

A Survey to Assess Oral Hygiene Awareness, Difficulties Faced and Satisfaction Level During and after Orthodontic Treatment

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Abstract

Introduction: The foremost goal of orthodontic treatment is to improve dental occlusion and alignment of teeth, which eventually results in a healthy functioning of dentition and facial aesthetics. The aim of the present study was to assess the oral hygiene awareness, difficulties faced and satisfaction level among a group of students undergoing orthodontic therapy during and after treatment.

Materials and Methods: A sample of 200 students from Melaka Manipal Medical College, who received orthodontic treatment were included in the study. A cross - sectional study in the form of self-administered questionnaire was carried out. The questions were based mainly to assess the difficulties faced, awareness with regard to oral hygiene and satisfaction level of the participants during and after orthodontic treatment.

Results: The difficulties faced by orthodontics patients were in the range of 65 to 85%, which were trouble sleeping, food lodgement and difficulty in maintaining oral hygiene. Study participants were not aware of various cleaning modes though more than 50% used floss. In the post treatment phase, aesthetic appearance was found to be better.

Conclusion: The present study showed that the participants who were undergoing orthodontic treatment did not have sufficient knowledge about oral hygiene practices. The participants were satisfied with the aesthetic appearance post treatment.

Key words- Aesthetics, Interdental brush, Oral Hygiene awareness, Orthodontic treatment, Satisfaction levels.

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Introduction

Orthodontics is a well-proclaimed branch of dentistry. It is majorly related to diagnosis, prevention and correction of malpositioned teeth and the dentofacial complex.¹ An individuals' requirement for a healthy and functional bite with pleasing esthetics necessitates an orthodontic treatment. Although, recent era has seen

an upsurge in use of clear aligners but its superiority over conventional methods is still controversial.²

In addition to being grueling for the orthodontist, the treatment is equally challenging for the patient as well, especially in terms of maintenance of oral hygiene. The conventional wires and brackets make even the simpler everyday practices of maintaining oral hygiene difficult. Although, special interdental and proximal brushes are available for cleaning food entrapped between the brackets and the wires, the awareness to use the same is not universally present. Thus, leading to enormous amount of food lodgment in these patients undergoing orthodontic treatment. Further, this becomes the root cause for accumulation of plaque, calculus, resulting in gingival and periodontal problems. The long duration of an orthodontic treatment also can cause demineralization of the teeth eventually making it prone to decay. The other problems associated are the malodor and essentially an unsightly appearance.³ Malocclusion is not only harmful for the oral cavity but also affects the psychological well-being of the patient related to social acceptance. An orthodontic treatment is usually a poignant part of adolescence and because of all the above stated issues; it becomes a scarring part of the growing up stage.

According to few studies, it is seen that majority of the population needs orthodontic treatment but only a few research projects have looked at patient satisfaction with treatment outcome and factors contributing to satisfaction.^{3,4} Since, the patient satisfaction after orthodontic treatment is influenced by a number of factors, such as sex, age, duration of treatment, compliance, and dentofacial improvement, so it is imperative that a certain correlation must be worked upon in between treatment expectation, motivation, and satisfaction with treatment outcome.⁴

The main goal of orthodontic treatment is to improve dental occlusion and alignment of teeth, which ultimately results in a good functioning of dentition. Orthodontic treatment helps the patients to improve dental and facial aesthetics; above all, it also builds up self-esteem. An oral hygiene awareness program must, therefore, be a part of the orthodontic treatment in order to counteract adverse factors. This study was carried out to assess oral hygiene awareness among patients wearing fixed

orthodontic appliances. The aim of the present study was to identify and assess the difficulties faced, Oral Hygiene awareness and satisfaction level during or after orthodontics treatment.

Materials and Method

A cross-sectional study was conducted after obtaining ethical approval from the Institutional Ethical Committee, Kasturba Medical College, Manipal. The participants were explained in detail regarding the importance of the study and written informed consent was obtained from all the students who were willing to participate in the study. A total of 203 students from Melaka Manipal Medical College, Manipal, participated in this study.

A self-administered multiple-choice questionnaire was used, the first part of questionnaire enquired about the participants social demographic background and the rest was regarding the issues elicited. The questions given were based on difficulties faced, Oral Hygiene Awareness and Satisfaction during or after orthodontic treatment. In self-assessment of oral hygiene, question regarding cleaning modes i.e use of interdental brushes, floss, and frequency of brushing were included. In assessing, the difficulties faced during the treatment such as pain, ulcers, restrictions in eating certain food and debonding of bracket were assessed. In assessing the level of satisfaction questions regarding esthetic and functional outcomes were asked.

