ORIGINAL ARTICLE POJ 2021:13(2) 53-58

Assessment of anxiety in orthodontic patients

Sadia Naureen[a], Huma Ghazanfar Kiani[b], Bushra Amin[c]

Abstract

Introduction: To explore stress concept in the field of dentistry is of great interest nowadays. Anxiety often lies at the basis of the decisions to avoid an orthodontic treatment, or delay the scheduled appointment. This study is aimed at comparing the anxiety levels in orthodontic patients at three different appointments.

Material and methods: The study material consisted of questionnaires completed by 60 adolescent patients (age 11-15 years) at above mentioned three different appointments i-e at insertion of separators (anx 1) at banding/bonding appointment (anx 2) and one week post banding/bonding (anx1), (anx2) and (anx3). Patients having any psychological problem and patients or their family members, if undergone orthodontic treatment previously were excluded from the study. Norman Corah's dental anxiety scale with modified questionnaire according to orthodontic need was used to assess the anxiety levels in these patients. Independent sample t-test was carried out to assess individual significance of anxiety at all three appointments, and paired sample t-test was applied for group comparison.

Results: Statistic ally significant levels of anxiety were found at all the three appointments. Males showed higher anxiety levels at all the appointments.

Conclusions: Anxiety should be taken seriously in all three initial appointments however banding/bonding appointment is most important for orthodontist to overcome the treatment related apprehension and anxiety of the patients.

Keywords: Corah's anxiety scale; dental fear; dental phobia

Introduction

Anxiety is a mental condition of trepidation, doubt, or fear originating from the expectancy of a genuine or abstract intimidating occurrence, often affecting bodily and emotional functioning. Generalized anxiety disorder (GAD) is known as the most widespread mental illness, with a lifetime occurrence of 5.1% in the US.[1] It represents one of the major medical concerns today, and by 2021 is forecasted to form the 2nd most common cause of illness.[2]

Dental worry is a prevalent problem that signifies one of main obstacles in dental care.[3] Attaullah found a relatively high occurrence of dental concern and fear in patients in Islamabad which confirms the scope of this problem.[4] Dental fear is rated as 5th most scary condition (6-15%).[5] Choobineh has presented it as an important primary health concern.[6] The initial interaction between the dentist and the patient can reveal the presence of anxiety, fear, and phobia. In such situations, subjective evaluation by interviews and self-reporting on fear and anxiety scales and objective assessment of blood pressure, pulse oximetry, finger temperature, and galvanic skin response can greatly enhance the diagnosis and enable categorization of

[a] Corresponding Author. BDS, FCPS; Assistant Professor, Orthodontics department, Rawal Institute of Health Sciences, Islamabad.
Email: drsaadis12@gmail.com
[b] BDS, FCPS, MOrth RCS Ed; Assistant Professor, Orthodontics department, Rawal Institute of Health Sciences, Islamabad.
[c] BDS, MOrth (Eng); Assistant Professor, Orthodontics department, Khyber College of Dentistry, Peshawar.

these individuals as mildly, moderately, or highly anxious or dental phobics.[7]

Dental fear/ anxiety (DA) starts in childhood, becomes maximum in primary adulthood, and weakens as a person ages. Its etiology is related to identity traits, painful dental recall, poor experience of family members, awareness of body dysmorphism, injury fears and allergies.[8] Todd and Walker showed that nearly 43% of people avoid going to a dentist unless they experience trouble with their teeth.[9] Gender and ethnic origin also contribute significantly to the prediction of dental fear.[10] Pain and disgust sensitivities contribute significantly to dental anxiety. Rakhshan suggested that pain is a concern in orthodontics and is considered as one of the causes of treatment delay/ refusal as it sustains for almost 4 weeks after fixed orthodontics is commenced. [11] According to Witcraft and Wickenhauser pain during orthodontics is one of the factors responsible for suspension or postponing of an appointment that extends duration and leads to compromised oral cleanliness, poor periodontium, compromised esteem and confidence.[12] These can be the reasons for discontinuation or delaying of orthodontic visit. Beyond emotional distress, avoidance of dental care visits can lead to serious dental and health consequences.[13] It is therefore important for the orthodontists to recognize existence of dental fear in patients coming for treatment so that they can better explain all these aspects in detail before starting the actual treatment.

