

# Correlation of pain perception and motivation to seek orthodontic treatment

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## Abstract

**Introduction:** The objective of this study was to explore the impact of motivation to seek orthodontic treatment on perception of pain during treatment.

**Material and Methods:** It was a cross-sectional study involving 75 patients attending the orthodontic clinic from September to October, 2010. Patients of Pakistani origin, aged 16 years and older and patients receiving fixed orthodontic treatment were included. The data collection instrument was a perception questionnaire consisting of 8 questions covering 2 domains; pain experiences and motivation to seek orthodontic treatment. Pain during different orthodontic procedures was scored using a qualitative pain intensity scale. Motivation to seek orthodontic treatment was assessed by questions concerning how important the patients thought it was to have straight teeth and their willingness to bear pain in order to have an attractive smile. A pain and motivation score was calculated by summing the above assessments.

**Results:** No statistically significant results were observed for gender dimorphism for pain and motivation. A very weak negative correlation was found between pain and motivation.

### Conclusions:

- No gender dimorphism for pain and motivation exists
- Higher motivation to seek orthodontic treatment does not affect perception of pain

**Keywords:** Discomfort; attitude; gender dimorphism

## Introduction

Pain and discomfort are frequently encountered during orthodontic treatment.<sup>1</sup> It is also stated to cause a number of patients to interrupt or discontinue treatment, affecting compliance and treatment times.<sup>2-5</sup> However, in most dental settings, experience of pain is influenced by both general and individual factors. Similarly, perception of pain during orthodontic treatment is said to be greatly influenced by previous negative dental experiences,<sup>6</sup> present emotional state and stress, sex and age, cultural differences,<sup>1,7</sup> various personality factors, motivation and attitude towards

orthodontic treatment.<sup>6</sup>

With the increase in esthetic awareness, people are becoming more and more perceptive about their malocclusion. The drive to seek orthodontic treatment is hence increasing. Studies<sup>9,10</sup> have showed that motivation to seek orthodontic treatment can affect the way patients report pain during orthodontic treatment.

Hence the aim of this study was to elucidate a potential relationship between patient's motivation to seek treatment and the amount of discomfort perceived in order to evaluate the role of attitude toward treatment as a predicting factor for the intensity of complaints that may occur during orthodontic treatment. It was hypothesized that perception of pain reduces with higher motivation to seek orthodontic treatment.

## Material and Methods

It was a cross sectional study including patients undergoing orthodontic treatment at the orthodontic clinic from September to October 2010. Inclusion criteria for the

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patients were adults of Pakistani origin, aged 16 years and older and patients receiving comprehensive fixed orthodontic treatment. Exclusion criteria were patients with cognitive or medical disorders, untreated dental caries, periodontal diseases, previous orthodontic treatment and patients receiving other types of orthodontic appliances aside from conventional fixed labial appliances. After screening 75 patients participated in the study.

The data collection instrument was a perception questionnaire (Figure 1) consisting of 8 questions covering 2 domains: pain experiences and motivation to seek orthodontic treatment.

Pain during different orthodontic procedures was scored using a qualitative pain intensity scale which ranked pain from 'no pain' to 'severe pain'. Participants were requested to grade the pain they experienced during pre-treatment record taking, separators, bands and bracket placement and after wire activation visits. A cumulative pain score was computed by summing the above scores for each patient.

Motivation to seek orthodontic treatment was assessed by questions concerning how important the patients thought it was to have straight teeth and their willingness to bear extreme pain in order to have an attractive smile. The patients were also asked to mention their mode of referral to the orthodontists. A motivation score was calculated by summing the above assessments.

Statistical analysis was carried out using SPSS for Windows (Statistical Package for Social Science version 19.0, SPSS Inc. Chicago). Descriptive statistics were calculated for the data collected from the perception questionnaire. Correlation between pain and motivation scores was assessed using Pearson's correlation. Gender dimorphism for pain during different orthodontic procedures was evaluated using Mann Whitney-U test. Statistical significance level was set at  $p \leq 0.05$ .

## Results

The total sample consisted of 75 orthodontic patients (28 males and 47 females, mean age 17 years and 7 months). Table I describes gender dimorphism for pain. No statistically significant differences were observed between the mean ranks of males and females. Table II describes gender dimorphism for motivation. No statistically significant differences were observed between the mean ranks of males and females. Figure I shows a scatter plot indicating a very weak negative correlation between pain and motivation scores ( $r = -0.199$ ;  $p = 0.08$ ).

