



Pain Perception and Attitude towards Orthodontic Treatment of Treated & Untreated subjects

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Abstract

Introduction and Objective of study: Orthodontic treatment involves alignment of the teeth and correction of jaw asymmetry. Pain and discomfort are the common problems noticed during the treatment. This study was designed to evaluate the relationship of pain perception and attitude towards orthodontic treatment of treated and untreated patients.

Methodology: The sample contained of two groups: Group 1 contained of 50 untreated subjects (25 males, 25 females; average age 22.7 ± 1.4 years), and Group 2 consisted of 50 treated subjects (25 males, 25 females; average age, 23.07 ± 1.3 years). Data collection was done in questionnaire form that included an assessment of pain experience for treated subjects, pain expectation for untreated subjects, and attitude toward orthodontic treatment. An analysis of variance was done between the groups to test for statistical significance. Categorical variables were evaluated with independent t-test with level of significance $P < 0.05$.

Results: Treatment status affects pain perception and attitude of a person toward orthodontic treatment. Pain perception of untreated patients was high compared to treated patients. Attitude of untreated patients was more negative than treated patients. It was statistically significant.

Conclusion: Lack of awareness towards the orthodontic treatment was noticed in untreated patients. Pain perception and attitude of treated patients may vary by operator's skills and practice. Patients with better attitude experienced less pain.

Keywords: Pain perception, attitude, Orthodontic treatment.

Introduction

A successful orthodontic treatment is largely dependent on the knowledge and skills of the clinician and the cooperation of patients. Major considerations regarding patient cooperation are regularity in keeping appointments, compliance in wearing elastics, headgear or wearing removable appliances, refraining from chewing hard and

tenacious substances that are likely to distort the arch wires, and remove bonded brackets and maintenance of oral hygiene. Laxity in following these instructions may lead not only to compromised treatment but also to slow progress of treatment, loss of chair time, increased number of visits to the orthodontist and frustration for the clinician, patient, and parents.¹

their attitude toward the treatment. On the VAS line, the lowest scores indicate a more positive attitude toward orthodontic treatment and the

highest scores indicate a more negative attitude toward orthodontic treatment.

Appendix 2

QUESTIONNAIRE STUDY

Name: _____ Age/Sex: _____
Date: _____ Treated/ Untreated _____

Attitude:

1. Was / will orthodontic treatment comfortable?
Extremely Unlikely [] [] [] [] [] [] [] [] [] [] [] extremely likely
2. Was / will change in the food habits necessary?
Extremely Unlikely [] [] [] [] [] [] [] [] [] [] [] extremely likely
3. Was / will maintenance of the oral hygiene difficult during orthodontic treatment?
Extremely Unlikely [] [] [] [] [] [] [] [] [] [] [] extremely likely
4. Was / will wearing of braces shameful?
Extremely Unlikely [] [] [] [] [] [] [] [] [] [] [] extremely likely
5. Was / will visiting of orthodontist after debonding necessary?
Extremely Unlikely [] [] [] [] [] [] [] [] [] [] [] extremely likely
6. Was / will wearing of elastics during orthodontic treatment have any use?
Extremely Unlikely [] [] [] [] [] [] [] [] [] [] [] extremely likely
7. Was / will change in the looks after orthodontic treatment?
Extremely Unlikely [] [] [] [] [] [] [] [] [] [] [] extremely likely

Mean: _____

Instructions:

1. Give the scoring between 1-10 scale.
2. The lowest scores indicate a more positive attitude toward orthodontic treatment and the highest scores indicate a more negative attitude toward orthodontic treatment.

Remarks, if any: _____

A brief explanation about the scope of this study and clarification of questions included in the questionnaire and how to score them were given to all subjects. Patients were encouraged to ask for help or further explanation if they encountered any difficulty in understanding or scoring the questionnaire.

Results

Each group consisted of 25 males and 25 females of the age group of 21-25 years. The data suggests that both the groups were well matched for age and gender with a mean age of 22.7 ± 1.4 in untreated group and 23.07 ± 1.3 in treated group [Table 1 & chart 1].