Malocclusion is considered as a condition, which is deviation from the attractiveness and according to a recent research of 2018 orthodontics can improve patient`s perception towards body appearance.[14] Faruqui and Fida claim that although orthodontic mechanics affect patient's fear, its preparation reduces this fear.[15] Effective communication particularly relating to explanations during treatment and making patients feel comfortable are effective methods of reducing anxiety.[16]

Different points of anxiety during orthodontics includes appointments before initial impressions, plan discussion, inserting separators and bracket placement. As the time passes patient gets used to routine appointments and there is less chance of anxiousness. There is a strong need to know exactly before which appointment dental anxiety is at maximum especially during initial orthodontic treatment. The purpose of this research is to evaluate the apprehension among orthodontic patients specifically related to three initial appointments i-e before separator placement, before banding/bonding, two weeks post banding/bonding. This is an original article and the rationale of the study is to help the orthodontist understand that exactly at which appointment anxiety resolving strategies should be adopted more intelligently while dealing anxious patient.

Material and Methods

This study was planned after approval from Ethical committee that includes patients of 11 to 15 years of age, reporting at orthodontic department, Rawal Institute of Health Sciences (RIHS). The time consumed in data collection was almost eight months between March 2019 till October 2019. WHO sample size calculator taking confidence level 95% and orthodontic patient proportion 7% out of the total dental patients reporting to RIHS was used to calculate sample size. Participants were selected from a pool of 200 patients who fulfilled the criteria of proposed study by lottery method and each patient selected was re included in the original sample so it was a randomized sampling with replacement. The pool of 200 patients was set because we wanted patients whose family members had not gone through orthodontic treatment previously. Subjects with any medical or known psychological disorder and patients who had family members treated orthodontically previously were excluded from the study. The inclusion criteria were class I extraction cases with mild to moderate

crowding. A brief explanation was given to every patient about the study to be carried before distribution of questionnaires because of ethical reasons. A verbal consent was taken from each patient. Out of 71 respondents eleven forms were incorrectly filled hence rejected so the total number of forms included in the study was 60.

A Questionnaire (figure 1) was prepared consisting of details like patient age, gender and qualification. Second portion was related with estimation of Dental anxiety. Modified Norman Corah's[20] Dental Anxiety Scale (DAS) was used for this segment. A pilot study was conducted by the assessors to ensure the content validity of the questionnaire. Questions in modified DAS had five options (most relaxed: score 0-1, moderate anxiety: 2-4 and steadily increasing to most anxious graded as score '5'). A separate question was asked at the end of questionnaire about the reason of anxiety or the thought which provokes dental fear in them. This was a simple question which helped us to know the most frequent cause of anxiety in orthodontic patients. Statistical assessment was performed through SPSS version 16. Same questionnaire was given to the same group of patients at three different appointments. 1. Before placement of separators (anx 1) 2. At banding/bonding appointment (anx 2). 3. One week post banding/bonding (anx 3). Banding /bonding was done simultaneously at the second appointment. Paired sample t test was applied to assess the significance of anxiety. Three pairs were made as (anx1&2, anx2&3, anx1&3) and in each pair mean anxiety levels were compared.

Results

Out of total sample of 60 patients 41 were females (68%) and 19 were males (32%). The age range of sample was between 11-15 years with a mean age of 13 years (Table l). The mean anxiety levels were found to be 1.97, 7.98 and 2.62 in each group respectively, showing moderate levels of anxiety in banding bonding (anx 2) group while mild anxiety in separator (anx1) and post banding boding (anx 3) group (Table I). Males showed higher values of mean anxiety levels in all three groups (Table III). Paired sample t test showed statistically significant levels of anxiety in all three groups $p \leq .05$ (Table II). The most common reason of anxiety (Roa) came out to be fear of pain before braces and pain /mouth ulcers one-week post braces.

Table I: Mean anxiety and age

	N Statistics	Minimum	Maximum	Mean	Std deviation	Skewness	Std Error
Pre separator	60	.00	.00	1.9667	1.11942	.367	.309
Pre bonding	60	1.00	12.00	7.9833	2.00416	.943	.309
Post bonding	60	.00	5.00	2.6167	1.32884	.255	.309
Age		11	15.00	13.0650	1.22721	.018	.309
Valid N	60						

Table II: Paired Samples Test

	Mean	Standard deviation	Standard Error Mean	95% Interval Diff Lower	Confidence Of the Upper	t	df	Sig (2 tailed)
(anx1 and anx2)	1.9667	2.22079	.28670	-6.59036	-5.44298	-20.986	59	.000
(anx2 and anx 3)	7.9833	2.17822	.28121	4.80397	5.92936ss	19.084	59	.000

(anx1and anx3)	2.6167	1.56037		-1.05309	-3.227	-3.227	59	.002

T-test pairs=anx1& anx2, anx2 & anx3 anx1& anx3 (Paired)/criteria = Confidence Interval (.9500)

Table III: Mean anxiety for males and females

	Mean anxiety Males	Mean anxiety Females
Anx 1	2.1579	1.9778
Anx2	8.0526	7.8889
Anx3	2.6316	2.5556

