

Evaluation of pain in patients undergoing fixed dental appliance

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Abstract

Introduction: Pain is experienced by patients during various fixed orthodontic procedures such as placement of separators, insertion of arch wire and its activations, orthopedic appliances such as headgear, and debonding of the appliance. This study was formulated with the background that the level of pain sensation differs between conventional metal and ceramic brackets, arch wire being the same pain is an important aspect of oral health-related quality of life (OHRQOL). Understanding how patients' pain experiences during their treatment affect their quality of life (QOL) is important and the absence of pain/discomfort is important for achieving a high QOL.

Aim and Objective: The objective of this study was to assess the relationship between pain and OHRQOL among patients wearing fixed orthodontic appliances and to evaluate whether patient motivation and counseling had an effect on the pain and discomfort.

Materials and methods: The data collection was done, the obtained data were tabulated and entered in the MS excel sheet. Data collection were imported to SPSS, variable definition process was done using tables and graphical illustration.

Keywords: fixed appliance, discomfort, pain, Innovative technique

INTRODUCTION

Orthodontists must be able to address the concerns of the patient about their treatment. Pain and discomfort are frequent side-effects of orthodontic therapy with fixed appliances. In most cases, the level of pre-treatment explanations seems to be generally satisfactory. The mechanisms whereby the application of orthodontic forces cause pain are not yet fully understood, but there are indications that these perceptions are due to changes in blood flow in the periodontal ligament (1) and correlated with the presence of prostaglandins, substance P and other substances (1). The common perceptions of orthodontic treatment are mostly pain and discomfort. This could happen due to many reasons such as type of appliances and patient's compliance. Perception can be defined as the state of being or process of becoming aware of something through the senses. Discomfort encountered by patients is distasteful tactile feelings, sense of tightness in the mouth, tissues stretching, mucosa pressure, tongue displacement, dental soreness, and painful experience [2]. Pain is subjective and depends on variety of factors such as maturity, sex, discomfort level, magnitude of force on the appliance, emotive state or anxiety, racial background, and pain perception [3]. It can be categorized into mild, moderate, and severe pain

During the orthodontic treatment patients frequently undergo a number of functional complaints and social discomfort and they are anxious about their appearance. 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 (4). All orthodontic procedures such as separator placement, arch wire placement and activations, application of orthopaedic forces and debonding produce pain in patients. Pain, induced by orthodontic treatment, generally could

be categorized as mild and short lasting (5). However, some patients do experience severe pain, even to the extent that mastication of food and tooth brushing might be impaired (5).

The level of pain reported after archwire placement is believed to be greater and more prolonged than that following extraction of teeth. (6) Some researchers even mentioned that, 90 per cent of their orthodontic patients reported that, their treatment was painful and 30 percent of them considered ceasing treatment prematurely because of the pain they experienced.(7) Within first few hours of insertion of first archwires, the majority of patients report experiencing some pain, after 24 hours pain is reported by up to 95 per cent of patients undergoing therapy with fixed appliances.Erdinç and Dinçer(6) concluded that, initial pain is perceived at 2 hours and peaks at 24 hours during orthodontic treatment with fixed appliances.

Patients' pain is one aspect of oral health-related quality of life (OHRQoL), a relatively new concept in the oral health sciences. Pain related to orthodontic treatment leads to poor oral health which can affect physical, psychological, and social conditions of the patient, which in turn affect patient's Quality Of Life (QOL).(8) Pain from orthodontic treatment has been shown to have negative effects on oral hygiene efforts and to be a major reason for missing appointments; in addition, almost all orthodontic patients reported pain when chewing and biting foods of a firm or hard consistency, causing them to change their diet.(9-10)

The objective of this study was to evaluate the number of patients presenting with complaints about discomfort and pain following the placement of fixed orthodontic appliances for the first time, and to understand the contributing and relieving factors by using common pain medication

