



CODEN [USA]: IAJ PBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF  
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.1218653>Available online at: <http://www.iajps.com>

Research Article

**EFFECTS OF ORTHODONTIC PAIN ON QUALITY OF LIFE  
OF PATIENTS UNDERGOING ORTHODONTIC TREATMENT  
IN PAKISTAN****Dr. Mamoona Batool<sup>1</sup>, Dr. Shahzadi Huma Amjad<sup>2</sup>, Dr. Maham Farooq<sup>3</sup>,  
Dr. Furqan Jamal<sup>4</sup>**<sup>1</sup>Associate Dental Surgeon at Islamabad Dental Clinic, Islamabad<sup>2</sup>Associate Dental Surgeon at Owais Dental Clinic, Islamabad<sup>3</sup>Associate Dental Surgeon at Dental Practice, Lahore<sup>4</sup>Masters of Dental Surgery (Orthodontics), Punjab Dental Hospital, Lahore**Abstract:**

**Introduction:** In orthodontics, researchers have assessed health-related quality of life (OHRQOL) in connection with orthodontic treatment outcomes; however, research on orthodontic patients QOL during their treatment is scarce. Orthodontic pain, the most cited negative effect arising from orthodontic force application, is a major concern for parents, patients, and clinicians. Studies have reported this reaction to be a major deterrent to orthodontic treatment and an important reason for discontinuing treatment.

**Objective of the study:** The main objective and focus of the study was to find the relationship between pain and OHRQOL among patients wearing fixed orthodontic appliances.

**Methodology of the study:** A total of 200 patients which included 120 female and 80 male patients in the adolescent age group of 13–18 years undergoing orthodontic treatment from January 2016 chosen by random selection were included for the study.

**Results:** There was a significant correlation found between pain and the QOL of patients undergoing orthodontic treatment. Overall score of OHRQOL increased significantly in the initial phase of treatment where the incidence of severe to moderate pain was reported in 80% patients.

**Conclusion:** Pain is very important sequelae of treatment and incorporates a vital impact on the QOL of orthodontology patients, particularly throughout the initial phases of treatment. Patient motivation and content by the dentist have a profounding impact in reducing the pain and discomfort, up the QOL, associated an overall improvement within the patient compliance touching the eminent outcome of the treatment.

**Keywords:** Orthodontics, OHRQOL, pain.

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Please cite this article in press Mamoona Batool et al., *Effects of Orthodontic Pain on Quality of Life of Patients Undergoing Orthodontic Treatment in Pakistan*, Indo Am. J. P. Sci, 2018; 05(04).

**INTRODUCTION:**

Most research in assessing the impact of malocclusion and treatment tends to focus on traditional clinical indices and measures. Investigators want to utilize the difference in cephalometric planes and edges or associate evaluation rating scores when orthodontic treatment as result measures. Nonetheless, the proposal by World Health Organization that personal satisfaction (QoL) measures ought to be incorporated into clinical examinations has brought about more accentuation on consideration of patient-focused result measures when contemplating orthodontic treatments and outcomes [1]. Patient-focused care is an idea that has been presented as of late in healthcare systems. Among the fundamental components are a need to comprehend the patient's treatment needs, encounters, fulfillment and the apparent general nature of healthcare system<sup>1</sup>. With an expanding number of grown-up patients now looking for orthodontic treatment, there is a developing requirement for such research in orthodontics. To date, almost no work has been distributed assessing persistent encounters amid treatment in connection to the kind of machine being gotten.

Understanding focused care is an idea that has been presented as of late in healthcare systems. Among the primary components are a need to comprehend the patient's treatment needs, encounters, fulfillment and the apparent general nature of healthcare system [2]. With an expanding number of grown-up patients now looking for orthodontic treatment, there is a developing requirement for such research in orthodontics. To date, next to no work has been distributed assessing quiet encounters amid treatment in connection to the kind of machine being gotten.

