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PREVALENCE OF DENTAL ANXIETY AMONG PATIENTS OF ORTHODONTICS INVOLVING NEUROLOGICAL COMPLEX INTERPLAY BETWEEN BRAIN EMOTIONAL AND COGNITIVE CENTER

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ABSTRACT

Objective: *The objective was to determine the prevalence of anxiety and neurlogical response among patient reporting for orthodontic treatment.*

Material and methods: *This survey was conducted on 120 orthodontic patients through non-probability sampling technique. The inclusion criteria were patients receiving fixed orthodontic treatment, both gender and Pakistani nationals. Patients receiving treatment from psychiatrists and having dentofacial deformity were excluded. Anxiety was recorded by using dental anxiety scale (DAS) of Norman Corah. Chi-square test was run for comparing anxiety level among genders and age groups.*

Results: *The females (n=74, 61.7%) were more than males (n=46, 38.3%). The mean age of the participants was 21.19±4.52 years. The most common type of anxiety among orthodontic patients was mild (n=62. 51.67%) and moderate (n=41, 34.17%). The least type of anxiety was severe and found in 6(5%) cases.*

Conclusion: *Dental anxiety is quiet frequent in patients receiving orthodontic treatment. As hypocampus plays the significant role in processing emotions including anxiety related to pain induced by orthodontic patient .when patient experience pain it can trigger a stress response in the brain which release stress hormone ,cortisol which increased anxiety and fear Anxiety among orthodontic patients has no statistical association with gender and age.*

Keywords: *Anxiety, orthodontic treatment, orthodontic patients, phobia.*

INTRODUCTION

Dental anxiety is one of behavioral manifestations having two subcategories that are state and trait anxiety.[1] State anxiety is a transitional emotional state that differs in severity according to the environmental factors. This type of anxiety show the present anxiety of an individual and not constant with time.[2] Trait anxiety on the other hand is a personality disorder that shows the general baseline anxiety of an individual and stays comparatively stable.[3]

Anxiety in actual sense is an emotion having the features of being tensed, having horrible thoughts, uneasiness and undergoing physical transformation like hypertension, nauseating feeling and increased heart rate etc. Anxiety is a response to a perceived danger or threat. Anxiety and related disorders are most frequent disorders in the public population.[4]

Anxiety due to dental treatment is a serious issue that poses a strong barrier in reception of dental treatment. [5] The negative outcome of anxiety

among patient presenting for dental care can be less favorable treatment results and delaying presentation to treatment.[6] The other adverse impacts of dental anxiety are severe disturbance of sleep, baseless thoughts, low self-esteem and lack of confidence.[7] Dental professionals on routine basis deal with patients suffering from anxiety.[8]

A previously conducted study on Indian population reported that among orthodontic patients the prevalence of mild, moderate and severe anxiety were 45%, 32.5% and 5.5% respectively. They found no statistical difference among gender and age.[9]

Although a lot of advancements have been done in dental science to combat anxiety but the frequency of anxiety is still very high among dental patients.[10, 11] Orthodontics is a discipline of dentistry where the patients and treatment is somewhat different from other dental fields. Pain and discomfort experienced during orthodontic treatment can lead to anxiety and it may results in delaying or postponing appointments thereby prolonging treatment time. The main neural pathway is through the trigeminal nerve to the thalamus and then to the cerebral sensory cortex There is lack of literature regarding assessment of dental fear and anxiety among orthodontic patients. So this study can help to quantify the frequency of anxiety in our patients and its interaction with gender and age.

The objective of this study was to determine the prevalence of anxiety among patients reporting for orthodontic treatment.

MATERIAL AND METHODS

This descriptive survey type study was conducted on 120 orthodontic patients visiting for orthodontic care at Khyber College of Dentistry, Peshawar. After in depth explanation about the pros and cons of this study, verbal informed consent were obtained from all participants. The sampling collection was done through non-probability sampling technique. The inclusion criteria were patients receiving fixed orthodontic treatment, both gender and Pakistani nationals (on the basis of NIC). Patients receiving treatment from psychiatrists and having dentofacial deformity were excluded.

A total of 120 questionnaires were distributed among orthodontic patients by orthodontic postgraduate trainees. The questionnaire comprised of demographics of participants and four questions relating dental anxiety based on dental anxiety scale (DAS) of Norman Corah. Each question had five responses in which '1' show relax and '5' show most anxious. DAS is numerical scoring-based scale having range of score from 4 to 20. The classification of anxiety on basis of DAS score was as follows: score 4 to 9-mild, 9 to 12-moderate, 13 to 14-high and 15-20-severe anxiety or dental phobia.

