ORIGINAL ARTICLE

Prevalence and Socio-demographic Correlates of Dental Phobia in Pakistani Adult Population

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ABSTRACT

Background: Dental anxiety is a barrier to seeking dental treatment. Anxiety aggravates the pain and fear of the dental procedure. Dentists all over the world report dental anxiety and non-compliance toward dental procedures by their Patients.
Objective: To find out the prevalence of dental anxiety in adults living in Lahore.
Methods: A cross-sectional study was carried out to find out the prevalence of dental anxiety in adults. 1000 participants (Females 919, Males 81) with the age range of 18 to 60 years (M 32.18 SD 11.16) were selected. A modified dental Anxiety Scale along with a demographic Performa was given to the Participants. The participants were assessed in an individual setting. Results: the results of the study revealed that 4% of the participants fall under the mild category of dental phobia. 11 % had a moderate dental phobia, whereas 19 % of the participants had a high level of dental phobia. However, the majority of the participants suffer from severe levels of dental phobia i.e., 67%. The results of the Mann Whitney U analysis carried out showed that dental phobia was higher in females as compared to males (***p<.001). The results of one-way ANOVA showed that dental phobia was higher in uneducated adults as compared to educated adults (***p<.001).
Conclusion: This study highlights the alarming prevalence rates of dental phobia that needs the attention of dental care providers to take preventative measures. The role of socio-demographic variables has implications for the timely assessment and management of dental phobia.
Keywords: Dental phobia, Prevalence, Socio-demographic variables, Dental care (MeSH)

INTRODUCTION

Dental phobia is a painful emotional state of consistent apprehension, worry, and anticipated fear. Dental phobia has played a pivotal role in the avoidance of dental visits and treatment [1]. Numerous studies have reported that high levels of dental phobia or anxiety are a major source of poor oral health behaviors such as infrequent tooth brushing, tobacco use, and unhealthy eating habits and hygiene [2]. Weiner and Sheehan proposed that there are two types of dental exogenous responses related to traumatic experience and endogenous responses deriving from other disorders or biological predispositions. Furthermore, dental phobia is divided into four categories: fear of specific stimuli, distrust of Dental personnel, generalized anxiety, and Fear of Medical catastrophe [3].

Researchers have emphasized that dental phobia is a continuous vicious cycle with overarching consequences in people's life. Dentally anxious people avoid dental visits, worsening their oral health issues. Poor oral health and hygiene result in the avoidance of dentists because of shame and embarrassment, until the unbearable pain drives the patients to seek dental treatment. This pattern reinforces the preconceived notion of pain due to dental treatment and fear of dental treatment [4]. Several other plausible explanations of the development of dental phobia are provided by extensive literature such as the direct conditioning perspective suggested that single exposure to aversive or negative stimuli could generate a learned response of fear or anxiety. Vicarious learning theorists believed that learned fear is acquired through observing other fearful reactions to specific events and stimuli. Negative information tends to increase negative beliefs about the proposed danger and the expectation of threat and discomfort obtained from it. Genetic studies supported the hypothesis of transgenerational transmission of fear in families [5].

The other associated factors reported in the studies are: traumatic experiences in childhood, irrational thoughts, recurrent memories, stereotypes of the dentist being cold and controlling, lack of empathy towards patients, perception of pain regarding dental treatment, fear of dental equipment, etc. studies have shown that patients reported one of the most aversive stimuli is surgical work and least aversive stimuli are meeting the dentist [6].

A considerable amount of research has reported the prevalence rates of dental phobia in adults. In an Australian sample, the reported prevalence rate of dental phobia was 16% [7]. The estimated prevalence rate of patients suffering from a dental phobia is 3 to 16% [8]. In another study, the reported prevalence rate of dental anxiety ranges from 4.2 to 50% [9]. Researchers have also identified that 70% of the patients, who visit dentists exhibit feelings of apprehension, and 15% of the patients avoid dental visits. It was also reported that 2.6% to 20% of the patients suffer from dental anxiety in an interesting study it was revealed that dental phobia in the Israeli population was 10 % and in the Pakistani population it was 9% [10]. This variation in prevalence rates could be attributable to several factors such as cultural, social, and economic conditions and personal characteristics of participants. Also, several instruments to evaluate the presence of several instruments to evaluate dental fear, which could also contribute to the difference in prevalence rate [11].

