



ISSN Print: 2394-7489  
ISSN Online: 2394-7497  
IJADS 2020; 6(3): 520-522  
© 2020 IJADS  
[www.oraljournal.com](http://www.oraljournal.com)  
Received: 06-06-2020  
Accepted: 21-07-2020

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## Assessment of impact of orthodontic pain on quality of life of patients undergoing orthodontic treatment

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### Abstract

**Background:** Fixed orthodontic appliance therapy is a regular orthodontic treatment to correct variations from an arbitrary norm (align the teeth or correct other irregularities), which may cause functional restrictions, discomfort and pain, but traditional orthodontic studies have only included clinician-based outcome measures. Hence; the present study was undertaken for assessing impact of orthodontic pain on quality of life of patients undergoing orthodontic treatment

**Materials & methods:** A total of 50 patients between the age group of 14 to 18 years were included in the present study. Pain was assessed using visual analogue scale (VAS) on a scale of zero to 10. A self-framed questionnaire was given to all the patients for assessing the impact of orthodontic pain on quality of life. The questions are rated using the five-level Likert scale (always<sup>[4]</sup>, often<sup>[3]</sup>, sometimes<sup>[2]</sup>, rarely<sup>[1]</sup>, and never<sup>[0]</sup>). All the results were analysed by SPSS software.

**Results:** After one day of starting of fixed orthodontic treatment, no pain was seen in 3 patients, moderate pain was seen in 13 patients, while severe pain was seen in 25 patients. After one month, severe pain was seen only in one patient. With passage of time, there was significantly reduction in the mean pain score. Out of 50 patients, 86 percent of the patients sometimes had problems in pronouncing words. 76 percent of the patients sometime had painful aching in the mouth. 80 percent of the patients sometimes felt embarrassed. 86 percent of the patients sometimes had difficulty in doing usual jobs.

**Conclusion:** From the above results, the authors concluded that pain is the major reasons for patients' non-cooperation and is a significant cause for missing appointments, which alters the quality of treatment.

**Keywords:** orthodontic, pain, quality

### Introduction

Fixed orthodontic appliance therapy is a regular orthodontic treatment to correct variations from an arbitrary norm (align the teeth or correct other irregularities), which may cause functional restrictions, discomfort and pain, but traditional orthodontic studies have only included clinician-based outcome measures. Since Cohen and Jago advocated development of 'social-dental' indicators, there have been considerable subjective patient-based measurement results leading to further understanding about psychosocial well-being and/or dental health<sup>[1-3]</sup>. Pain intensity can also be affected by the type of appliance. Patients with fixed appliances report significantly greater pain intensity than those with removable ones. Invisalign aligners, besides other proposed benefits, have been proven to offer less pain compared to the fixed orthodontic appliances during the initial stages of treatment<sup>[4]</sup>.

A simple and non-invasive preoperative sensory technique of using a cold pressor test aids in predicting the risk of developing pain in patients undergoing orthodontic treatment. Self-reported pain was reduced after archwire placements as the individual's pain tolerance increased. This experiment might help highlight an individual's variations and preferred method of pain management<sup>[5-7]</sup>. Hence; the present study was undertaken for assessing impact of orthodontic pain on quality of life of patients undergoing orthodontic treatment

### Materials & methods

The present study was undertaken for assessing impact of orthodontic pain on quality of life of patients undergoing orthodontic treatment. A total of 50 patients between the age group of 14 to 18 years were included in the present study. Inclusion criteria for the present study included:

- Patients who were undergoing fixed orthodontic treatment from past six months,
- Patients with negative history of any other systemic illness
- Patients with negative history of any psycho-somatic disorder
- Patients in which no therapeutic intervention was planned using any other intra-oral or extra oral device except for fixed orthodontic treatment

Pain was assessed using visual analogue scale (VAS) on a scale of zero to 10. Following description of VAS was used:

Score of zero: No pain,

Score of one to three: Mild pain,

Score of four to seven: Moderate pain,

Score of Eight to ten: Severe pain

A self-framed questionnaire was given to all the patients for assessing the impact of orthodontic pain on quality of life. The questions are rated using the five-level Likert scale (always [4], often [3], sometimes [2], rarely [1], and never [0]) [8]. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. Chi-square test was used for evaluation of level of significance.

**Results**

In the present study, a total of 50 patients were analysed. After one day of starting of fixed orthodontic treatment, no pain was seen in 3 patients, moderate pain was seen in 13 patients, while severe pain was seen in 25 patients. After one month, severe pain was seen only in one patient. With passage of time, there was significantly reduction in the mean pain score.