The mean pain perception for the Group 1 (untreated group) was 4.09 ± 0.89 and similarly for Group 2 (treated group) was 3.33 ± 0.53 . The comparison of pain perception of untreated and treated group [Table 1] indicated that there was difference between the two groups, that is, orthodontic treatment had effect on pain perception ($P < 0.001$).

The mean attitude for untreated group was 4.19 ± 0.97 and 3.65 ± 0.78 for treated group. There was statistically significant difference ($P = 0.003$) in the attitude of untreated and treated groups [Table 1 & chart 1].

The mean pain perception of the males in untreated group was 4.15 ± 0.92 and 4.03 ± 0.87 for females and in the treated group it was 3.42 ± 0.56 for males

and 3.24 ± 0.21 for females. A two-sample t-test revealed, there was no statistically significant difference in pain perception of males and females in the untreated group ($P = 0.64$) and treated group ($P = 0.23$). Thus, there was no effect of gender on pain perception [Table 2 & chart 2].

The mean attitude of males in untreated group was 4.05 ± 1.03 and 4.33 ± 0.91 for females and in

treated group it was 3.57 ± 0.82 for males and 3.73 ± 0.76 for females. A two-sample t-test revealed there was no significant difference in attitude of males and females in untreated group ($P = 0.31$) and in the treated group ($P = 0.49$), suggesting that there was no effect of gender on attitude of the patient [Table 3 & chart 3].

Table 1: Showing the result of independent t-test

GROUP	N	Mean	Std. Deviation	Std. Error Mean	Mean Difference	P Value
pain perception mean	untreated	50	4.09	.89	.125	<0.001*
	treated	50	3.33	.53	.076	
attitude mean	untreated	50	4.19	.97	.138	.003*
	treated	50	3.65	.78	.111	

Where * shows statistically significant

Chart 1: Showing the result of independent t-test

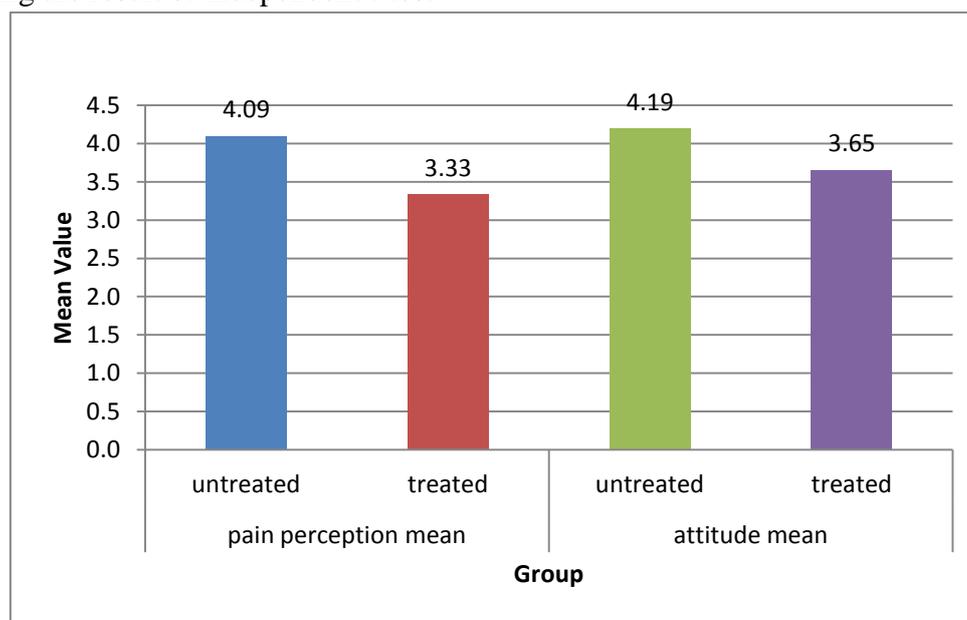


Table 2: Showing the result of pain perception towards the orthodontic treatment

SEX	N	Mean	Std. Deviation	Std. Error Mean	Mean Difference	P Value
untreated	MALE	25	4.15	.92	.184	.644
	FEMALE	25	4.03	.87	.174	
treated	MALE	25	3.42	.56	.111	.231
	FEMALE	25	3.24	.51	.101	