Inconvenience is communicated as unsavory material sensations, feeling of requirement in the oral hole, extending of the delicate tissues, weight on the mucosa, uprooting of the tongue, and soreness of teeth and pain [3]. All orthodontic systems, for example, separator position, curve wire situation and enactments, use of orthopedic powers, and debonding produce torment in patients. Torment, incited by orthodontic treatment, for the most part could be classified as mellow and short-lasting [4]. However, a few patients do encounter serious agony, and even to the degree that rumination of sustenance and tooth brushing may be impeded. Agony is a subjective reaction and shows substantial individual variations [5]. Patients' self-confidence might be affected by visibility of the appliance and speech impairment, especially during social interactions when attention is

focused on the face, eyes, and mouth. Poor oral health can affect physical, psychological, and social conditions, which in turn affect patients' quality of life (QOL) [6]. In orthodontics, researchers have assessed health-related quality of life (OHRQOL) in connection with orthodontic treatment outcomes; however, research on orthodontic patients QOL during their treatment is scarce. Orthodontic pain, the most cited negative effect arising from orthodontic force application, is a major concern for parents, patients, and clinicians. Studies have reported this reaction to be a major deterrent to orthodontic treatment and an important reason for discontinuing treatment [7]. OHRQOL is defined as "the absence of negative impacts of oral conditions on social life and a positive sense of dento facial self-confidence." With regard to fixed orthodontic appliance therapy, understanding the consequences and discomforts during orthodontic procedures affords patients more realistic expectations regarding orthodontic treatment and may increase adherence to treatments.

**Objectives of the study**

The main objective and focus of the study was:

- To find the relationship between pain and OHRQOL among patients wearing fixed orthodontic appliances
- To evaluate whether patient motivation and counseling had an effect on the pain and discomfort.

**METHODOLOGY:**

A total of 200 patients which included 120 female and 80 male patients in the adolescent age group of 13–18 years undergoing orthodontic treatment from January 2016 chosen by random selection were included for the study. Approval for the study was obtained from the Institutional committee. Mean age of elect patients was fifteen.0 years. The exclusion criteria were patients with severe skeletal pattern (Class II or category III) UN agency needed orthognathic surgery and syndromic patients (cleft lips or surface or both). The McGill-Short-Form with visual analog scale (VAS) scale and present pain intensity (PPI) and Oral Health Impact Profile (OHIP)-14 indices were used to determine the intensity and severity of pain and to evaluate the QOL. Patients were asked to complete questionnaires and to answer questions about pain and discomfort they had experienced during 1 month after the appliance insertion. The questions on the intensity of pain contained 3 series of horizontal visual analog scales on that the patient marked the intensity of pain once one day, 1 week, and one month. It had been doable to decide on answers to the queries on a zero–

4 score scale as follows: 0 - No pain/discomfort, one - delicate pain/discomfort, a pair of - moderate pain/discomfort, and three - severe pain/discomfort, four - terribly severe pain/discomfort.

#### Statistical analysis

Student's t-test was performed to evaluate the differences in roughness between group P and S. Two-way ANOVA was performed to study the contributions. A chi-square test was used to examine the difference in the distribution of the fracture modes (SPSS 19.0 for Windows, SPSS Inc., USA).

#### RESULTS:

The statistical significances of the differences between the groups were evaluated using the nonparametric tests. The paired means in time period analysis were statistically compared using the Wilcoxon signed-rank test. Chi-squared statistics was used to evaluate the statistical significance of the differences in prevalence between groups.  $P \leq 0.05$  was considered statistically significant. Ninety-five percent patients felt pain or discomfort. After 1 day of appliance placement, more than 85% of patients experienced severe to mild pain whereas 9% of patients suffered very severe pain. (Table 1).

**Table 1: Pain intensity mean score at different time periods after the appliance insertion**

score	Pain intensity	Day 1 n (%)	Day 7 n (%)	1 month n (%)
0	No pain	4.5	21	32
1	Moderate pain	23	24	35
2	Mild pain	22	31	54
3	Severe pain	44	5.5	0.5
4	Very high pain	10	2	2
	Chi-squared test	P<0.001		

During the 1 month of fixed orthodontic treatment, almost all domains in the OHRQOL, i.e., functional limitation, physical pain, physical disability, psychological disability, and psychological discomfort, were significantly affected following insertion of fixed orthodontic appliances, except physically challenged domain and social disability (table 2).