## Discussion

In order to investigate pain perceptions during orthodontic treatment, this study reports patients who underwent standard orthodontic procedures for fixed appliance therapy. Several studies have shown that orthodontic treatment is frequently associated with pain.<sup>1,8,9</sup> In agreement with these studies, the present investigation indicates moderate degrees of pain associated with different orthodontic procedures.

Berguis et al<sup>11</sup> reported girls to experience higher degrees of pain more frequently than boys. Scheurer et al<sup>12</sup> results were in agreement with this. However, the orthodontic literature seldom points to any correlation between gender and perception of pain during orthodontic treatment.<sup>13,14</sup> Similarly, our study reports no gender dimorphism for pain during different orthodontic procedures.

Our results also indicate that majority of the patients were highly motivated to seek orthodontic treatment and no gender dimorphism existed. Both girls and boys were equally concerned about their dental appearance and considered it highly important to have straight and well aligned teeth. Neither increased pain nor extended treatment time was a problem for the majority of the patients. They were willing to accept

both in order to get straight teeth. This was in disagreement to other studies<sup>11,15</sup> reporting that girls were more negative than boys about the appearance of their teeth before starting orthodontic treatment and more frequently took the initiative to seek orthodontic treatment by themselves, as compared to boys.

The present study also investigated the impact of motivation to seek orthodontic treatment on perception of pain. Serg et al<sup>9</sup> showed that patients who perceived their malocclusion as severe and had higher motivation levels to seek treatment reported lesser degrees of pain during treatment. In another study by Berguis et al<sup>10</sup> it was concluded that prolonged pain assessments could be related to low motivation for orthodontic treatment. This was in contrast to our results which were in agreement with other authors<sup>11,15</sup> who reported no influence of motivation on perception of pain.

**Table I: Gender Dimorphism for Pain**

Procedure	Gender N= 75		p value
	Males (n=28) Mean Rank	Females (n=47) Mean Rank	
Records	44.46	45.22	0.89
Separators	37.92	47.92	0.08
Banding	39.38	47.32	0.17
Bonding	45.48	44.80	0.91
Wire Adjustment	41.98	46.25	0.46

N=75

Mann Whitney U Test

\*p ≤ 0.05

### Conclusions

- No gender dimorphism exists for perception of pain and motivation to seek orthodontic treatment.

- Higher motivation to seek orthodontic treatment does not affect perception of pain.

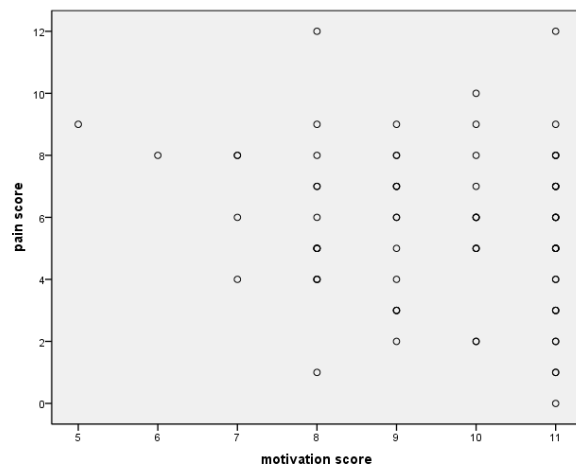
**Table II: Gender Dimorphism for Motivation**

Parameter	Gender N= 75		p value
	Males (n=28)	Females (n=47)	
Motivation	32.45	40.16	0.154

N=75

Mann Whitney U Test

\*p ≤ 0.05



**Figure 1: Scatter Plot for Pain and Motivation (Pearson's correlation)**

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**Personal information**

Name: \_\_\_\_\_

Gender: 1. Male 2. Female

Age(years/months): \_\_\_\_\_

**Pain Perception****Verbal Pain Rating Scale**

Please rate your pain score for the following procedures using the above scale, if applicable to you:

1. At the time of pre-treatment orthodontic record taking:

0 1 2 3

2. When the separators were placed before banding:

0 1 2 3

3. After banding procedure:

0 1 2 3

4. Bonding of braces:

0 1 2 3

5. Wire adjustment visits:

0 1 2 3

**General Questions**

1. It is very important to have straight teeth:

1. Strongly Disagree
2. Disagree
3. Agree
4. Strongly agree

2. You are ready to accept more pain just to have your teeth straightened?

1. Strongly Disagree
2. Disagree
3. Agree
4. Strongly agree

3. You had your braces treatment started because:

1. You were concerned about the way your teeth looked.
2. Your parents were concerned about the way your teeth looked.
3. Your dentist was concerned about the way your teeth looked.

Figure 1: A Survey of Perception of Orthodontic Pain and its Effect on Patient's Quality of Life