



DIETARY HABITS AND COMPLIANCE WITH ORTHODONTIC RESTRICTIONS. A QUESTIONNAIRE-BASED INVESTIGATION AMONG ORTHODONTIC PATIENTS.

Orthodontics

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ABSTRACT

Objective: This study investigates dietary habits and compliance with orthodontic restrictions among 71 patients through a questionnaire-based approach at Dept of Orthodontics and Dentofacial Orthopaedics in Nims Dental College and Hospital, Jaipur, Rajasthan. **Materials And Methods-** A structured questionnaire, encompassing demographic data and closed-ended questions, was administered to assess dietary habits and compliance. Participants, aged 12-45, provided information on age, gender, treatment duration, meal frequency, typical daily diet, adherence to dietary restrictions, intentional consumption of restricted foods, and perceived impact on orthodontic treatment. Descriptive statistics were employed for analysis. **Results-** A questionnaire comprising closed questions and demographic information was administered to a sample of 71 orthodontic patients. Participants demonstrated varying levels of consciousness regarding their dietary choices during orthodontic treatment. Compliance with orthodontic restrictions ranged, with some participants facing difficulties adhering to prescribed guidelines. Noteworthy concerns included the intentional consumption of restricted foods and the perceived impact on orthodontic treatment success. **Conclusion-** This study sheds light on the multifaceted aspects of dietary habits and compliance among orthodontic patients. The findings underscore the need for tailored approaches to address diverse patient needs, enhance awareness, and improve adherence to orthodontic restrictions. These insights contribute to the development of targeted interventions, promoting more effective orthodontic care and improved treatment outcomes. Future research with a larger sample size may further refine evidence-based guidelines for dietary management during orthodontic treatment.

KEYWORDS

Dietary Habits, orthodontic Treatment, Oral hygiene

INTRODUCTION

"Dietary habits are defined as "the habitual decisions of individuals or a group of people regarding what foods they eat". Demand for orthodontic treatment has significantly increased and fixed appliances (FA) are integral to comprehensive orthodontic treatment. ⁽¹⁾ Orthodontic treatment with FA entails lifestyle modifications and impacts the performance of routine daily activities, particularly eating. ⁽²⁾ FA tends to be more painful in comparison to removable appliances and pain during mastication has been reported by recall-based ⁽³⁾ and naturalistic assessment ⁽⁴⁾ studies. Pain can affect compliance ⁽⁵⁾ and is ranked high among the reasons for discontinuing orthodontic treatment. The discomfort, sensitivity, and/or pain on biting and chewing during orthodontic treatment with FA lead to alterations in food choices. Changes in the consistency of the food consumed are needed to manage pain during orthodontic treatment. ⁽⁶⁾ Diet modifications during orthodontic treatment also result in response to instructions given by orthodontists. Orthodontists advise a soft diet in the immediate post-treatment stage to avoid pressure sensitivity leading to altered nutrient intake. The importance of providing dietary and nutritional guidance to patients undergoing orthodontic treatment has been emphasized in the past. ^(3,7) Although dietary guidelines listing foods to avoid and foods that can be consumed during FA treatment have been provided by orthodontic associations around the world. Fixed orthodontic treatment typically lasts for around 1½ to 3 years and during this duration, certain dietary restrictions and modifications are advised. Even though an orthodontist gives dietary guidelines, when a patient wears orthodontic braces, it is the patient's job to maintain oral hygiene during the entire tenure of orthodontic treatment. ⁽⁷⁾

Questionnaire surveys are a valuable tool to gain insight into the preferences, opinions, and experiences of subjects quickly and cost-effectively. In the past, questionnaire studies have provided valuable information regarding patient experiences at various stages of

orthodontic treatment. ⁽⁸⁻¹¹⁾ Questionnaires help gather baseline data which can then be used to formulate evidence-based guidelines. With this in mind, a questionnaire survey was conducted to identify dietary preferences and experiences during FA treatment from a patient's perspective. Thus, this study was carried out to know the perception of dietary habits for the patients undergoing Orthodontic treatment at Nims Dental College and Hospital, Jaipur, Rajasthan, India.