Where * shows statistically significant

Chart 2: Showing the result of pain perception towards the orthodontic treatment

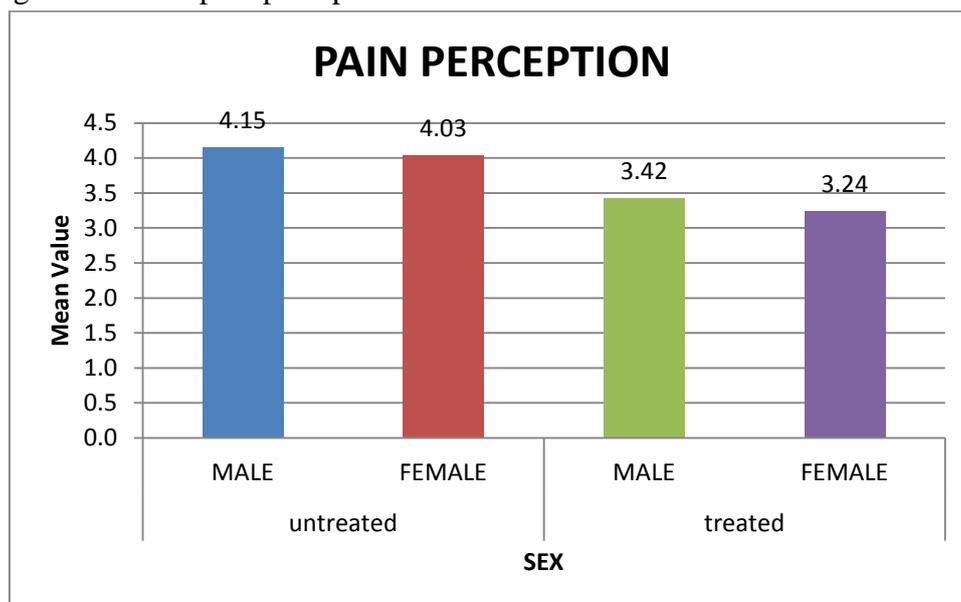
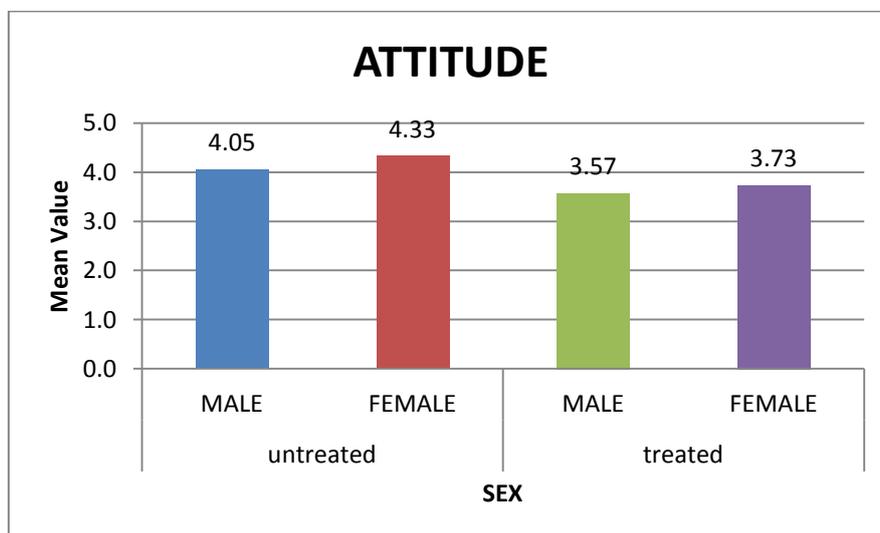