Discussion

The purpose of this study was to highlight the time when orthodontic patients are experiencing significant dental fear during the initial three appointments of orthodontic treatment. Having knowledge of this time will help the orthodontist to take anxiety resolving measures timely. Witcraft highlighted the role of screening the dental anxiety and disgust sensitivities to improve the orthodontic treatment and counselling sessions at the appropriate time.[12] According to our results mean anxiety levels were mild in group I and III while moderate anxiety levels were found in group II (Table I). Overall anxiety levels were statistically significant between all groups according to independent sample t test. In one of the previous studies, patients had raised proportions of minor and moderate levels of stress due to the fact that they were frequently attending sessions with their orthodontist and additionally had greater knowledge about the expected procedures[3] but no study has yet compared the anxiety levels appointment wise, however Aksoy and cesur[21] found that orthodontic appliances and the initial alignment phase of orthodontic treatment affect patients' anxiety and cortisol hormone levels significantly. In our study patients selected were aware of the treatment but none of their sibling or family member had orthodontic treatment done before. Patients whose siblings had undergone orthodontic treatment were excluded from the study. In addition to that educational and socioeconomic level of the patient was almost same. The patients participating in this study had a mean age of 14.2 years. According to a local study Attaullah[4] found that young children tend to be more anxious than elder patients. Awareness is one of the reasons for gradual decrease in severe anxiety in highly literate people. However, in our study all the patients were between class 8 to 10, patients higher than that level were excluded from the study to control educational bias In our study although anxiety data was taken at three different appointments but the sample size was same, so analysis of variance (ANOVA) could not be applied to compare the anxiety levels at three consecutive appointments. Out of the total sample size of 60 patients, 41 (22.8%) were females and 19 (10.6%) were males. Study patients were mainly females because they seemed more concerned about esthetics and thus pursue management of dentofacial concerns, which is in line with previous studies outcome. According to Aksoy and Cesur[21] the patient anxiety level is not dependent on gender and nor on the parents' stress. Conversely Saeed and Cunningham reported higher anxiety concerns in females.[22] Mustafa and Younis[13] also found greater anxiety in females. In our study males showed higher anxiety levels however the value for anxiety between males and females was statistically insignificant (Table III). Hallit and Haddad[18] suggested that men reported lower levels of fear than women because they were less truthful. Our study showed a little higher anxiety level in males which may be because of their age less than 13 years. In addition, factors such as the reason of visit to the orthodontist office and

time elapsed since the beginning of the treatment and who referred the patient was not considered in this study.

The limitation of our study is that among orthodontic patients no one reported severe anxiety the reason of which could be that participants were mostly visiting different orthodontists for advice secondly everyone knew something about braces to certain extent through internet or friends.

This is a fact that orthodontic phobia has not been a part of research greatly in the recent past. Anxious patients are hard to manage and appointments may be delayed or avoided altogether. Contributing Factors towards anxiety should be taken care of so that orthodontic anxiety should be rectified.[21] Banerjee et al[17] reported that awareness about core treatment reduces apprehension and concerns. Sufficient information and motivation towards treatment reduces the fear of patients and parents.

Rao and Havale [19] reported that anxiety lowers the pain threshold thereby changing "painless" stimuli as painful. Banerjee et al[17] reported that one`s stress and anxiety dictates the discomfort level caused by orthodontic appliances. In a local study Mustafa and Younis found the most common causes of stress were extraction (54%), and fear of injection (64.8%).[13]

. It is proven that pain and anxiety are interrelated.[17] Some dentists do believe that discussing about phobia can increase patient's fear of dental care.[18] However, Rao and Havale research showed that use of virtual reality is an effective way of reducing pain perception and state anxiety levels.[19] Corah[20] explained that patient's behavior improved when dental professionals discussed reasons of their dentistry related worries. Better awareness, regular appointments, excellent compliance, and good communication skills may reduce dental fear.

In our study the most frequent cause of anxiety was the fear of pain related to orthodontic treatment at all the three appointments. Mouth ulcers was the second important cause at two week post banding bonding appointment, at first two appointments pain and lack of knowledge about procedure were the common causes of anxiety. This study will help us and other orthodontists to emphasize on counselling the patients, to give awareness and reassurance about pain free orthodontic treatment to reduce anxiety levels especially in the initial appointments. The existence of dental worry has significant consequences for both parties.

Conclusions

Orthodontists should recognize the existence of dental fear in patients coming for treatment and create an awareness of the problem. All the three initial appointments should be given importance with respect to anxiety; however, the banding bonding appointment needs more attention as moderate level of anxiety is found at this appointment. This knowledge will help the orthodontist to be cautious during the initial appointments and will enable him to use the anxiety reducing strategies timely and effectively in orthodontic patients.

