

A Study on Oral Hygiene Maintenance Among Adolescent and Adult Patients with Varying Severity of Crowding, Undergoing Orthodontic Treatment by Fixed Appliance Mechanotherapy

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ABSTRACT

Background: To assess the oral hygiene maintenance in patients undergoing orthodontic treatment having mild, moderate and severe crowding.

Methodology: Informed consent was obtained from each participant. A Self-assessed Questionnaire formulated to assess the oral hygiene awareness among the adolescent and adult patients with mild, moderate or severe crowding wearing fixed orthodontic appliances. It was completely filled by 60 patients between 13-30 years, undergoing orthodontic treatment in Department of Orthodontics, Bhabha college of Dental Sciences, Bhopal. Severity of crowding was classified as mild, moderate, and severe according to model analysis.

Result: The female and adult patients are more aware as compared to men and adolescent patients. As the severity of crowding of crowding increases the difficulty in maintaining the oral hygiene increases.

Conclusion: Of the total sample, 46% of the patients are aware of oral hygiene measures. There is a need to incorporate more oral hygiene programs regarding correct brushing techniques, education and motivation regarding use of mouth wash and interdental aids. The patient needs to be educated and to be instilled about correct food habits.

Keywords: Fixed Orthodontic treatment, Oral hygiene, Severity of crowding.

INTRODUCTION

The unwanted accumulation of plaque with Fixed Orthodontic appliances, difficulty in maintaining Oral hygiene and reduction in self cleansing ability due to reduced mechanical chewing can cause interruption in orthodontic treatment.¹ Consequently, gingivitis, tooth decay and periodontitis can prolong or lead to discontinuation of orthodontic treatment.²

Patients need to learn about the technique and frequency of tooth brushing, types of toothbrushes, use of mouthwash, interdental and orthodontic brushes. The information gathered from patients across various socio-economic groups would be valuable in formulating guidelines to decrease the various unwanted consequences of poor oral hygiene in orthodontic patients. Thereby, improve

Received: May. 17, 2020; Accepted: June. 21, 2020

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the health and stability of teeth and supporting structures.

Aims: The aim of this study is to assess the oral hygiene maintainance in patients undergoing orthodontic treatment with any fixed appliance mechanotherapy, with varing severity of crowding.

Objectives:

1. To find out about the Oral hygeine awareness that is specifically related to needs of orthodontic pateints.
2. To evaluate what methods are the patients following during orthodontic treatment and which is the most widely used method.
3. To evaluate if there is any change in oral hygiene habit among adolescents and adults, male and female.
4. To assess if the severity and area (upper-lower arches) of crowding affects the oral hygiene maintainance of patient.

MATERIALS AND METHODS

Informed consent was obtained from each participant before the study.

The study consisted of: A Self-assessed Questionnaire (multiple choice answers) which was formulated to assess the oral hygiene awareness among orthodontic patients, being treated with fixed appliance mechanotherapy, was filled by 60 patients at Department of Orthodontics, Bhabha college of Dental Sciences, Bhopal. The individual patient's oral hygiene was evaluated using OHI-S (Oral hygiene Index-Simplified). Severity of crowding was assesed by Arch perimeter/ Carey's analysis on study models and the upper lower intra-oral occlusal photographs were taken.

Inclusion criteria:

1. Patients diagnosed with upper/ lower/ upper and lower anterior crowding (mild crowding <4mm, moderate crowding 4-8mm, severe crowding >8mm).
2. Patients undergoing orthodontic treatment with Fixed appliance therapy- MBT, Roth, Begg's and even with techniques incorporating skeletal anchorage.

3. Patient examined in initial stage of Fixed appliance therapy.
4. Patient age ranging from 13-30 years.

Exclusion criteria:

1. Patient not undergoing orthodontic treatment.
2. Patient with removable appliance therapy.
3. Fixed appliance assessed after unravelling of crowding.
4. CLCP patients
5. Patient with any dental prosthesis.

