

Patient's Perception of Pain and Discomfort Towards Orthodontic Treatments

Azrul Hafiz, Noor Ellyyu Hafizah, and Nur Nisrin Nabihah

ABSTRACT

Background: Patient undergoes orthodontic treatment with removable and fixed appliances will usually complaint of pain and discomfort. The level of pain and discomfort experience by patient will determined the cooperation and compliance towards the treatment. This study explores the perception of pain and type of discomfort experience by patients when undergoes orthodontic treatment.

Material and method: This cross-sectional study involve a set of questionnaires regarding patient social demographic and factors contributing to pain and discomfort among patients with removable and fixed appliances.

Result: This study shows that the most common discomfort experienced by patients with removable appliance are increased in saliva flow, interferes with mastication and altering speech. Apart from that, ulcers, pain in the mouth and appliance breakages are the most common pain experience by the patients with fixed appliances.

Conclusion: In conclusion, majority of patients will experience some form of pain and discomfort during orthodontic treatments. Thus, information regarding pain and discomfort during orthodontic treatment should be clearly convey during the first initial appointment to prepare patient mental and physically.

Keywords: pain, discomfort, orthodontic treatments, fixed appliances, removable appliance.

Published Online: April 21, 2021

ISSN: 2684-4443

DOI: 10.24018/ejdent.2021.2.2.47

Azrul Hafiz*

Associate Professor
Islamic Sciences University of
Malaysia, Kuala Lumpur, Malaysia.
(e-mail: afizz80@usim.edu.my)

Noor Ellyyu Hafizah

Dental officer
Ministry of Health, Malaysia.
(e-mail: ayuehafizah178@gmail.com)

Nur Nisrin Nabihah

Dental Officer
Ministry of Health, Malaysia.
(e-mail: nunina_171@yahoo.com)

**Corresponding Author*

I. INTRODUCTION

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 patient are distasteful tactile feelings, sense of tightness in the mouth, tissues stretching, mucosa pressure, tongue displacement, dental soreness, and painful experience [1].

In addition, patient's self-esteem and confident might be affected due to speech difficulty and the appearance of the appliances, especially during social event [2]. For example, patient with functional appliance feel embarrassed with the appearance of the bulky appliance in their mouth and when their speech is affected during the first month of treatment. Because of this, they were being tease at school and home. As a result, this could reduce their self-esteem and confidence.

Pain is subjective and depend 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. Majority of the orthodontic procedures could

cause pain to the patient, for example placement of separator for band, arch wire insertion, activation of orthodontic forces and removal of braces.

These common perceptions of pain and discomfort are the reason that can demotivate patient and thus affect the compliant towards orthodontic treatment. Apart from that, factors like belief, mindset, views, and motivations also contributed towards patient's compliance. Patient with positive mindset and highly motivated are more likely to have better compliance towards pain and discomfort during treatment. As orthodontic treatment is very technical and time-consuming procedure, on average, orthodontic treatment with removable appliance will take around one year to finish, while fixed appliances will take around two to three years. It is very important to assess the pain perception from patient perspective and motivation towards orthodontic treatment. This is to ensure the successful outcome of the treatment and satisfaction of the orthodontist and patient as well.

Most of the orthodontic patients will complaint of some level of discomfort during the treatment either those who wear fixed or removable appliance. However, not many studies were done to assess whether these two appliances might give similar result to pain and discomfort level.

Apart from that, not many studies were done regarding perceptions of patient during orthodontic treatment in Asian

countries. This study will help dental practitioner in giving adequate information to the patient on what to expect throughout the orthodontic treatment. This will then contribute to the patient's compliance and ensure the successful of the treatment.

In short, the general objective of this study is to investigate patient's perception on pain and discomfort towards orthodontic treatment. While the specific objective is to examine the association between patient's perception of pain and discomfort towards fixed and removable orthodontic appliances.