SPSS v.22 was used for entire data entry and computation. Mean and SD were computed for continuous data and percentages for categorical. Chi-square test was run for comparing anxiety level among genders and age groups. P≤0.05 was significant level.

RESULTS

The females (n=74, 61.7%) were more than males (n=46, 38.3%). The mean age of the participants was 21.19±4.52 years with range from 12 to 29 years. The most common type of anxiety among orthodontic patients was mild (n=62. 51.67%) and moderate (n=41, 34.17%). The least type of anxiety was severe and found in 6(5%) cases. **(Fig 1)** The median anxiety score was higher in females (median=9, IQR=5-12) than males (median=7, IQR=4-10). **(Fig 2)**

Though level of anxiety was found high in females than males but the results were not statistically significant (p=.134). Severe anxiety was found only in females (n=6, 100%). The details are shown in **table I**. Age has no significant interaction with dental anxiety for orthodontic patients (p=.432). The detailed statistics are given in **table II**.

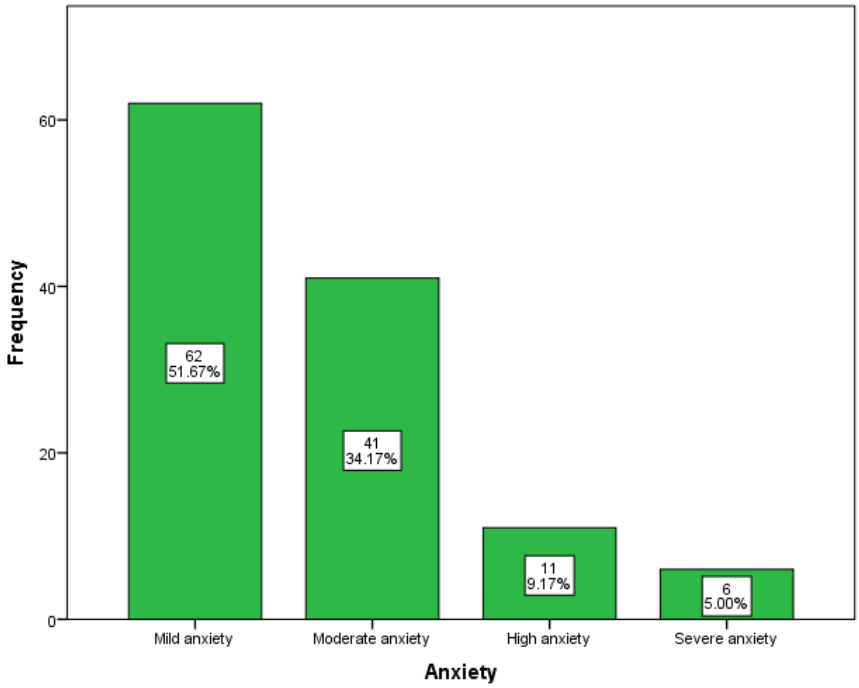

Fig 1: Distribution of anxiety among orthodontic patients

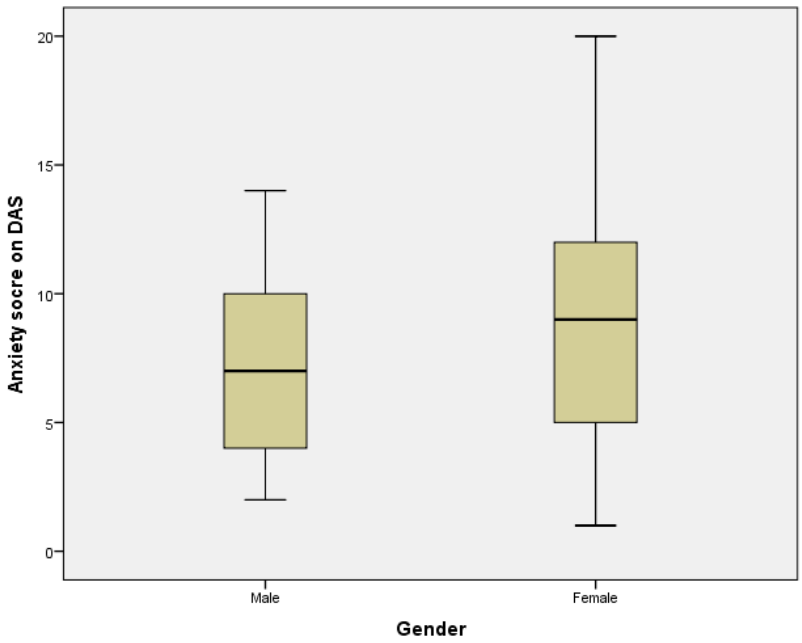

Fig 2: Anxiety score on DAS scale among genders

Table I: comparison of anxiety among genders

Gender	Mild anxiety n(%)	Moderate anxiety n(%)	High anxiety n(%)	Severe anxiety n(%)	P-Value
Male	28 (45.2)	15(36.6)	3(27.3)	0(0)	.314
Female	34(54.8)	26(63.4)	8(72.7)	6(100)	