Table 1: Questionnaire regarding Oral Hygiene maintainance (you can choose more than one option)

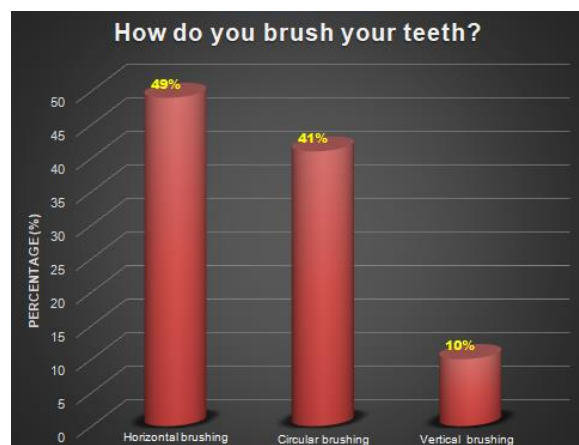
1. How do you brush your teeth?
Circular
Horizontal
Vertical
2. How many times do you brush your teeth?
Once
Twice
Thrice
3. Which type of Brush do you use?
soft/ ultra soft bristles
medium hard bristles
orthodontic toothbrush
4. Which toothpaste do you use?
Fluoridated
Non fluoridated
5. Do you use any other aid for maintaining oral hygiene?
No
Yes, Mouth wash
Yes, interdental brush/ floss/ toothpick
6. Which type of mouth wash do you use?
Commercially available mouth wash
Herbal mouthwash
Doctor's prescribed mouthwash
Saline (salt water) mouthwash
None
7. Do you brush or rinse your mouth after every meal?
Yes, always
Yes, sometimes
Never
8. How many meal you take per day?
1-2
3-4
5 or more
9. If you are at school/college, or at work how do you clean your teeth?
I don't clean
Use mouth wash
Use toothbrush
10. What precautions you take while eating?
No precautions as such
Avoid hard food
Avoid sticky food
Mouth rinse after every meal

RESULTS

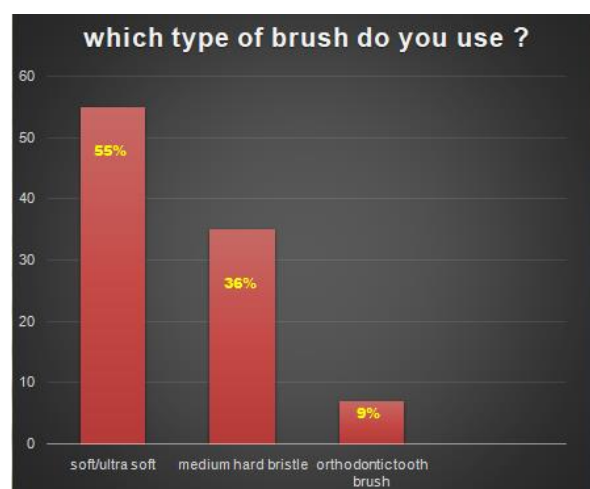
Response to questions on brushing:

The patients had poor knowledge on brushing strokes and techniques. Horizontal brush strokes were followed by majority of the patients. Circular brushing is usually useful in teaching children to brush, but the downside is, it is the least effective brushing technique.

The horizontal method is used by 49%; however, it is not advisable in the long run because it causes cervical abrasion. Vertical stroke is the most effective brushing stroke as it cleans the interproximal areas and is used in case of fixed orthodontic appliances. Only 10% seem to be using the correct technique of brushing. (Refer Graphs 1,2).



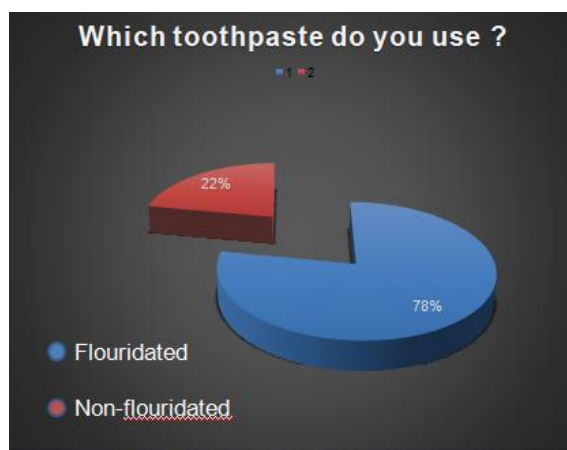
Graph 1: Knowledge on brushing technique