Dental phobia is not solely limited to poor oral health it has various devastating short-term and long-term repercussions. One of the most obvious causes of dental phobia is avoidance of necessary dental care at the personal and professional level, causing adverse effects on an individual's oral health status and quality of life. Individual daily living activities are affected such as modification of eating habits and avoidance of food to avoid further deterioration of dental health. The systematic research finding revealed that impairment outside the dental situation is widely spread throughout an individual's entire life. Mostly people curtail their social relationships to avoid shame and social embarrassment caused due to deteriorating appearance and oral health. It is a leading cause of feelings of loneliness and social isolation, subsequently causing negative self-evaluation, low self-esteem, and depression [12]. The experience and manifestation of dental phobia vary from culture to culture. The role of culture is inevitable in shaping people's perception of dental fear and anxiety. It has been reported that particularly in Asian culture greater emphasis is given to self-control restraint and compliance to social norms, causing avoidance of dental visits and treatment. Cultural beliefs could act as a barrier in dental treatment, condition of teeth, and care-seeking behaviors leading to different oral health statuses across the globe [13].

Socio-demographic determinants of dental anxiety are an area of research worldwide. Researchers are divided in their opinion about the role of age and dental phobia. A study conducted by Liddell et al. reported that younger people showed higher levels of dental anxiety as compared to adults, whereas Doganer believed that there was a significant difference in age group and dental phobia. Discrepancies in the research findings could be attributed to age

as a function of the socio-cultural environment [14]. Another important variable in research related to dental phobia is gender. Studies have highlighted that females reported greater levels of dental anxiety as compared to males. This is consonant with the notion that females are considered to be more prone to difficulties in affective regulation such as stress, depression, fear, and social phobia. The variance between genders also arises from the structural and functional differences between male and female brains. Even though the gender difference is explained by structural differences, a sociocultural factor also acts as a deriving force, as females are allowed to express their feelings more openly as compared to males [15]. Similarly, levels of education were negatively correlated with dental anxiety. Al-Omari et al. compared the levels of dental anxiety in college students from different faculties and found that dental anxiety was more prevalent in medical and engineering students as compared to dentistry students. This finding demonstrated that knowledge and education about dental procedures have positive effects on the levels of dental phobia [16]. Few studies have been carried out in Pakistan on the subject matter of dental phobia. In a seminal work dental anxiety was explored by 300 students in the age range of 13 or above in Lahore, through cross-sectional research. A modified dental anxiety scale was used to assess dental phobia. The results showed that mild anxiety was 21.3%, and moderate to high anxiety was 62.7% [17]. In another study, the prevalence of dental anxiety was assessed in pre and post-dental treatment in 210 patients, visiting the dental clinic. Dental anxiety was categorized as mild, moderate, high, and severe. It was observed that in the pretreatment group mild, moderate, and high anxiety was observed whereas in the post-treatment group severe anxiety was observed [18]. In another study oral health-seeking behaviors and quality of life were assessed on 500 university students residing in Rawal Pindi.21.6 % of males reported high to severe dental anxiety and 24% of the females reported high to severe dental anxiety [19].

Given that, the prevalence of dental anxiety is on the surge, with each passing day. Oral health problems are devastating conditions and had repercussions for a person's social, and emotional life, which further exacerbate the condition of anxiety. Despite the research on the prevalence of dental phobia, still there is a lack of consensus about the exact prevalence rate in the general population. These aforementioned factors lend higher importance to studying dental phobia in adults. Therefore, the objective of the current research was1) to find out the prevalence of dental anxiety in adults. 2) to find out the demographic determinants of dental anxiety in adults.

METHODOLOGY

Selection and Description of Participants: Cross-sectional research was carried out from August 2022 to October 2022. The data was collected from rural and urban settings of Lahore. The participants were selected through a simple random sampling strategy. 1000 participants with the age range of 18 to 60 years (M 32.18 SD 11.16) were selected. The sample size was calculated by epi-tools online calculator using the following equation Sample size n = [DEFF*Np (1-p)]/ [(d2/Z21-α/2*(N-1) + p*(1-p)]. The calculated sample size was (985+ 15) =1000. The participants selected were (Males 81 and females 919), educated and uneducated, with family monthly income ranging from 25000 to 100000 Rs. Participants with dental problems tooth decay, dental caries, missing teeth, malocclusion, Dentin hypersensitivity, pulpitis, Dental plaque, Dental calculus, gingivitis, and periodontitis were included in the sample. Those participants who had oral health conditions like oral cancer, autoimmune disease, hearing impairment, vision loss paralysis, and cleft palate were excluded from the sample.