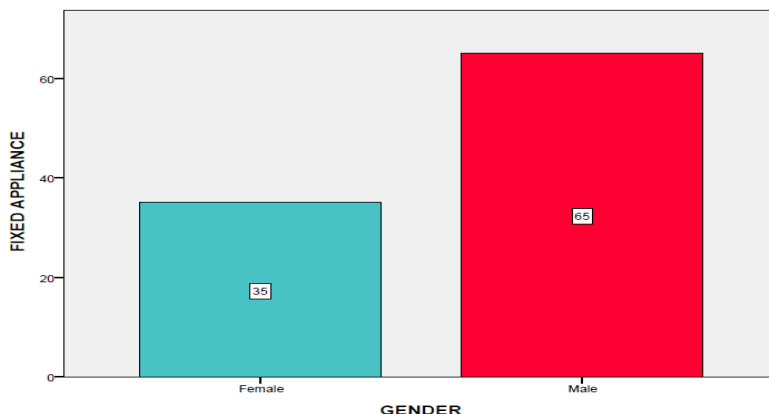
Materials and Methods

The study was done under a University setting. The study was approved by the Institutional Ethics Board .Two reviewers are involved in the study. The samples were obtained from patients who are undergoing orthodontic treatment in Saveetha Dental College from June 2020 – March 2022. The patients were asked to classify the pain after placement of orthodontic treatment into mild, moderate, and severe. They were also questioned the requirement of a pain killer and the type of pain killer they has used. The data collection was done , the obtained data were tabulated and entered in the MS excel sheet. Data collection were imported to SPSS, variable definition process was done using tables and graphical illustration.

By using the statistical software IBM SPSS version 23 statistical tests like description statistical test and inferential statistics were done keeping demographical, such as age, gender as independent variable and pain as dependent variable.The data was reviewed by one external reviewer and the data was imported to SPSS and variables defined .Chi- square was done on the data obtained. The type of analysis that was done was correlation and association.

Results:

The 100 participants the questionnaire (65% males, and 35 % females) enrolled in the study figure 1



In figure 2: Frequency of pain after fixation the dental appliance mild 49% ,moderate 29% and severe 22%

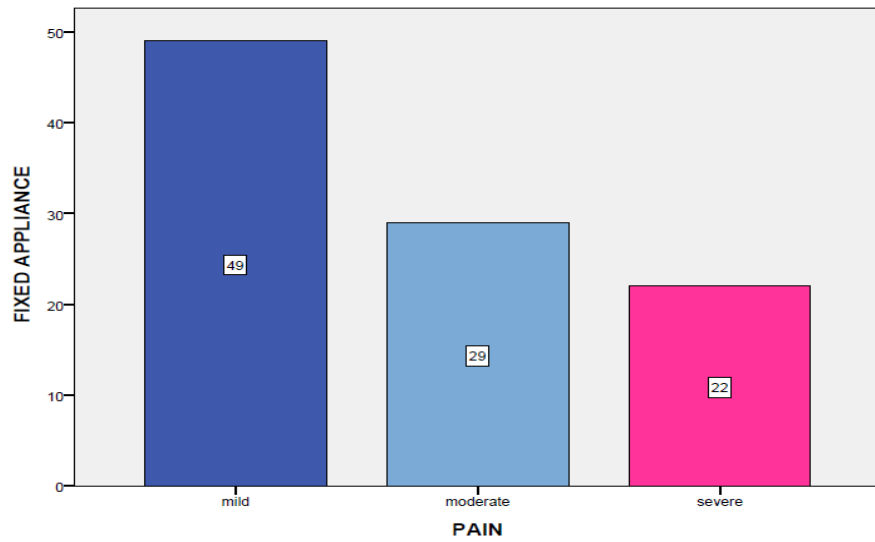
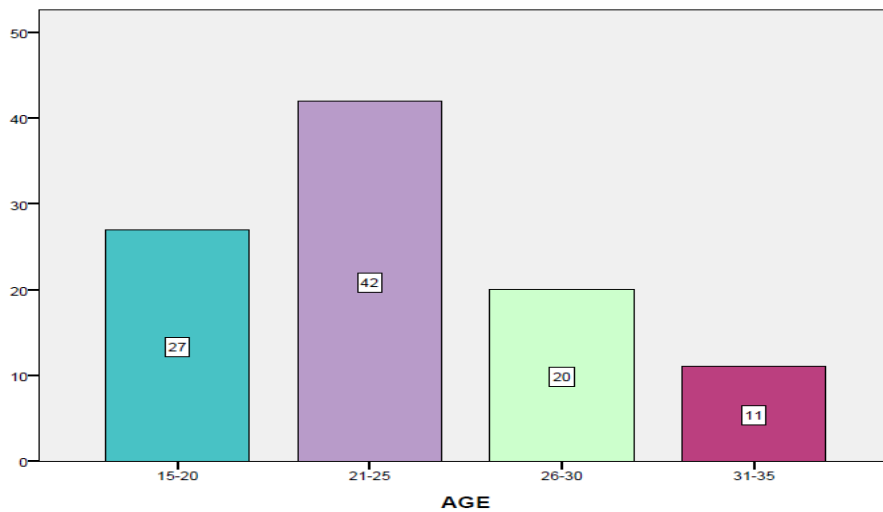