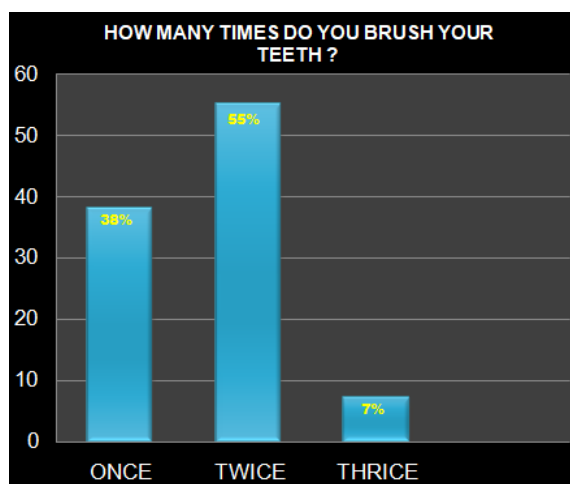
Graph 2: Knowledge on type of tooth brush.

Response to question on frequency and type of Toothpaste:

Plaque can cause gum disease and tooth decay. Fluoride helps prevent tooth decay by strengthening tooth enamel. About 76% of the population are aware of this fact and use fluoridated toothpastes. Brushing twice is ideal during orthodontic treatment(Graph3). Only 33% of the population brush twice a day. (Graph 4)



Graph 3: Knowledge on type of toothpaste

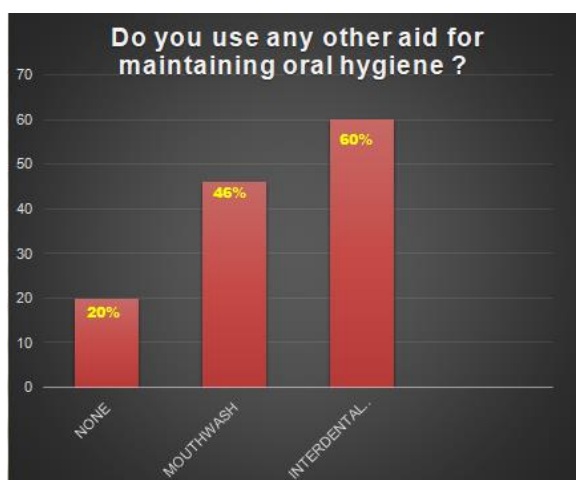


Graph 4: Knowledge on frequency of toothbrushing

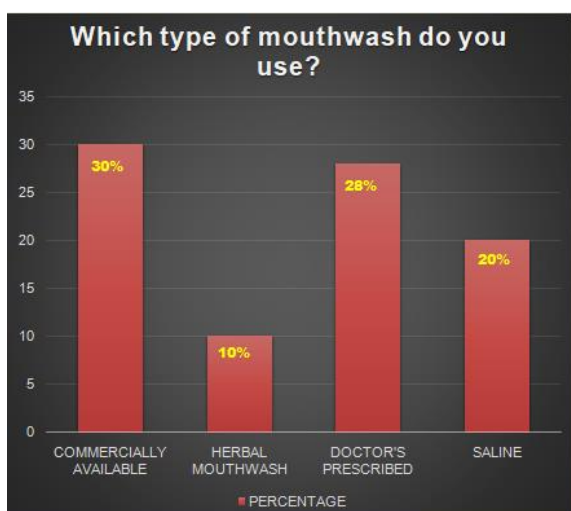
Response to questions on mouthwash and use of Interdental aids:

While a good brushing technique is important, mouthwashes are often recommended to help control plaque. In this study, only 46% of populations are using mouthwash, 28% of population are using doctor's prescribed mouthwash. And 60% of patients are using some kind of interdental aid. From the above, it is clearly

understood that there is need for educating and motivating patients regarding use of mouth wash and interdental aids.⁴(Graph 5,6)



Graph 5: Knowledge on other oral hygiene aids.