*chi-square test

Table II: Comparison of dental anxiety in various age groups of orthodontic patients

Age group (years)	Mild anxiety n(%)	Moderate anxiety n(%)	High anxiety n(%)	Severe anxiety n(%)	P-value*
12-20	22 (35.5)	20(48.8)	6(54.5)	2(33.3)	.432
21-30	40 (64.5)	21(51.2)	5(45.5)	4(66.7)	

*Chi-Square test

DISCUSSION

The aim of this survey was to assess anxiety among orthodontic patients using dental anxiety scale (DAS). Our findings showed that most of the participants showed mild and moderate anxiety and this was higher in females though not statistically significant. Orthodontic treatment can trigger a stress response in The hippocampus, amygdala, and prefrontal cortex are brain regions involved in processing emotions, including anxiety induced in patients . brain, releasing stress hormones can cause Muscle tension, particularly in the jaw, face, and neck.

The females were predominant gender in our study. The higher number of females than males can be attributed to the fact that females are more concern about their dentofacial esthetics and hence more presentation for orthodontic treatment. In the same fashion previously conducted studies on anxiety among orthodontic patients also reported that females were more than males.[9, 12]

In our study the most common type of anxiety among orthodontic patients was mild (n=62. 51.67%) and moderate (n=41, 34.17%). The least type of anxiety was severe and found in 6(5%) cases. This shows that mild anxiety can be very common in orthodontic cases. This can attributed to the nature of routine procedure conducted in orthodontic department which can be annoying for patient. Although needle stick trauma and tissue incision are not the routine treatment in orthodontics but orthodontic pain due to tooth movement and waiting for appointment can be the common causes of anxiety.[13, 14]

Previous study on Indian population showed that in 45% orthodontic cases the anxiety was mild, in 32% it was moderate, 17% participants had high anxiety and 5.5% had severe anxiety.[9] Another study conducted in Rawalpindi reported that 46% patients had mild anxiety and 4% had sever anxiety.[12] These studies support our findings.

Our findings showed that though females have more frequent anxiety than males but the association was not statistically significant. Studies conducted before 2000 showed that females are anxious about dental treatment than males [15, 16] However, recently conducted studies found no association like our study of gender with level of anxiety during orthodontic treatment[9, 12, 17].

CONCLUSION

Within the limits of this investigation, it can concluded that dental anxiety is quiet frequent in patients receiving orthodontic treatment. Anxiety among orthodontic patients has no statistical association with gender and age. Severe anxiety may lead to avoidance of orthodontic treatment or delayed treatment.

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Data collection Proforma

Prevalence of dental anxiety among patients visiting Orthodontics department Khyber College of Dentistry, Peshawar

S.No_____ Gender_____

Age____

Corah's Dental Anxiety Scale, Revised (DAS-R)

1. If you had to go to the dentist tomorrow for a check-up, how would you feel about it?

a. I would look forward to it as a reasonably enjoyable experience.
b. I wouldn't care one way or the other.
c. I would be a little uneasy about it.
d. I would be afraid that it would be unpleasant and painful.
e. I would be very frightened of what the dentist would do.

2. When you are waiting in the dentist's office for your turn in the chair, how do you feel?

a. Relaxed.
b. A little uneasy.
c. Tense.
d. Anxious.
e. So anxious that I sometimes break out in a sweat or almost feel physically sick.

3. When you are in the dentist's chair waiting while the dentist gets the drill ready to begin working on your teeth, how do you feel?

a. Relaxed.
b. A little uneasy.
c. Tense.
d. Anxious.

e. So anxious that I sometimes break out in a sweat or almost feel physically sick.

4. Imagine you are in the dentist's chair to have your teeth cleaned. While you are waiting and the dentist or hygienist is getting out the instruments which will be used to scrape your teeth around the gums, how do you feel?

a. Relaxed.
b. A little uneasy.
c. Tense.
d. Anxious.
e. So anxious that I sometimes break out in a sweat or almost feel physically sick.

a = 1, b = 2, c = 3, d = 4, e = 5 Total possible = 20

- < 9 = mild
- 9 - 12 = moderate anxiety
- 13 - 14 = high anxiety
- 15 - 20 = severe anxiety (or phobia)

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