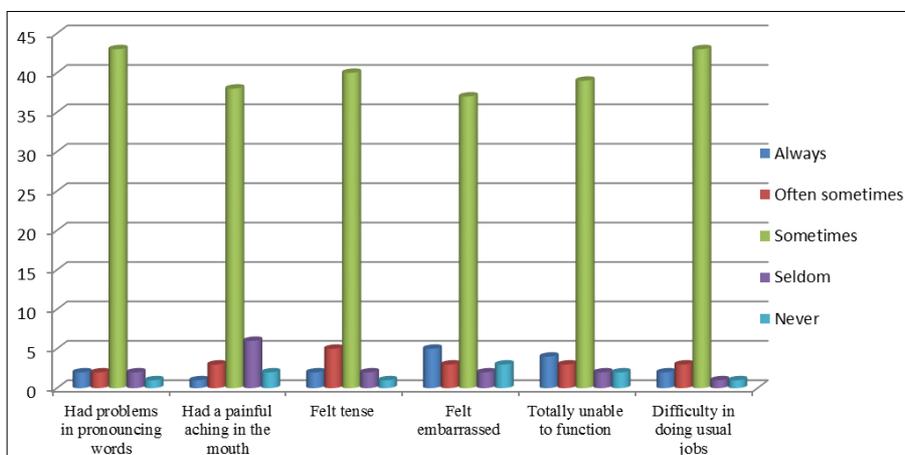
Out of 50 patients, 86 percent of the patients sometimes had problems in pronouncing words. 76 percent of the patients sometime had painful aching in the mouth. 80 percent of the patients sometimes felt embarrassed. 86 percent of the patients sometimes had difficulty in doing usual jobs.

**Table 1:** Pain range

Pain range	After one day	After one week	After one month	p- value
None	3	9	16	0.00 (Significant)
Mild	9	16	25	
Moderate	13	21	8	
Severe	25	4	1	
Total	50	50	50	

**Table 2:** Impact of pain on quality of life

Impact questions	Always	Often sometimes	Sometimes	Seldom	Never
Had problems in pronouncing words	2	2	43	2	1
Had a painful aching in the mouth	1	3	38	6	2
Felt tense	2	5	40	2	1
Felt embarrassed	5	3	37	2	3
Totally unable to function	4	3	39	2	2
Difficulty in doing usual jobs	2	3	43	1	1



**Graph 1:** Impact of pain on quality of life

**Discussion**

Pain is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage or is described in terms of such damage. With no exception, orthodontic pain is perceived as discomfort, dull pain and hypersensitivity in affected teeth. In most circumstances, pain motivates individuals to withdraw from damaging situations. However, because human beings are well acquainted with the fact that orthodontic pain is a normal adverse effect of tooth movement, orthodontic pain is well accepted by most orthodontic patients. Orthodontic pain is commonly referred to as tooth discomfort induced by orthodontic tooth movement, whereas a broader definition of orthodontic pain refers to any painful sensation, for example, mucosal ulcer, tongue discomfort and gingival lesion, caused by orthodontic

appliances [7-9].

According to most authors, self-ligating brackets produce less pain and have less impact on the oral quality of life than conventional fixed orthodontic treatment. Regarding lingual orthodontics, most authors consider that there is greater pain and impact on function (speech and chewing) in these patients compared with users of conventional orthodontics; however, aesthetics are improved. This improvement in the perception of aesthetics and comfort by patients has also been observed in users of the Invisalign system, with a lower perception of pain from the second day onwards when compared with patients treated with conventional orthodontics [8-10]. Hence; the present study was undertaken for assessing impact of orthodontic pain on quality of life of patients undergoing orthodontic treatment.

In the present study, a total of 50 patients were analysed. After one day of starting of fixed orthodontic treatment, no pain was seen in 3 patients, moderate pain was seen in 13 patients, while severe pain was seen in 25 patients. After one month, severe pain was seen only in one patient. With passage of time, there was significantly reduction in the mean pain score. Banerjee S *et al.* assessed the relationship between pain and OHRQOL among patients wearing fixed orthodontic appliances. The McGill-Short-Form with visual analog scale and present pain intensity and Oral Health Impact Profile-14 indices were used to determine the intensity and severity of pain and to evaluate the QOL of 200 adolescents undergoing fixed orthodontic treatment during different phases of treatment. There was a significant correlation found between pain and the QOL of patients undergoing orthodontic treatment. 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. Pain reduced over a week, and at the end of a month, 10.5% patients had moderate pain whereas majority, i.e., 58% of patients complained of only mild pain ( $P < 0.05$ ). Pain is important sequelae of orthodontic treatment and has a significant effect on the QOL of orthodontic patients, especially during the initial phases of treatment [8].

In the present study, out of 50 patients, 86 percent of the patients sometimes had problems in pronouncing words. 76 percent of the patients sometime had painful aching in the mouth. 80 percent of the patients sometimes felt embarrassed. 86 percent of the patients sometimes had difficulty in doing usual jobs. According to the literature published in recent years, there does not appear to be a statistically significant difference in pain with the different arches analyzed or between the use of different arch sequences and greater presence of pain [11-14].

### Conclusion

From the above results, the authors concluded that pain is the major reasons for patients' non-cooperation and is a significant cause for missing appointments, which alters the quality of treatment.

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