MATERIALS AND METHODS

A self-administered, anonymous questionnaire was utilized to gather information on participants receiving fixed appliance orthodontic treatment's opinions of various eating habits. Over a month, patients were chosen from the Nims Dental College and Hospital's active patient list in the orthodontic department in Jaipur, Rajasthan. Those between the ages of 15 and 25 who were undergoing therapy with a fixed appliance were included. All enrolled patients had their upper and lower metal brackets (Orthox JJortho, slot size 0.022") affixed with light-cure adhesive resin (Orthofix, Anabond). Individuals with mental disability, those undergoing ongoing aligner therapy, those undergoing the first three weeks of FA treatment, and those who were unable to answer the questionnaire were excluded. Participants in the study included 71 patients (Age 15–25) who attended orthodontic appointments as a convenience sample. Every patient or caregiver who filled out the Google questionnaire gave their informed consent. Additionally, patients had the option to withdraw from the survey at any moment.

The questionnaire [Annexure 1] was composed of closed-ended questions that addressed a range of topics related to the patient's experience, comfort level, challenges faced, and restrictions placed on eating certain foods while receiving FA treatment. The questionnaire was developed using suggestions from multiple orthodontists at the Nims Dental College and Hospital's Department of Orthodontics and Dentofacial Orthopaedics in Jaipur, Rajasthan.

The questionnaire was divided into six sections: patient demographics, orthodontic treatment specifics, meal habits, daily diet, following Dietary's advice and influence on day-to-day living. The mean $\pm$ standard deviation, or number and percentage, was used to record the data. The statistical package for the social sciences (version 22.0; SPSS Inc., IL, USA) was used to analyze the data, and an alpha value of 0.05 was used. A chi-square test was employed to check for the level of significance.

RESULTS

A questionnaire comprising closed questions and demographic information was administered to a sample of 71 orthodontic patients. Demographic details of the participants have been mentioned in Table 1. Participants demonstrated varying levels of consciousness regarding their dietary choices during orthodontic treatment. There is no significant difference between males and females in terms of meal habits, maintaining a consistent meal schedule, daily diet composition, or adherence to dietary restrictions during orthodontic treatment. The P-values for all variables tested are greater than 0.05, indicating that any observed differences between males and females could likely be due to chance variation rather than a true gender-based difference in dietary habits and restrictions. This study suggests that orthodontic patients, regardless of gender, may exhibit similar behaviour and preferences when it comes to their dietary choices during treatment. (Table 2).

Compliance with orthodontic restrictions ranged, with some participants facing difficulties adhering to prescribed guidelines. Noteworthy concerns included the intentional consumption of restricted foods and the perceived impact on orthodontic treatment success. Females tend to consume certain foods more often during orthodontic treatment than males. However, there are no significant gender differences observed in the types of challenges faced or the types of foods restricted during orthodontic treatment (Table 3)

DISCUSSION

Dietary habits have the main impact on the maintenance of oral hygiene, especially when one is going through orthodontic treatment. It is important to maintain oral hygiene till treatment is completed. Orthodontic treatment may cause dietary changes since some patients may opt to eat less frequently due to the constant need to brush their teeth to eliminate the food trapped in their appliances.¹² In addition, their diet can be influenced by instructions from the orthodontists to avoid sweets as well as hard and sticky food. Thus, they are likely to adhere to a soft diet to maintain the appliances. However, patients may fail to follow their orthodontist's advice on sugary and sticky food as their effects on teeth are not immediate. In addition, some may still prefer to consume these types of foods and overcome the risks by simply brushing their teeth more frequently. Changing dietary habits during orthodontic treatment is related to age in that it is more significant among adults (>18), who are more aware of the consequences than younger patients. The latter are less likely to consider their orthodontist's advice and change their dietary habits.^{13,14,15} Patients may also find it difficult to follow their orthodontist's advice completely and change their dietary habits as they find the advice unrealistic¹⁵. The results of this study indicated higher odds of frequent visits to hygienists among the patients during and after orthodontic treatment. In contrast, Atassi and Awartani reported a low frequency of visits to hygienists among orthodontic patients, though there was no control group in their study.¹⁶ Petruskiene et al reported better dental attendance among patients who underwent orthodontic treatment. However, their study focused mainly on adolescents whereas in the present study, there were multiple age groups. During orthodontic treatment, ideal oral hygiene may not be achieved simply by the mechanical removal of dental plaque. Daily rinsing with fluoridated mouthwash can significantly improve dental health and reduce white spot lesions. The present study is the first to evaluate dietary habits and oral hygiene measures among patients after orthodontic treatment at Nims Dental College and Hospital, Jaipur, Rajasthan. Previous studies also did not control for demographic confounders when comparing oral health-related behaviour among orthodontic patients. Nevertheless, this study has some limitations. The data were collected using a self-administered questionnaire, so patient responses might have been affected by social desirability and recall issues. In addition, the findings of this study might not be generalizable to patients in populations with different characteristics. Further longitudinal studies following patients before, during and after orthodontic treatment are necessary to understand the influence of

orthodontic treatment on individuals' oral health-related behavior.¹⁷

CONCLUSION

This study sheds light on the multifaceted aspects of dietary habits and compliance among orthodontic patients. Regarding meal patterns, diet composition, or following dietary restrictions, the study of orthodontic patients did not find any statistically significant gender differences.

