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A cross-sectional study of gender variations in dental anxiety among Pakistani undergraduate students

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ABSTRACT

BACKGROUND & OBJECTIVE: This study investigates gender differences in dental anxiety among Pakistani undergraduate students to enhance their oral health awareness and help reduce the avoidance of necessary dental care. To study the gender variations in dental anxiety among Pakistani undergraduate students.

METHODOLOGY: Data was collected from 350 students by using cross-sectional study design and the age of the students was 18-24 years. A non-probability convenience sampling technique was utilized. After getting institutional ethical permission, the study was carried out. Every participant provided their consent, and confidentiality was maintained. The significance level was set at 0.05, and a 95% confidence level was determined.

RESULTS: There were 350 students responded to the survey. Dental anxiety was more prevalent in females than males and found to be associated with other risk factors like visits to the dentist (<0.001), fear of dental pain (0.021), dental treatment (0.030), fear of white coat (0.006) and concerns (0.002). The findings emphasized the need for stress-reduction techniques and exercises done by the doctor before starting the dental treatments. Furthermore, it is crucial to minimize, if not completely avoid, the causes of dental anxiety through effective counseling and communication.

CONCLUSION: Dental fear is more common among female students, which is a barrier to receiving dental treatments. Therefore, decreasing dental anxiety could be accomplished by offering frequent dental education and public awareness regarding oral health.

KEYWORDS: Dental Anxiety, Phobia, Fear, Students, Gender Differences.

INTRODUCTION

Dental anxiety is a severe and unwarranted negative mental state that can strike patients receiving dental care. Dental anxiety may be caused by traumatic experiences in the past, such as severe pain or discomfort before or after dental work, as well as negative observations. These may affect the person's dental health, cause them to think negatively, hinder their ability to interact with others, perform well at work, and generally depress them ^[1].

Many patients attending oral surgery clinics experience dental anxiety, with a higher prevalence observed among females than males ^[2]. Contributing factors to this anxiety include past negative encounters, fear of pain, and apprehension about losing control during treatment ^[3]. Moreover, dental anxiety heightens the likelihood of treatment complications since patients may exhibit

movements or flinches during procedures, posing challenges for dentists in performing required treatments ^[4]. Dental anxiety can lead to considerable distress and diminished quality of life ^[5]. Various interventions are available to address dental anxiety in patients visiting oral surgery clinics. One strategy involves employing pharmacological methods like benzodiazepines or nitrous oxide to alleviate anxiety levels ^[6].

There is very little information on the cause of dental anxiety. It is believed that dental anxiety begins in childhood, peaks in early adulthood, and then gradually declines with age ^[7]. Clinical dental anxiety is prevalent globally, with rates varying from approximately 4% to over 20%. In the UK, about 48% of adults are estimated to experience dental anxiety ^[8]. Similarly, a Canadian survey discovered that 9.8% of participants reported being somewhat afraid of

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dental appointments, while 5.5% expressed being very afraid or terrified [9].

Dental anxiety is a major problem for multiple people and children who operate as an obstacle to treatment by delaying dental appointments or by only visiting a Dentist in an emergency. The Dental Anxiety Scale (DAS), created by Corah in 1969, is a widely used and recognized instrument for assessing adult anxiety. It is fairly quick to complete and easy to use for assessing DA [10].

Our study aims to investigate the gender variations in dental anxiety among Pakistani undergraduate students in Lahore. By identifying potential anxiety factors and focusing on them, the students who will become future clinicians will be better able to manage their patients and build a connection with them, ultimately relieving their tension.

METHODOLOGY

A cross-sectional study was carried out in students, aged 18 to 24, in which information was gathered using a closed-ended questionnaire from 10th January 2023 to 10th March 2024 using the convenience sampling technique. The data was collected from the Lahore Medical and Dental College students, studying Dental, Medical, Nutrition, Physiotherapy, and Pharmacy, different questions related to the Dental Anxiety Scale (DAS) were asked the students, and various questions were also asked like how often you visit a dentist, fear of dental pain, white coat phobia, dental treatment, and dentist listens to the concerns of the patients.