Table 3: Showing the result of attitude towards the orthodontic treatment

SEX		N	Mean	Std. Deviation	Std. Error Mean	Mean Difference	P Value
untreated	MALE	25	4.05	1.03	.206	-.28	.314
	FEMALE	25	4.33	.91	.183		
treated	MALE	25	3.57	.82	.163	-.15	.492
	FEMALE	25	3.73	.76	.152		

Where * shows statistically significant

Chart 3: Showing the result of attitude towards the orthodontic treatment



Discussion

Optimum clinical management of patients seeking orthodontic treatment requires patient motivation and cooperation, which may be affected by their attitude toward orthodontic treatment and pain perception.⁵ Knowing the patient's attitude would

aid the orthodontist to understand the patient better in terms of their compliance which is one of the most important factors for successful treatment. Today, when the patient has paramount importance in decision making and treatment planning, knowing the relationship between pain perception

and his/her attitude toward treatment should help to improve patient satisfaction.

The results of the present study have shown that the treatment had a positive effect on pain perception and treated patients showed less pain and discomfort, and positive attitude towards the orthodontic treatment [Table 1]. Using a questionnaire based model, Zhang et al.⁷ also obtained similar results.

Contrary to the findings of the present study, Firestone et al.⁵ stated that the pain perception was similar for treated and untreated groups and there was no effect of treatment on pain perception. Abu Alhaija et al.⁶ also obtained similar result.

Patient compliance and attitude of the patient toward treatment are important factors for successful treatment. In the present study, there was statistically significant difference ($P = 0.03$) in attitude of treated and untreated patients [Table 1].

Many other studies have shown better attitude in treated patients compared to untreated patients with greater dental awareness, internal control, and improvement in self-image than those who hadn't been treated previously.^{8,9,10,11,12}

In this study, the gender did not have any effect on pain perception [Table 1]. Similarly, in a study by Ngan et al.¹³ pain perception didn't show any gender variation over a period of 7 days into the treatment after placement of arch wires. Similar results were also shown Jones and Chan.¹⁴ and Erdinç and Dinçer¹⁵ in their studies.

Many other studies revealed greater pain perception in females than in male subjects.^{16,17} In a similar questionnaire based study done by Abu Alhaija et al.² showed gender as the only factor that affects subject's average pain perception and females had greater pain perception than males. The possible causes for variation of results of the present study from the aforementioned published studies could be due to racial differences, difference in a sample size of the studies and socioeconomic status of the patients.

It was hypothesized that female subjects would have a more positive attitude toward orthodontics than male subjects.⁹ In this study, there was no

effect of the gender on attitude of the patient toward orthodontic treatment in treated and untreated subjects [Table 3]. Similar results were shown in the studies by Bos et al.⁹ and Abu Alhaija et al.² where the gender of patients did not show any effect on attitude toward orthodontic treatment.

In the present study, there was a strong correlation between pain perception and attitude of the patients. Similarly a study by Serogl et al.¹⁸ showed poor attitude with increased pain perception. Pain was one of the most important discouraging factors for taking up orthodontic treatment and most important negative motives for taking up orthodontic treatment.^{2,17,19,20}

The present study indicates that patients' attitude affect pain perception toward orthodontic treatment. Knowing the attitude of the patient before commencing, during and after the treatment may be beneficial for the patient and for the orthodontist.

It is recommended that psychological assessment of the patient should be given due importance pretreatment, during treatment and post treatment to elicit maximum compliance of the patient and improve patient satisfaction.

Conclusion

- Lack of awareness towards the orthodontic treatment was noticed in the untreated patients.
- Pain perception and attitude of treated patients may vary by operator's skills and practice.
- Gender had no effect on pain perception or attitude of the patients toward treatment.

A more positive attitude was found in patients who experienced less pain during orthodontic treatment.