**Table 2: Frequency distribution of reported impacts on the activities of the Oral Health Impact Profile and orthodontic treatment status**

Questions	Never %	Seldom %	Sometime %	Often %	Always %
Problem in pronunciation	10.0	0.5	86.0	1.1	9.1
Sense of taste is effected	0.5	5.1	86.1	0	9.4
Pain in the mouth	5.0	2.0	1.0	2.0	90.0
Uncomfortable to eat food	4.5	0	1.5	1.0	93.0
Felt tense	4.5	12.5	15	6.0	62.5
Unsatisfactory diet	6.7	1.5	92.0	0	2.5
Interruption in meals	4.5	7.0	30.0	59.5	6.2
Difficulty in relaxation	42.1	5.5	45.5	3.0	2.6
Feel irritation in talking	5.6	5.0	92.0	0	1.0
Difficulty in routine life	84.6	6.1	5.5	0	3.5
Unable to do work properly	89.0	5.5	4.5	0	1.5

More than 85% of patients experienced problem in speech, more than 95% had problem in eating and experienced pain, 60%–65% of patients experienced anxiety, embarrassment, and difficulty to relax. There was a strong correlation between patients who indicated more pain (moderate to severe pain) during treatment with higher scores for the OHIP-14 impact profile ( $P < 0.05$ ).

**DISCUSSION:**

The most common and problematic sequela of orthodontic treatment is pain and discomfort [9-11]. The intensity of orthodontic pain is comparable to the greatest intensity of general pain felt with a wasp sting or an ankle sprain. Between 87% and 95% of adolescents experience pain during fixed orthodontic treatment, especially during the first 24 h [12-15]. Moreover, 39%–49% experience pain during every step of the treatment or after appliance removal. Therefore, pain is a major deterrent to orthodontic treatment, a factor that reduces patient compliance during treatment, and a reason that patients discontinue treatment or miss appointments. According to 90% of patients, orthodontic treatment is painful, and 30% might prematurely cease treatment because of the pain [16]. Despite its substantial clinical value, this area has been surprisingly neglected in the literature, educational programs, and practice. Orthodontists usually underestimate the degree of pain caused by treatment and are not well equipped to assess if and when their patients might need painkillers [2]. Pain has been assessed in only a handful of studies. According to the literature, 70%–95% of orthodontic patients experience pains during treatment.<sup>17</sup> About 11% of patients maintain that treatment is constantly painful.<sup>18</sup> It has been suggested that psychological factors may influence patients' adaptation to pain and discomfort during orthodontic treatment. Recent research data indicate that patients may adapt to continuous pain with the progression of treatment as the sensations cease or at least disappear from their focus of attention. A clinician must precisely know and explain to patient how much time is needed for such adaptation to occur [19].

Although all studies agree that pain occurs during orthodontic treatment, there are large variations between reported prevalence rates, intensities, and durations of pain [20]. Sergl *et al* [14] pointed out that patients, who were aware of the severity of their orthodontic irregularities, perceived lower intense feeling of discomfort. Unfortunately, motivation for orthodontic treatment usually is very weak, especially in young children. It has been found that parents reported greater motivation for their children to have orthodontic treatment than did the children [21]. Consequently, the second aim of our study was to elucidate roles of patients' motivation for orthodontic treatment and awareness of negative perceptions to the intensity of pain during orthodontic treatment. In agreement with previous studies, we found that pain perception was significantly associated with patients' motivation for treatment and their awareness of probable discomfort. Patients who were positively

motivated for treatment or were aware of potential pain and discomfort after 1 week complained of significantly less acute pain than patients from alternative group. Insufficient information about orthodontic treatment and lack of communication between the orthodontist and patient were the basis for premature termination of orthodontic treatment. Lighter forces are less traumatic and painful and are thought to be ideal for orthodontic treatment but this recommendation is controversial [1]. Crowded teeth will be actively engaged with the arch wire, which results in substantial forces depending on the level of crowding. Therefore, extreme forces are likely unavoidable at the beginning of treatment and will produce pain that peaks around 24 h after treatment and reduces slightly after the 2<sup>nd</sup> or 3<sup>rd</sup> day [22].

**CONCLUSION:**

Pain is one of the primary reasons for patients' noncompliance and is a major reason for missing appointments, which affects the quality of treatment and a significant factor affecting the OHRQOL of orthodontic patients. The perception of pain and discomfort among dental medicine patients was variable throughout the first month when the appliance insertion additionally reckoning on the patients' motivation for treatment and their awareness of probable discomfort. Patients UN agency were completely intended for the treatment or were awake to probable pain and discomfort according considerably decreasing pain.

**Contribution of authors**

All the authors contributed equally. Dr. Mamoona Batool conceived of the presented idea and does all the lab work and carried out the experiment with other co-authors. Dr. Shahzadi Huma Amjad developed the theory and performed the computations. Dr. Maham Farooq supervised the findings of this work and Dr. Furqan Jamal and Dr. Mamoona Batool developed the theoretical formalism, performed the analytic calculations and performed the numerical simulations. All the authors contributed to the final version of the manuscript.

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