The ethical approval was obtained from Dental College's Research and Ethical Review Board (No/FD/4951/23, dated: 6-1-2023). All students were included who had given written consent, aged between 18-24 years of both genders. The exclusion criteria were those individuals who did not give consent and whose ages were less than 18 or more than 25. The researcher informed the participants about the aims and implications of the study. The pilot survey was conducted to test the feasibility of study designs and the reliability of the questionnaire (Cronbach's alpha 0.74).

The sample size was determined using the open epi calculator, with a 95% confidence level and a targeted 5% margin of error while preserving an 80% test power and prevalence of 29.5% [11]. Therefore, a sample size of 320 was determined. However, data was collected from the 350 students to account for potential non-responses and dropouts, expecting that not all initially recruited would participate.

The Dental Anxiety Scale (DAS) was used for assessing dental anxiety. It consisted of 4 questions and each question consisted of 5 multiple-choice items including the following. If you had to go to the dentist tomorrow for a check-up, how would you feel about it? When you are waiting in the dentist's office for your turn in the chair, how do you feel? 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? 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 that will be used to scrape your teeth around the gums, how do you feel?

There was a minimum score of 4 and a maximum score of 20 on a Likert scale. To get an estimated value of dental anxiety, the scores for each of the five-item responses were combined. Mild anxiety (<9), moderate anxiety (9–12), high anxiety (13–14), and severe anxiety (15–20) were the categories used for DAS scores. A significant p-value of 0.05 was used, and the statistical significance of various relationships between dental anxiety and gender was examined using the Chi-Square test through (SPSS) version 26.

RESULTS

There were 350 students responded to the survey. Dental anxiety was more prevalent in females than males and found to be associated with other risk factors like visits to the dentist (<0.001), fear of dental pain (0.021), dental treatment (0.030), fear of white coat (0.006) and concerns (0.002). The findings emphasized the need for stress-reduction techniques and exercises done by the doctor before starting the dental treatments. Furthermore, it is crucial to minimize, if not completely avoid, the causes of dental anxiety through effective counseling and communication.

Table-I: Frequency of students according to gender.

Gender	n%
Female	215 (61.4)
Male	135 (38.6)

Table-II: Shows the association between gender and DAS-R

Gender	Corah's Dental Anxiety Scale, Revised (DAS-R)				P-Value
	Mild Anxiety n%	Moderate Anxiety n%	High Anxiety n%	Severe Anxiety n%	
Female	21 (9.8)	66(30.7)	42(19.5)	86(40.0)	0.008
Male	20 (14.8)	56(41.5)	28(20.7)	31(23.0)	

Table II shows DAS-R scores in which females exhibit higher levels of dental anxiety than males. Table III reports more often fear of pain (23.7%%, p=0.021), and receiving less treatment (27.4%) showing the association of students of both genders about risk factors with females.

Table-III: Shows the association between gender and other risk factors.

Various Risk factors		Genders		P-Value
		Female n%	Male n%	
Visit to a Dentist	Never	57 (26.5)	65 (48.1)	<0.001
	Once a year	50 (23.3)	19 (14.1)	
	After 6 months	23 (10.7)	14 (10.4)	
	After 2-3 years	85 (39.5)	37 (27.4)	
Fear of Dental Pain	Never	96 (44.7)	81 (60.0)	0.021
	Once or twice	47 (21.9)	22 (16.3)	
	Often	51 (23.7)	18 (13.3)	
	Nearly every time	21 (9.8)	14 (10.4)	
Dental Treatment	No	156 (72.6)	83 (61.5)	0.030
	Yes	59 (27.4)	52 (38.5)	
White Coat	Never	150 (69.8)	78 (57.8)	0.006
	Somewhat	37 (17.2)	43 (31.9)	
	Very much	28 (13.0)	14 (10.4)	
Dentist Listens to Concerns	No	77 (35.8)	27 (20.0)	0.002
	Yes	138 (64.2)	108 (80.0)	

DISCUSSION

In our study, females experienced severe dental anxiety (73.5%) more than males (26.0%), whose results were similar to the study which showed that patients generally experience moderate dental anxiety, with severe anxiety being uncommon. It was observed that women are more anxious than males, with 52.78% of women showing moderate levels of dental anxiety compared to 33.33% of men [12], another study also revealed that women are more anxious than males [13].

