29) showed inadequate oral hygiene (51.8%) when orthodontic plaque score were taken three weeks after instructions were given while least number of patients (5) showed good oral hygiene (8.9%).

The relationship between age and orthodontic plaque scores were not significant since participants were of the age group from 10-25 years. Children shows good oral hygiene only when assisted by elders. This conclusion was supported in accordance with a study conducted by Suresh et al. [18]

The relationship between gender and orthodontic plaque index were not significant because the number of males who participated in the study were less when compared to female participants.

The relationship between mode of instruction and orthodontic plaque index were significant because people tend to perceive and follow instructions when given verbally while it is difficult for them to practice brushing techniques when given by handwritten means. This conclusion was supported in accordance with by Sivakumar P et al. [19]

VI. CONCLUSION

Verbal mode of conveying oral hygiene instructions was more effective than the written mode. Though there was a mild increase in the gingival index in the review appointment, it was less than that observed in group of patients who were given hand written instructions.

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