Figure 2 : Severity of pain



In Figure 3 : The frequency of fixation appliance age of the patients 15-20yrs 30% ,21-25 yrs 40% , 26-30yrs 20% and very less recommended for fixed appliance in the age group from 31-35yrs

Discussion

In this survey study, 100% of the patients indicated that they experienced pain following the placement of a fixed orthodontic appliance, consistent with other studies [13]. 49% stated that they experienced severe pain after fixing the appliances. 29% of the patients experience moderate pain and 22% experienced severe pain (Figure 2). In a study conducted by Scheurer et al [12], 40 % of the patients reported the onset of pain was immediate and severe

Additional report regarding the medication, 46% of this study's patients did not take medications like Paracetamol for pain relief, whereas 25% took Paracetamol and 10% Ibuprofen painkillers. One way to account for this result is that, given the generally low severity of the pain arising from routine orthodontic treatments, most patients do not require pain relief medications. In the study conducted by [14], the impact of Paracetamol lowering pain following the initial placement of an orthodontic appliance.

The study was limited in some aspects as pain is subjective by nature, it is extremely difficult to measure especially because it varies considerably from case to case and depends on several inter individual variations, such as age, gender, the magnitude of the force applied, pain thresholds, stress, current emotional state, cultural differences, social class, and past pain experiences.[15] The relatively high frequency of pain in this sample was consistent with other studies.[16] Apart from the alveolar pain, soft-tissue lesions and wounds caused by orthodontic appliances might as well induce pain.[17] Another limitation was the differences between treatment plans of the patients as the treatment plan depended on the amount and type of malocclusion.[18]

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 In orthodontics, researchers have assessed health-related quality of life (OHRQOL) of orthodontic patients.

The perception of pain and discomfort among orthodontic patients was variable during the 1st few days after the appliance insertion also depending on the patients' motivation for treatment and their awareness of probable discomfort. Patients who were positively motivated for the treatment or were aware of probable pain and discomfort reported significantly decreasing pain. To solve these problems, cooperation between orthodontist and patient is essential.

Sufficient time should be spared to explain the possible discomfort during treatment, and the treatment need should be used as a motivating stimulus. A standard care for pain management with analgesics should be established for orthodontic patients. Increased patient-orthodontist communication about pain management psychological encouragement can improve patients' quality of life (QOL during orthodontic treatment and ultimately their treatment cooperation and satisfaction.

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Conflict Of Interest

The author declares no conflict of interest.

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