Acknowledgement:

The efforts of dental Assistants Mr. Usman and Mr. Hasnain are highly appreciated for scheduling the appointments, distribution and collection of questionnaires.

References

1. Murad M H, Ingle NA, Assery M K. Evaluating factors associated with fear and anxiety to dental patients-ASystematicRviewJFamilyMedPrimCare.2020.30;(9):4530-35.
2. Chadwick BL. Assessing the anxious patients. Dent Update 2002;29: 448-54.
3. Chapman HR, Kirby-Turner NC. Dental Fear in Children: a Proposed Model. Br Dent J. 1999;187 (8):408-12.
4. Attaullah AAK. Prevalence of dental anxiety among university students in Islamabad, Pakistan. J. Khyber Coll. Dent. 2011;1(2): 71-7.
5. Wiedel AP, Bondemark L A randomized controlled trial of self-perceived pain, discomfort, and impairment of jaw function in children undergoing

orthodontic treatment with fixed or removable appliances. Angle Orthod. 2016;86(2):324-30.
6. Choobineh A, Neghab M, Hasanzade J, Rostami R. Comparative Assessment of Dentists' Psychological Health Status in Shiraz with Their Physicians Counterparts Using General Health Questionnaire (GHQ-28) Jdm.2012; 25(4):290–6.
7. Appukuttan DP. Strategies to manage patients with dental anxiety and dental phobia: literature review. Clin Cosmet Investig Dent. 2016;8:35-50.
8. Locker D, Liddell A, Dempster L, Shapiro D. Age of onset of dental anxiety. J Dent Res 1999;78:790-6.
Todd JE, Walker A. Adult Dental Health in England and Wales.London. H.M.S.O; 1980.
9. Vanhee T, Mourali S, Bottenberg P, Jacquet W, Vanden Abbeele. A.Stimuli involved in dental anxiety: What are patients afraid of?: A descriptive study. Int J Paediatr Dent. 2020 ;30(3):276-85.
10. Rakhshan H, Rakhshan V.Pain and discomfort perceived during the initial stage of active fixed orthodontic treatment. Saudi Dent J. 2015;27(2):81-7.
11. Witcraft SM, Wickenhauser ME, Maack DJ, Dixon LJ. What sensitivities matter in dental anxiety? Investigating sensitivity to anxiety, pain, and disgust. Psychol Health Med. 2021 ;26(3):313-21.
12. Mustafa S, Younis R., Islam H, & Durrani, O. Dental fear in patients pursuing orthodontic treatment. POJ.2017;9(1):37-42.
13. Imani MM, Dinmohammadi M, Nouri P. The Effect of Orthodontic Intervention on Mental Health and Body Image. Maced J Med Sci 2018; 6(6):1132-37.
14. Faruqui S, Fida M, Shaikh A. Factors affecting treatment duration: a dilemma in orthodontics. J Ayub Med Coll Abbottabad. 2018;30(1):16-21.
15. Wong L, Ryan FS, Christensen LR, Cunningham SJ. Factors influencing satisfaction with the process of orthodontic treatment in adult patients. Am J Orthod Dentofacial Orthop. 2018;153(3):362-70.
16. Banerjee S, Banerjee R, Shenoy U, Agarkar S, Bhattacharya S Effect of orthodontic pain on quality of life of patients undergoing orthodontic treatment. Indian J Dent Res. 2018 Jan-Feb;29(1):4-9
17. Hallit S, Haddad C ,Hallit R ,Obeid S, Haddad G, Soufia M, Khansa W, Khoury R ,Kheir N, AbiElias C, Salameh H P. Validation of the Hamilton Anxiety Rating Scale and State Trait Anxiety Inventory A and B in Arabic among the Lebanese population Clinical Epidemiology and Global Health.2020;8(4):1104-9.
18. Rao DG, Havale R, Nagaraj M, Karobari NM, Latha AM, Tharay N, Shrutha SP.Assessment of Efficacy of Virtual Reality Distraction in Reducing Pain Perception and Anxiety in Children Aged 6-10 Years: A Behavioral Interventional Study.Int J Clin Pediatr Dent. 2019 ;12(6):510-13.
19. Corah NL. Dental anxiety. Assessment, reduction and increasing patient satisfaction. Dent Clin North Am. 1988;32: 779–90.
20. Aksoy A, Cesur MG, Dağdeviren BH, Özkaynak YA, Karacin G, Gültekin F. Assessment of Pain, Anxiety, and Cortisol Levels During the Initial Aligning Phase of Fixed Orthodontic Treatment. Turk J Orthod.2019 ; 32(1): 34–40.
21. Saeed SA, Cunningham K, Bloch RM. Depression and Anxiety Disorders: Benefits of Exercise, Yoga, and Meditation. Am Fam Physician. 2019;99(10):620-27.