Each option was given score from 1 to 4, with 4 being strongly agree and 1 being strongly disagree. Certain close-ended questions with Yes / No option were included. The scores were summed and analyzed to assess the knowledge of the students regarding oral hygiene and the difficulties faced as well as the level of satisfaction achieved during and after orthodontic treatment. The social demographic data obtained was also analyzed to determine its relation with the level of knowledge of oral hygiene and difficulties faced, satisfaction during and after orthodontic treatment. The data obtained was tabulated and were statistically analyzed using SPSS-15.0 with descriptive statistics and the Chi-square test.

Results

A total of 203 students participated in the study, with 69.46% of female subjects and 30.54% of male subjects (Table 1). On analyzing the self-reported knowledge on oral hygiene during orthodontic treatment, 81% of the participants were aware and 18.23% were not aware (Table 2). Table 3 and table 4 shows the mean and standard deviation derived from the questionnaire concerning the outcome of the Orthodontic treatment in

terms of Aesthetics and functionality respectively. Table 5 shows the correlation between the treatment outcome (Aesthetics) and the Problems faced before and during orthodontic treatment. On assessing the correlation between the treatment outcome (Functionality) and the problems faced before and during orthodontic treatment, it was seen that there were few problems that showed significant positive correlation with the outcome, however few problems showed significant negative correlation. (Table 6)

Table 1: Frequency distribution of participants

Subjects	N (%)
Male	62 (30.54)
Female	141 (69.46)

Table 2: Frequency distribution of participants with knowledge on Oral Hygiene during orthodontic treatment

Oral Hygiene during orthodontic treatment	N (%)
Yes	37 (18.23)
No	166 (81.77)

Table 3: Questionnaire concerning the outcome of the Orthodontic treatment in terms of Aesthetics

Aesthetics (Outcome)							
1. Does your teeth look more aligned?		2. Does it improve the appearance of your facial features?		3. Do you feel more confident than before?		4. Are you satisfied with the orthodontic treatment?	
Mean	SD	Mean	SD	Mean	SD	Mean	SD
3.36	0.77	3.39	0.75	2.64	0.96	3.17	0.79

Table 4: Questionnaire concerning the outcome of the Orthodontic treatment in terms of Functionality

Functionality (Outcome)													
1. Was it easier to chew food after undergoing orthodontic treatment?		2. Did it help to improve your occlusion (closing of mouth)?		3. Has it helped you speak clearer?		4. Did your breathing improve after undergoing orthodontic treatment?		5. Are you satisfied with your treatment or were you expecting something more than what you have received?		6. Do you think the money you have spent on orthodontic treatment was worth it?		7. Do you have any regrets after undergoing orthodontic treatment?	
Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
2.90	0.83	3.01	0.81	2.82	0.90	2.57	0.92	2.81	0.87	3.02	0.80	2.06	0.95

Table 5: Correlation between the treatment outcome (Aesthetics) and the Problems faced before and during orthodontic treatment

	Aesthetics (Outcome)							
	1. Does your teeth look more aligned?		2. Does it improve the appearance of your facial features?		3. Do you feel more confident than before?		4. Are you satisfied with the orthodontic treatment?	
Difficulties during orthodontic treatment (Experience)	r	P-value	r	P-value	r	p-value	r	p-value
1. Do you have trouble falling asleep or experience pain in the middle of the night caused by the treatment?	0.106	0.133	0.032	0.649	0.106	0.134	-0.002	0.971
2. Do you often find food particles lodged on your teeth & was it difficult to remove it?	-0.0814	0.248	0.185	0.008*	-0.043	0.543	0.142	0.044*
3. Did you develop ulcers during the orthodontic treatment?	0.0265	0.708	0.155	0.027*	0.089	0.205	0.069	0.325
4. Were you able to manage the restrictions on eating certain foods? (nuts/popcorn/chewing gum)	0.0101	0.886	0.151	0.031	0.054	0.443	-0.035	0.619
5. Did you experience any malocclusions (cannot clench your teeth properly) after each appointment?	-0.046	0.508	-0.008	0.9	-0.035	0.618	0.091	0.194
6. Did any of your brackets come out during your orthodontic treatment?	0.102	0.146	0.095	0.174	-0.015	0.831	0.027	0.703
7. Did you find it difficult to maintain oral hygiene throughout?	0.030	0.665	0.023	0.74	-0.051	0.47	-0.065	0.353
8. Do you have trouble falling asleep or experience pain in the middle of the night caused by the treatment?	-0.011	0.871	0.034	0.629	0.067	0.336	-0.013	0.85

Table 6: Frequency distribution of participants with knowledge on Oral Hygiene during orthodontic treatment