- Females were more likely to eat foods that were limited than males, although both sexes displayed comparable dietary habits.
- A need for focused treatments to enhance adherence, especially in female patients, is suggested by the participants' varying degrees of adherence to dietary requirements.
- Future research with a larger sample size may further refine evidence-based guidelines for dietary management during orthodontic treatment.

Annexure 1

Questionnaire form

Dietary habits and compliance with orthodontic restrictions. A questionnaire-based investigation among orthodontic patients.

1. Informed consent

We would like to inform you that this study is being conducted by dr. Mufti sheheer ul hassan under the guidance of dr. Shantanu sharma, department of orthodontics and dentofacial orthopaedics, nims dental college and hospital, jaipur, rajasthan.

The study comprises of a questionnaire regarding "dietary habits and compliance with orthodontic restrictions. A questionnaire-based investigation among orthodontic patients- a questionnaire study".

Your response to this study, or any individual questions, is completely voluntary. You will not be individually identified and your participation in this study will be used for statistical purposes only. You are free to refuse to participate in this survey or to withdraw your consent and discontinue participating in the study at any given time. Click "yes" to agree.

☐ YES

2. Demographic Information: Age:

Mark only one oval.

- ☐ 18-24
☐ 25-34
☐ 35-44
☐ 45 and above

3. Gender

Mark only one oval.

- ☐ MALE
☐ FEMALE
☐ OTHER

4. 2. Orthodontic Treatment Details: a. How long have you been undergoing orthodontic treatment?

Mark only one oval.

- ☐ LESS THAN 6 MONTHS
☐ 6-12 MONTHS
☐ 1-2 YEARS
☐ MORE THAN 2 YEARS

5. 3.Meal Habits: a. How many meals do you typically have in a day?

Mark only one oval.

- ☐ 1-2
☐ 3
☐ 4 OR MORE

6. Do you have a consistent meal schedule?

Mark only one oval.

- ☐ YES
☐ NO

4. Daily Diet: a. What best describes your typical daily diet?

Mark only one oval.

- ☐ MOSTLY SOFT FOODS
☐ BALANCED MIX OF SOFT AND HARD FOODS
☐ MOSTLY HARD FOODS

7. What Are The Dietary Restrictions Provided As Part Of Your

Rthodontic Treatmrnt Plan?

Mark only one oval.

- ☐ AVOIDING STICKY FOODS
☐ AVOIDING HARD FOODS
☐ OTHER (PLESE SPECIFY)

8. 5. Adherence to Dietary Recommendations: a. On a scale of 1 to 10, how well do you adhere to the dietary restrictions provided in your orthodontic treatment plan?

Mark only one oval.

1 2 3 4 5 6 7 8 9 10

LES : ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ FULLY ADHERENT

9. What challenges or difficulties have you faced during your orthodontic treatment?

Mark only one oval.

- ☐ Discomfort
☐ Difficulty in Cleaning appliances Eating Challenges
☐ Other:

10. Have you intentionally consumed any foods that are restricted during your orthodontic treatment?

Mark only one oval.

- ☐ Yes
☐ No

11. Select the type of restricted food consumed:

Mark only one oval.

- ☐ Sticky foods Hard foods
☐ Adhered to dietary protocol

12. 6. Impact on Daily Life: a. How has your orthodontic treatment impacted your daily life?

Mark only one oval.

- ☐ Significantly
☐ Moderately
☐ Slightly
☐ Not at all

13. 7. Support and Information: a. Do you feel you have received sufficient information and support regarding your dietary habits during orthodontic treatment?

Mark only one oval.