Data Collection Procedure: The data collection was started after obtaining consent from university authorities. Participants were debriefed about the purpose of the research, anonymity, and confidentiality of the information. After explaining the nature and purpose of the research participant were given 5 items Modified

Dental Anxiety Scale [20], developed to measure the emotional experience of patients before the dental treatment. It is a five-item Likert scale, with a response set ranging from 1 means "not anxious" to 5 means "extremely anxious". The total score ranges from 5 to 25. The scale has sound psychometric properties with a Cronbach alpha was .89 and test-retest reliability was .82. Participants were given a demographic performa containing information related to age, gender, education, and family monthly income. The data was collected in an individual setting and participants were approached with the reference of a Lady Health worker. It took 10 to 15 minutes to administer the scale. Afterward, feedback was obtained and the queries of the participants were resolved.

Data Analysis: Data was entered in SPSS version 26. Statistical significance was set at 0.05 level. Sociodemographic variables were analyzed using frequencies, and percentages. Prevalence was calculated using frequencies and percentages. To find out gender difference Mann Whitney U test was used. To find out the difference between levels of education and dental phobia one-way ANOVA was used.

Table 1: Socio-Demographic Characteristics of the Participants (N=1000)

Variables	f	%
Gender		
Male	81	8.10
Female	919	91.90
Age		
Less than 20 years	150	15
21-30 years	356	35.64
31-40 years	268	26.82
41-50 years	145	14.50
50 years and above	81	8.12
Education		
Uneducated	122	12.20
Under matric	269	26.90
Matric and above	609	60.90
Family Monthly Income		
Greater than 25,000	244	24.40
26,000 – 50,000	584	58.40
51,000 – 100,000	124	12.40
Above 100,000	48	4.80

Table 1 showed that among 1000 respondents 8 % were males and 92% were female, revealing a higher proportion of female participants have dental problems and phobia. Similarly, a higher percentage of participants were in the age group of 21 to 30 (36%) and 31 to 40 (27%). The results also showed that the majority of the participants were educated (61%). Similarly, most participants' family income was between 26,000-50,000 rupees (59%).

Table 2: Frequencies and Percentages of Mild, Moderate, High, and Severe levels of Dental Phobia (N=1000)

Dental Phobia	f	%
Mild	37	3.70
Moderate	108	10.80
High	189	18.90
Severe	666	66.60
Total	1000	100.0

Note:<9 = mild, 9-12 = moderate, 13-14 = high, 15-25 severe

The results of table 2 depicted that 4% of the participants fall under the mild category of dental phobia. 11 % had a moderate dental phobia, whereas 19 % of the participants had a high level of dental phobia. However, the majority of the participants suffer from severe levels of dental phobia i.e., 67%.

H1: It is hypothesized that females would experience dental phobia as compared to males.

To test the hypothesis Mann Whitney U test was carried out. Mann Whitney U test is a non-parametric alternative to t-test. It is used in the condition when the sample is not normally distributed [21].
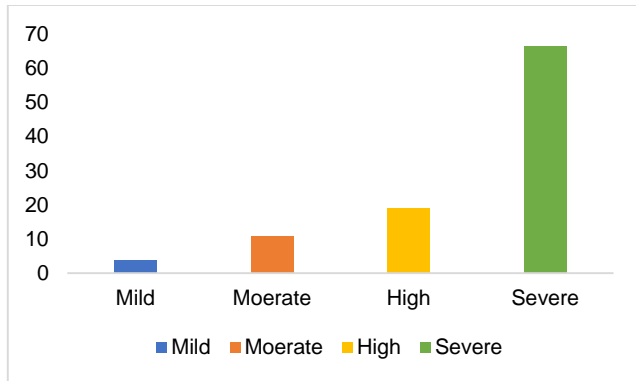
Fig 2: showing severity levels of dental phobia in adults

Table 3: Mann Whitney U Test, Mean Rank, Z, and Significance Values of Gender on Modified Dental Phobia Scale

Variables	Male (81)	Female (919)	Mann Whitney U	Z	Sig
	Mean Rank	Mean Rank			
MDPT	385.15	510.67	27876.50	3.76	001***

***p<.001

Note. MPDT=Modified Dental Phobia Scale Total

The results of table 3 showed that dental phobia was higher in females (Mean Rank = 510.67) as compared to males (Mean Rank= 385.15), U= 27876.50, ***p<.001.