	Functionality (Outcome)													
	Was it easier to chew food after undergoing orthodontic treatment?		2. Did it help to improve your occlusion (closing of mouth)?		Has it helped you speak clearer?		Did your breathing improve after undergoing orthodontic treatment?		Are you satisfied with your treatment or were you expecting something more than what you have received?		Do you think the money you have spent on orthodontic treatment was worth it?		Do you have any regrets after undergoing orthodontic treatment?	
Problems before and during orthodontic treatment (Experience)	r	P value	r	P value	r	P value	r	P value	r	P value	r	P value	r	P value
1. Do you have trouble falling asleep or experience pain in the middle of the night caused by the treatment?	0.147	0.036*	0.056	0.422	0.167	0.017*	0.078	0.267	0.063	0.367	-0.090	0.198	0.015	0.832
Do you often find food particles lodged on your teeth & was it difficult to remove it?	0.005	0.933	0.17	0.015*	-0.031	0.659	-0.009	0.898	-0.0009	0.99	0.066	0.344	-0.189	0.006*
Did you develop ulcers during the orthodontic treatment?	0.083	0.238	0.12	0.087	0.090	0.199	0.061	0.387	0.165	0.018*	0.074	0.292	0.004	0.944
Were you able to manage the restrictions on eating certain foods? (nuts/ popcorn/chewing gum)	0.082	0.24	0.065	0.356	0.164	0.019*	-0.026	0.711	0.141	0.044*	0.008	0.907	0.032	0.649
Did you experience any malocclusions (cannot clench your teeth properly) after each appointment?	-0.072	0.302	0.025	0.723	-0.099	0.158	0.041	0.558	-0.067	0.338	-0.064	0.36	-0.137	0.051
Did any of your brackets come out during your orthodontic treatment?	0.157	0.025*	0.119	0.091	0.175	0.012*	0.090	0.198	0.002	0.971	-0.003	0.963	0.099	0.158
Did you find it difficult to maintain oral hygiene throughout?	0.068	0.333	-0.016	0.82	0.022	0.748	0.018	0.793	0.109	0.123	-0.114	0.104	0.144	0.039*
Do you have trouble falling asleep or experience pain in the middle of the night caused by the treatment?	0.085	0.224	0.002	0.972	0.081	0.248	0.035	0.611	0.090	0.197	-0.050	0.474	0.104	0.141

Discussion

Patients undergoing orthodontic treatment usually face difficulty in maintaining oral hygiene. Previous studies have shown a rapid fall in oral hygiene maintenance after the initial bonding as the appliance favours plaque build-up and also hinders the oral hygiene practices like tooth brushing and flossing.^{5,6} The satisfaction level after treatment is mainly related to patient expectations prior treatment. This study assessed the difficulties faced, Oral Hygiene awareness and satisfaction level during or after orthodontic treatment.

Maintenance of oral hygiene is important during orthodontic treatment. This study assessed the oral hygiene awareness among participants during and after orthodontic treatment. Only 18.23% of the students had sufficient awareness in maintaining oral hygiene during treatment. 81 % of the students had no sufficient awareness about oral hygiene maintenance during treatment. Question regarding different cleaning modes and frequency of brushing after every meal and use of dental floss and interdental toothbrushes were asked to check the knowledge of the participants regarding oral hygiene. The results of our study are similar to study done by Shah et al, where 62% of patients did not follow the oral hygiene instructions, and despite being given instructions; most of them hesitated in practicing them consistently.³

Previous literature states that patient satisfaction with orthodontic treatment had no outcome. This can be explained by the difficulties faced during treatment and expectations of patients receiving orthodontic treatment.⁴ However, no major correlations were found between treatment-outcome satisfaction and patient expectations of orthodontic treatment in some studies. The outcome of the treatment in terms of aesthetics and functionality were compared with the satisfaction levels in the present study. On comparison of the difficulties faced during the orthodontic treatment and aesthetic outcome, many problems showed a positive correlation with the treatment outcome. Many of the patients were satisfied with the aesthetic outcome of the treatment and with the facial appearance post treatment. On comparison between the treatment outcome in terms of functionality and the problems faced before and during orthodontic treatment, it was seen that there were few problems

that showed significant positive correlation with the outcome, however few problems showed significant negative correlation. However, it is interesting that the participants reported higher correlations with functional aspects of their treatment outcomes compared with aesthetic aspects. The results of other studies that showed that aesthetic considerations were the primary reason for orthodontic treatment.^{7,8} It can be considered that functional and aesthetic factors influence the participants to undergo orthodontic treatment. Previous research showed that the facial aesthetics is crucial in the development of a person's self-esteem and self-image.^{9,10}

These findings offer an important strategy to improve patients' orthodontic treatment satisfaction level. Given that possible pre-treatment self-considerations correlate with post treatment satisfaction, a first step would be to assess patients' expectations during the screening appointment. The limitations of the study should be noted. The findings reflect only the satisfaction levels of students during and after orthodontic treatment in Melaka Manipal Medical College. Therefore, the results cannot be generalized to orthodontic patients in general. The questionnaires had only a few questions to assess the satisfaction level in term on aesthetics and function, which means that issues were dealt with only superficially.

Conclusion

The participants did not have sufficient knowledge about various cleaning modes, but they showed a positive attitude to learn about the same. The participants were satisfied with the aesthetic appearance post treatment.

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