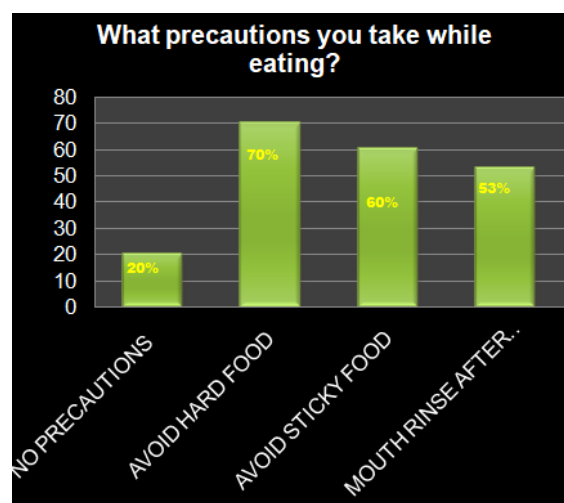
Graph 6: Knowledge type of mouthwash.

Response to questions on food habits

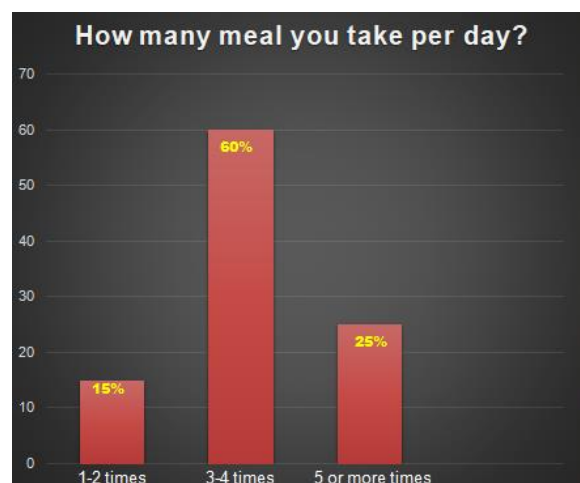
In the present study, it is understood that only 60% of the population avoid sticky food and 70% avoids hard food (Graph: 7). Hard foods may cause damage by bending the wires, weakening of cement under the bands, or breaking the brackets. Thus, it should be strictly avoided during orthodontic treatment.⁴ Sticky food also has the same issues such as bending of wires and weakening of cement.

Only 33% of population rinses mouth after every meal (Graph: 8,9) and 31% of patient don't clean teeth in any way, if they are at school/college/work (Graph 10). With this result it is clear that patient

needs to be educated and to be instilled about correct food habits.



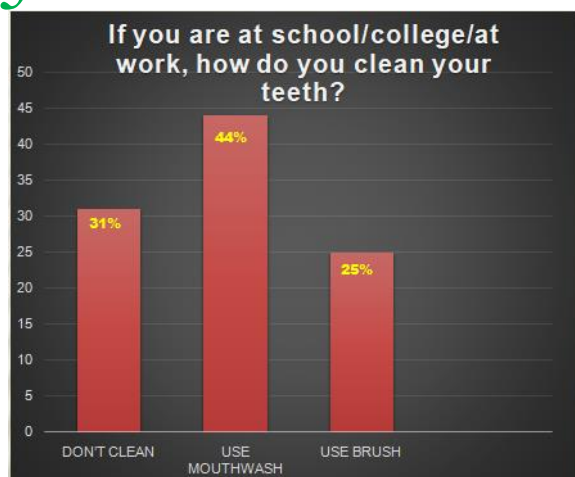
Graph 7: Knowledge on precautions while eating.



Graph 8: Frequency of having meal.