Reference

1. Kadu A, Chopra SS, Jayan B, Kochar GD. Effect of the personality traits of the patient on pain perception and attitude toward orthodontic treatment. *J Indian Orthod Soc* 2015;49:89-95.
2. Abu Alhaija ES, Aldaikki A, Al-Omairi MK, Al-Khateeb SN. The relationship between

- personality traits, pain perception and attitude toward orthodontic treatment. *Angle Orthod* 2010;80:1141-9.
3. Mendigeri V et al. Knowledge, Attitude, and Pain Perception of Patient toward Orthodontic Treatment: A Questionnaire Survey. *Journal of International Oral Health* 2016; 8(1):1-5.
 4. Scheurer PA, Firestone AR, Bürgin WB. Perception of pain as a result of orthodontic treatment with fixed appliances. *Eur J Orthod* 1996;18:349-57.
 5. Nanda RS, Kierl MJ. Prediction of cooperation in orthodontic treatment. *Am J Orthod Dentofacial Orthop* 1992;102:15-21.
 6. Firestone AR, Scheurer PA, Bürgin WB. Patients' anticipation of pain and pain-related side effects, and their perception of pain as a result of orthodontic treatment with fixed appliances. *Eur J Orthod* 1999;21:387-96.
 7. Zhang M, McGrath C, Hägg U. Patients' expectations and experiences of fixed orthodontic appliance therapy. Impact on quality of life. *Angle Orthod* 2007;77:318-22.
 8. Fernandes LM, Espeland L, Stenvik A. Patient-centered evaluation of orthodontic care: A longitudinal cohort study of children's and parents' attitudes. *Am J Orthod Dentofacial Orthop* 1999;115:227-32.
 9. Bos A, Hoogstraten J, Prahl-Andersen B. Attitudes towards orthodontic treatment: A comparison of treated and untreated subjects. *Eur J Orthod* 2005;27:148-54.
 10. Klages U, Bruckner A, Guld Y, Zentner A. Dental esthetics, orthodontic treatment, and oral-health attitudes in young adults. *Am J Orthod Dentofacial Orthop* 2005;128:442-9.
 11. Lee SJ, Ahn SJ, Kim TW. Patient compliance and locus of control in orthodontic treatment: A prospective study. *Am J Orthod Dentofacial Orthop* 2008;133:354-8.
 12. Varela M, García-Camba JE. Impact of orthodontics on the psychologic profile of adult patients: A prospective study. *Am J Orthod Dentofacial Orthop* 1995;108:142-8.
 13. Ngan P, Kess B, Wilson S. Perception of discomfort by patients undergoing orthodontic treatment. *Am J Orthod Dentofacial Orthop* 1989;96:47-53.
 14. Jones M, Chan C. The pain and discomfort experienced during orthodontic treatment: A randomized controlled clinical trial of two initial aligning arch wires. *Am J Orthod Dentofacial Orthop* 1992;102:373-81.
 15. Erdinç AM, Dinçer B. Perception of pain during orthodontic treatment with fixed appliances. *Eur J Orthod* 2004;26:79-85.
 16. Ramírez-Maestre C, LópezMartínez AE, Zarazaga RE. Personality characteristics as differential variables of the pain experience. *J Behav Med* 2004;27:147-65.
 17. Bergius M, Broberg AG, Hakeberg M, Berggren U. Prediction of prolonged pain experiences during orthodontic treatment. *Am J Orthod Dentofacial Orthop* 2008;133:339.e1-8.
 18. Serogl HG, Klages U, Zentner A. Pain and discomfort during orthodontic treatment: Causative factors and effects on compliance. *Am J Orthod Dentofacial Orthop* 1998;114:684-91
 19. Egolf RJ, BeGole EA, Upshaw HS. Factors associated with orthodontic patient compliance with intraoral elastic and headgear wear. *Am J Orthod Dentofacial Orthop* 1990;97:336-48.
 20. Al-Omiri MK, Abu Alhaija ES. Factors affecting patient satisfaction after orthodontic treatment. *Angle Orthod* 2006;76:422-31.