The study found an association between gender and dental anxiety in which the percentage of females (22.8%) visiting a dentist after 6 months was more than in males (P-Value:0.000) while in another study, a larger percentage of male students reported that their most recent dental visit occurred more than two years ago more than the females (17% for females versus 30% for males, χ^2 -test, $P=0.002$) [14].

Various researchers discussed dental avoidance in those people having more dental anxiety. Women were more terrified of the dentist than males as reported by an Australian research [15]. The fear of pain was also linked with dental anxiety and females (23.7%) were more likely to be afraid of pain due to treatment than males (13.3%). Various studies have found that dental pain causes more anxiety in females than males, as women more frequently voice their concerns, whereas men might be less open about their fears due to social stigmas [16,17]. Unlike previous studies, there were no significant differences in dental anxiety scores between genders [18].

A study conducted in Turkey revealed that 47.7% of students experienced toothache in the year with a mean DAS score of 8.8 and the females scored higher (9.5) than males (8.0) [19]. Another study showed that pain was the second most common cause of dental fear which was chosen by 25% of the participants ($n = 165$) [20].

Our study found that males experienced more dental anxiety (38.5%) due to dental treatment compared to females. However, Kuscu et al. reported that females generally exhibited greater fear of dental work than males [21]. A study conducted in India reported that fear of pain (38.47%) or discomfort during dental procedures was a contributing factor and was found more in females [22]. A study conducted in China showed that the first dental visit experience, the frequency of the dental visit, dental experience, length of time, and postponement of the dental visit is strongly associated with dental anxiety ($P=0.001$) [23], while on the contrary, patients with past negative dental experiences generally report higher anxiety, with recent pain significantly predicting elevated anxiety levels [24].

In contrast, males show higher dental anxiety than females for prolonged mouth opening (37.8% vs. 23.4%), cold air (43.2% vs. 29.7%), and lack of procedure information (40.5% vs. 29.6%). They also report greater anxiety about root canal treatment (64.9% vs. 40.6%) extractions (45.9% vs. 34.4%) and injections (59.5% vs 48.4%) [25].

The present study found that dental anxiety in males due to white coats was more as compared to females. Riley et al. investigated the association between children's inclinations for various types of apparel used by dentists and their degrees of dental anxiety [26], while in some studies the

respondents significantly preferred male dentists in white coats and female dentists in white coats with scarves, perceiving them as more knowledgeable, skilled, competent, and approachable for personal issues ($P < 0.001$) [27].

The current study also found an association between dental anxiety and the dentist's listening to patients' concerns. The study shows preoperative communication significantly reduces patients' as well as dental anxiety of the students which effectively alleviates their stress [28]. Various psychological therapies effectively address emotional, cognitive, behavioral, and physiological aspects of dental anxiety.

Limitation:

Researchers need to keep in mind that people's perceptions of dental anxiety could change with time. Since it is a cross-sectional study, therefore the relationships shown within shouldn't be taken to be causative, and prospective longitudinal studies are essential to track changes over time and establish links between variables.

CONCLUSION

Dental anxiety is more prevalent among female undergraduate students, particularly those who had previously poor experiences with dental pain when compared to participants who had not been informed of dental anxiety. To minimize exposure to pain and reduce anxiety connected with dental care, it is essential to advocate health policies and education that will increase the vast majority of the population's exposure to preventive dental services.

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Authors' Contribution:

Syeda Lalarukh Saba Shah: Conception and design of the work.

Nazli Gul Shujaat : Acquisition of data for the work.

Shujaat Hasan Idris: Revised the manuscript critically and approved the final version of the article.

Hafsa Mahmood: Analysis, interpretation , and drafting of data for the work.

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