- ☐ Yes
☐ No

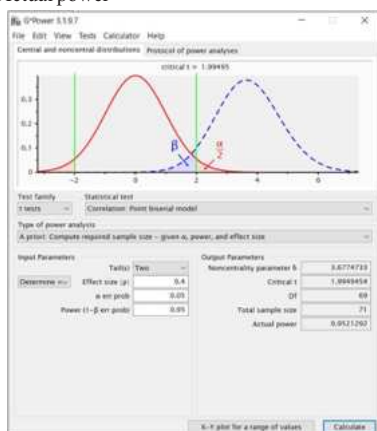
Sample Size Determination

t tests - Correlation: Point biserial model

Analysis: A priori: Computer required sample size

Input: Tail(s) = Two
 Effect size $|\rho|$ = 0.4
 α err prob = 0.05
 Power (1- β err prob) = 0.95

Output: Non-centrality parameter δ = 3.6774733
 Critical t = 1.9949454
 Df = 69
 Total sample size = 71
 Actual power = 0.9521292

**Tables & Graphs****Table 1: Demographic characteristics of study participants**

VARIABLES	FREQUENCY (N)	PERCENT (%)
Age		
18-24 Years	52	70.3
25-34 Years	22	29.7
Total	74	100.0
Gender		
Male	18	24.3
Female	56	75.7
Total	74	100.0

where N = number

Table 2: Gender responses on Dietary habits and restrictions during orthodontic treatment

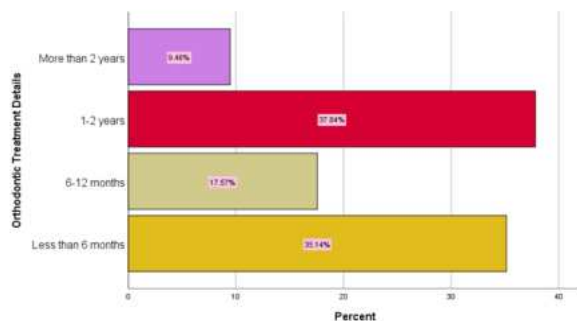
Gender	QUESTIONS			P-Value
	Meal Habits			
	1-2	3	4 or More	
Male	7	9	2	0.09
Female	9	38	9	
Consistent Meal Schedule				
	Yes	No		0.75
Male	12	6		
Female	35	21		
Daily Diet				
	Mostly Soft Foods	Balanced Mix of Soft and Hard Foods	Mostly Hard Foods	0.71
Male	6	11	1	
Female	13	43	0	
Dietary Restrictions				
	Avoiding Sticky Foods	Avoiding Hard Foods	Others	0.61
Male	7	10	1	
Female	25	29	2	

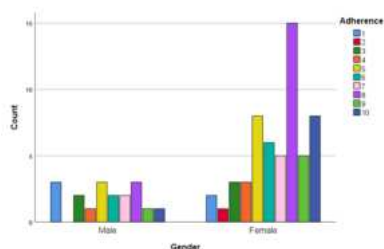
Test used: Chi-square test; where P-value significant at 0.05 levels

Table 3: Gender responses on challenges faced, intentionally consumed food and type of restricted food during Orthodontic treatment

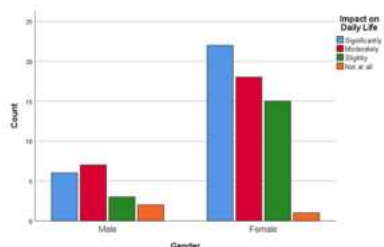
Gender	QUESTIONS				P-Value
	Challenges				
	Discomfort	Difficulty in Cleaning appliances	Eating Challenges	Others	
Male	4	6	7	1	0.28
Female	21	14	20	1	
Intentionally Consumed					
	Yes	No			0.01*
Male	13	5			
Female	19	37			
Type of Restricted food					
	Sticky foods	Hard foods	Adhered to dietary protocol		
Male	6	8	4		0.49
Female	17	20	19		

Test used: Chi-square test; where P-value significant at 0.05 levels

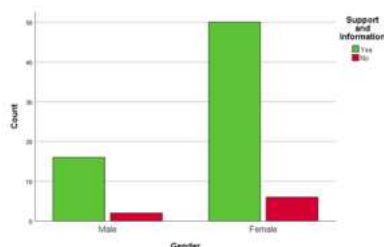
**Graph 1: Showing Orthodontic Treatment Details of study participants**



Graph 2: Visual analogue scales scores for the Adherence to Dietary Recommendations: On a scale of 1 to 10



Graph 3: Showing impact of Orthodontic treatment on Daily life according to gender



Graph 4: Showing responses on Support and Information regarding dietary habits during orthodontic treatment according to gender

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