II. MATERIAL AND METHOD

This cross-sectional study was conducted in dental faculty polyclinic using a set of questionnaires. The inclusion criteria were patients attending the clinic must undergo orthodontic treatment (removable or fixed appliance) and can communicate/understand in English or Malay language. The exclusion criteria were disabled patient (mental and physical) and patient who does not understand Malay or English language.

Consent form and information sheet was distributed to obtain permission from patient before they participate in this study. The criteria of subject followed the inclusion and exclusion that had been stated. Around 60 subjects based on sample size calculation were chosen to participate in this study and answer the questionnaire. A pre-test questionnaire was done to ten samples before conducting the study.

The questionnaire was divided into two section: SECTION A: Sociodemographic profile of respondent. The basic information regarding the patient will be collected such as gender, age and parent's occupation. SECTION B: Assessing patient's perception of pain and discomfort and their compliance towards orthodontic treatment. Lastly, the data collected from the rating scale and protocol of pain and discomfort was used and analysed accordingly to meet the aims of the study using SPSS version 22.

III. RESULT

A total of 63 patients were asked to complete the questionnaire regarding their perception of pain and discomfort during their treatment with removable and fixed appliances. In terms of races, 59 of the samples are Malay, 3 are Chinese and 1 is Indian. From this study, a total of 45 patients (71.43 %) are females and the rest of 18 patients (28.75%) are males.

Table I shows the percentages of pain and discomfort towards orthodontic treatment for fixed and removable patient. From this figure, there is different between percentage of pain and discomfort experienced by the patients who were treated with fixed and removable appliances. The most common discomfort experienced by removable appliances patients are increases in saliva flow with the percentage of 83.33%, interferes with chewing (75%) and interferes with speaking (66.67%) while for those who treated with fixed appliance, the most common pain and discomfort are ulcers, pain in the mouth and breakage of the appliances where the percentages are 52.94%, 49.02% and 49.02%

respectively. Both appliances are less likely to interfere with breathing.

TABLE I: COMPARISON OF PAIN AND DISCOMFORT BETWEEN REMOVABLE AND FIXED APPLIANCES

Appliance	YES n (%)	NO n (%)	p
ULCERS			
Fixed	27(52.9)	24(47.1)	0.028
Removable	2 (16.7)	10(83.3)	
INTERFERENCE WITH SPEAKNG			
Fixed	12 (23.5)	39 (76.5)	0.012
Removable	8(66.7)	4 (33.3)	
INTERFERENCE WITH EATING			
Fixed	22 (43.1)	29 956.9)	0.060
Removable	9 (75.0)	3 (25.0)	
INTERFERENCE WITH BREATHING			
Fixed	1 (2.0)	50(98.0)	1.000
Removable	0 (0.0)	12 (100.0)	
INTERFERENCE WITH SLEEPING			
Fixed	4 (7.8)	47 (92.2)	0.320
Removable	2 (16.7)	10(83.3)	
INCREASE SALIVA FLOW			
Fixed	18 (35.3)	33 (64.7)	0.004
Removable	10 (83.3)	2 (16.7)	
SENSITIVE TEETH			
Fixed	11 (21.6)	40 (78.4)	0.433
Removable	1 (8.3)	11 (91.7)	
PAIN IN MOUTH			
Fixed	25 (49.0)	26 (51.0)	0.754
Removable	5 (41.7)	7 (58.3)	
APPLIANCE BREAKAGE			
Fixed	25 (49.0)	26 (51.0)	0.010
Removable	1 (8.3)	11 (91.7)	

IV. DISCUSSION

The major motivation for the orthodontic treatment is to correct dental and facial appearance. According to an article which is to evaluate the patient's reason for seeking orthodontic treatment by Sharma *et al.* more than half of the patients (52.4%) undergoes orthodontic treatment to align their teeth with the thinking that dental appearance is the key factors that could improve their facial feature [4]. Results of the study also found that the reason seeking orthodontic treatment are for better profile appearance, eating and for communication. Other study also suggest that face is the main indicator for the whole attractiveness compared to the body [5]. Any malocclusion or irregularities can affect the attractiveness of the face and this can lead to the disruption of social interaction, interpersonal relationship and mental wellbeing which later can lead to inferiority [6].