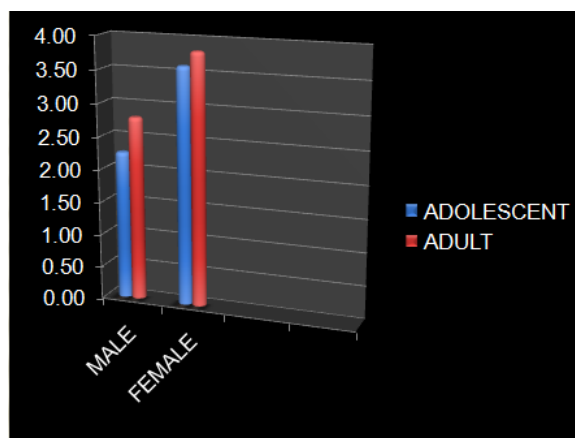
Graph 9: Knowledge on food habits



Graph 10: Knowledge on food habits

Oral hygiene maintainance among male/female and adolescent/adults :

In the present study, OHI-S of adult male patients is 2.2 (fair), adolescent male is 2.8(fair), adult female is 3.8 (good), and adolescent female is 3.6 (good). This result clearly shows that women maintain their hygiene better than men. And also adult pateints are more responsible regarding there oral hygiene. Hence, according to this adolescents and men should be explained more about maintianing oral hygiene (Graph: 11).

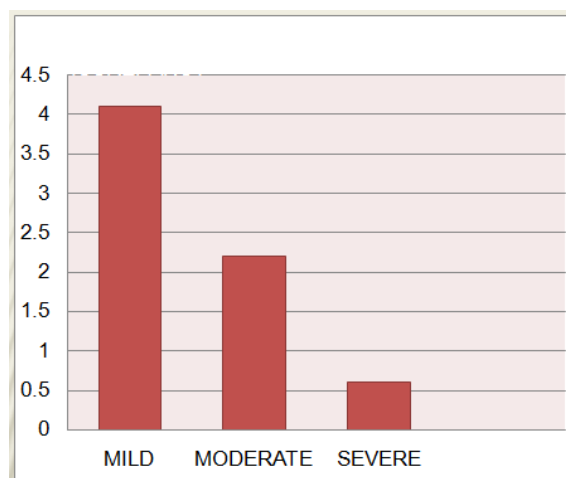


Graph 11: Oral hygiene among different age groups and gender

Oral hygiene maintainance with varying severity of crowding:

In the present study, OHI-S of patients with mild crowding is 4.1 (good), moderate crowding is 2.2 (fair),and severe crowding is 0.6 (poor) (Graph:12). So, this result undoubtedly shows that more the

severity of crowding, more is the difficulty in maintaining the oral hygiene.



Graph 12: OHI-S according to severity of crowding

DISCUSSION

Orthodontic treatment is accepted and appreciated due to its positive effects on the teeth and face, fixed orthodontic appliances aids in three dimensional positive effect on functional occlusion. Malocclusion with crowding is an additional factor which increases the chances of plaque accumulation. Fixed appliances on such patients increase the plaque retention areas due to the presence of brackets, modules, bands, elastic chains etc.⁵

The evaluation of implementation of educating oral hygiene methods at the initiation of orthodontic treatment is of utmost importance.⁶ Otherwise the education imparted is wasted, which is what is usually observed. Hence, more education and more evaluation of implementation of education on oral hygiene would be valuable.⁷⁻¹¹

CONCLUSION

An average of 46% of the population are aware of the oral hygiene measures. There is a need to incorporate more oral hygiene programs in future. Only 10% seem to be using the correct technique of brushing. So, correct brushing technique education is a must at the start of orthodontic treatment. Only 33% of the population brush twice a day, so education in brushing after every meal, or atleast twice daily is required. About 76% of the population are aware of importance of fluoride in toothpastes and uses the same. There is more need for educating and motivating patients regarding use of

mouth wash and interdental aids. Only 53% of populations rinses mouth after every meal. Also the patient needs to be educated and to be instilled about correct food habits. Women maintains oral hygiene better than men. And adult pateints are more responsible regarding their oral hygine. More the severity of crowding, more is the difficulty in maintaining the oral hygiene. Thereby education of oral hygiene of the patient by the treating clinician as well as evaluation of implimentation of this education should go hand-in-hand.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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