H2: It is hypothesized that uneducated adults would experience more dental phobia as compared to educated adults

Table 4: Means, Standard Deviations, F and p Statistics for the Variable

Variable	Illiterate (n=122)		Undermatric (n=269)		Matric and above (n=609)			
	M	SD	M	SD	M	SD	F	p
MDPT	18.22	4.91	17.16	4.74	15.77	3.88	21.99	***.001

***p<.01, ***p<.001

Note. MDPT=Modified Dental Phobia Scale Total

The results of one-way ANOVA were carried out to find out the mean difference in dental phobia among three educational levels, classified as illiterate (n=122), under matric (n =269) and matric and above (n=609). The results revealed that a statistically significant difference was found F (2,997)=21.99, ***p<.001. Dental anxiety was slightly higher in the uneducated group as compared to the educated group.

DISCUSSION

Dental anxiety is seemingly a distressful condition and a leading cause of avoidance of dental procedures. Despite the technological advancement and increasing awareness about dental treatment, existing literature suggested that it is an issue of concern and needs a lot of attention from different stakeholders [22]. Dental anxiety is an impairing condition affecting children and adults, irrespective of socio-economic status. Dental anxiety follows a dynamic vicious cycle, linking anxiety to deteriorating oral health, avoidance of dental treatment, worsening of pain, and going for a painful procedure, henceforth developing a fear of dental procedures [23]. The progression of untreated infection, combined with the feeling of social embarrassment and low self-esteem are the contributing factors in maintaining the vicious cycle of anxiety [24].

Therefore, the current research aimed to find out the prevalence of dental anxiety in adults. The findings of the current research revealed the prevalence of dental phobia among 1000 respondents, 3.7% had a mild dental phobia, 10.8% had moderate, 18.9% had high while the majority 66.6% of respondents had a severe dental phobia. The findings of the research are consistent with the research studies showing that 83% of Chinese adults suffered from moderate to severe dental anxiety. Dental anxiety is a significant and constant source of stress for patients that could endanger the clinical practice and efficiency of dentists and practitioners [25].

Therefore, it is important to identify dental phobia before the initiation of treatment. It will support dental healthcare professionals to break the continuous ongoing cycle of dental phobia and maintain a healthy relationship with patients to facilitate further treatment. Dental evaluation of phobia is very important using scales with sound psychometric properties that could exactly depict the expression of dental phobia [26].

The role of demographics is also vital in understanding the factors associated with dental phobia. Gender difference is also crucial in understanding and estimating the prevalence of dental phobia. Studies have reported that females scored higher on the dental anxiety scale as compared to males. It could be attributed to the fact that women had lower pain thresholds as compared to males [27]. This finding is in line with the results of current research revealing that females experience more dental anxiety related to dental treatment as compared to males.

A plethora of research is also emphasizing the role of education in developing a dental phobia. Studies had demonstrated that patients with higher educational levels have better oral health conditions and visit the dentist for a dental checkup more frequently. The majority of the patients with a tertiary level of education experience no dental anxiety on the dental anxiety scale. Presumably, knowledge and awareness about dental problems and comprehension of dental treatment and procedure lower dental anxiety [28]. The current research is also evidence of the fact that educated patients experience lesser dental anxiety as compared to uneducated patients.

From the above-mentioned discussion, it is manifested that dental anxiety is a debilitating condition affecting people irrespective of their age. It is advocated that gender and education should be given utmost importance and consideration in the assessment and management of dental phobia.

CONCLUSION

Dental anxiety is one of the most prevalent phenomena occurring worldwide. It has a severe adverse effect on an individual's life, undermining their social and work life. It is quite challenging to assess people with dental phobia, within the population. People with a dental phobia could be reached out so to provide awareness through campaigns about the importance of oral health, dental procedures, and appropriate ways to overcome dental anxiety. It is important to take preventative measures to develop dental fear or timely intervention should be given to avoid the condition getting worse. The role of gender and education should also be given consideration when assessing and managing oral health problems and dental anxiety.

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