The rationale of orthodontic treatment is to corrects irregularities of dental and structure surrounding facial anatomy. This includes maxilla, mandibular and the craniofacial relationship. The treatment usually includes functional appliances, removable appliances, and fixed appliances. While the term perception is defined as the conscious recognition and interpretation of sensory stimuli that serve as a basis for understanding, learning, and knowing or for motivating a particular action or reaction [7]. In our study, the most common pain and discomfort perceptions of the patient during the orthodontic treatments are ulcers, interfere with eating and speaking. According to a study by Sharma *et al.* patients underwent orthodontics treatment encounter many problems such as concern of soreness, awkwardness, cost, and long treatment time [4]. In addition, Patel and Lew reported almost 8% and 30% patients stop

orthodontic treatment due to the pain suffered at the beginning stage of the initial treatment [8].

Concurred with our findings, pain is the main reasons why patients are deterred to seek orthodontic treatment. Patient will usually feel soreness on teeth and mouth after placement of orthodontic appliances. They will also experience some level of discomfort to speak and eat. Some literature show that all orthodontic procedures like placement of separator, insertion of arch wires, arch wires activation, use of external forces and removal of brackets will produce some discomfort in patients. Additionally, another study has shown that orthodontic treatment could have detrimental effect on quality of life and influence their oral health [9].

A prospective study by Scheurer and co-workers have also reported about 95% of patient will experienced pain during orthodontic treatment [10]. Previous study has shown that there is no difference in the level of pain were found between fixed and removable appliances. However, Serogl and co-workers reported removable appliances does not cause as much pain as treatment with fixed and functional appliances [11]. Patients not only experienced pain during the orthodontic treatment but also at the finish of the treatment (debonding procedure).

Patient's attitude and cooperation is a crucial component to determine the result of orthodontic treatment [12]. Absence of support from the patient will give substantial impact to the duration of treatment time. Based on the study by Larsson and Bergstrom, they found that 52% out of 152 Swedish adolescents in the study did not obey every treatment suggestion from their orthodontist [13].

Nearly all the patients will complaint some degree of discomfort, pain, and the appearance of appliances as contributing factors for not concur with their treatment [14]. Pain and discomfort cause by the orthodontic appliances could reduce patient's cooperation and has been known to be the major reason patients declined orthodontic treatment [15]. Factors that might contribute to a successful orthodontic treatment before and during the treatment is the capability to manage pain and discomfort cause by the appliance [16]. Thus, it is important to reduce and minimize pain experience during orthodontic treatment.

V. CONCLUSIONS

This study shows that some degree of discomforts and pain will likely happen when patients undergo orthodontic treatment with removable and fixed orthodontic appliances. However, the type of pain and discomfort experience is difference between these two appliances. Information regarding what to expect must be incorporated during the first appointment prior to orthodontic treatment. This is to prepare patient mentally and physically.

ACKNOWLEDGMENT

We would like to convey our greatest gratitude to all the academic and clinical staff from the Faculty of Dentistry, USIM for the helping hand during this research. Terima kasih.

REFERENCES

- [1] A. Kavaliauskiene, D. Smailiene, I. Buskiene and D. Keriene, "Pain and discomfort perception among patients undergoing orthodontic treatment: Results from one month follow-up study," *Baltic Dental and Maxillofacial Journal*. 2012; 14(4):118-25.
- [2] H. G. Serogl, U. Klages, A. Zentner, "Functional and social discomfort during orthodontic treatment- effects on compliance and prediction of patients' adaptation by personality variables," *Eur J Orthod*. 2000; 2:307-315.
- [3] V. Krishnan. "Orthodontic Pain: from causes to management-a review," *European Journal of Orthodontics*. 2007; 29(2):170-179.
- [4] S. Sharma, S. Narkhede, S. Sonawane and Gangurde, "Evaluation of Patient's Personal Reasons and Experience with Orthodontic Treatment," vol. 5, no. 6, pp. 78-81, 2013.
- [5] E. Ong, R. A. Brown, and S. Richmond, "Peer assessment of dental attractiveness," *American Journal of Orthodontics and Dentofacial Orthopedics*, vol. 130, no.2, pp.163-169, 2006.
- [6] M. K. Al-Omiri, E. S. Alhaija, "Factors affecting patient satisfaction after orthodontic treatment," *Angle Orthod*, vol. 7 no. 3, pp. 422-431, 2006.
- [7] Mosby "Topic: Perception, Awareness and need of orthodontic treatment among patients aged between 12-35 years attending KHIDCC and King Faisal Hospital," Retrieved from <http://www.academia.edu>. 2002.
- [8] K. K. Lew, "Attitudes and perceptions of adults towards orthodontic treatment in an Asian community," *Community Dent Oral Epidemiol* vol. 21 no.1, pp. 31-5, 1993.
- [9] A. Hafiz, A. Jamal, N. Azura, R. Sahudi, M. M. Nor, "The Impact of Fixed Appliances (Braces) on Quality of Life. *J Int Dent Med Res*".12(2): 650-654, 2019.
- [10] P. Scheurer, A. Firestone, W. Burgin, "Perception of Pain as a Result of Orthodontic Treatment with Fixed Appliance," *European Journal Orthodontic* vol. 18, no.4, pp. 349-357, 1996.
- [11] E. Kvam, O. Bondevik, N. R. Gjerdet, "Traumatic Ulcers and Pain During Orthodontic Treatment," *Community Dent Oral Epidemiology*, vol. 17 no. 3, pp. 154-157. 1989.
- [12] H. G. Serogl, U. Klages, Zentner, "A Pain and Discomfort During Orthodontic Treatment Causative Factor and Effect on Compliances," *American Journal of Orthodontic and Dentofacial Orthopedics*, vol. 114, no. 6, pp. 684-691, 1998.
- [13] J. E. Albino, S. D. Lawrence, C. E. Lopes, L. B. Nash, L. A. Tedesco, "Co-operation of adolescents in orthodontic treatment," *J Behav Med*, vol 14. no. 1, pp. 53-70, 1991.
- [14] B. W. Larsson, K. Bergstrom, "Adolescents 'perception of the quality of orthodontic treatment,'" *Scand J Caring Sci*, vol. 19, no. 2, pp. 95-101, 2005.
- [15] A. S. Daniels, J. D. Seacat, M. R. Inglehar, "Orthodontic treatment motivation and cooperation: A cross sectional analysis of adolescent patients' and parents' responses," *American Journal of Orthodontic and Dentofacial Orthopedics*, vol. 136, no. 6, pp 780, 2009.
- [16] M. Shekhar, A. Sinha, "Orthodontic treatment attitude and cooperation: A prospective study of patients 'and parent's responses in people of Deoghar (Jharkhand)," *J Adv Med Dent Scie Res*; vol. 4, no. 6, pp. 73-80, 2016.



Azrul Hafiz bin Abdul Aziz was born in Kuala Lumpur, Malaysia on 21st January 1980. He graduated from Universiti Kebangsaan Malaysia in 2004 and work in various dental clinic around Malaysia. Three years later, he joined Islamic Sciences University of Malaysia as a trainee dental lecture in the department of orthodontics. A year later he did his master in orthodontics (MSc orthodontics) in Newcastle upon Tyne, United Kingdom and gain his membership in Royal College of Edinburgh (MOrth Edinburgh) in 2011.

Now, he works as a senior dental lecturer in the dental pediatric and orthodontics department. He has published various book regarding orthodontics such as Orthodontics Examination and diagnosis, Radiograph in Orthodontics and Treatment in Dental Pediatric and Orthodontics. He has also published in index and non-index journal worldwide.

Azrul Hafiz is now working as the Associate Professor in the Faculty of Dentistry, Islamic Sciences University of Malaysia and a Deputy Dean of Research and Innovation. Previously, he held many positions such as the head department, course coordinator and senior management. He has also received many awards such as Top 100 USIM researchers, high achievement awards, best writer awards and many more.