

## DETERMINANTS OF DENTAL ANXIETY AMONG PATIENTS VISITING A DENTAL INSTITUTE IN HIMACHAL PRADESH, INDIA: A CROSS-SECTIONAL STUDY

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### ABSTRACT

**BACKGROUND:** Dental anxiety is a known barrier in accessing dental health care and an established factor related to poor oral health. This paper reports on prevalence of dental anxiety and associated factors among patients visiting a dental institute in Himachal Pradesh, India. **METHODS:** The study was conducted on 200 patients who visited Himachal Institute of Dental Sciences, Paonta Sahib (HP) for dental treatment. Data on dental anxiety were collected using a self-completed questionnaire and were measured by the Modified Dental Anxiety Scale (MDAS). Data were analyzed using SPSS version 16 at significance level of 0.05. **RESULTS:** The mean MDAS score was 9.3±4.0 and the prevalence of dental anxiety was found to be 37%. Dental anxiety was found to be higher among females (P<0.001), participants of lower age (P<0.001), and those who had never visited the dentist before (P=0.028). Dentally anxious individuals were also found to have less number of filled teeth compared to those without dental anxiety (P=0.020). **CONCLUSION:** Dental anxiety was found to be significantly associated with age, gender, and dental visiting pattern.

**KEYWORDS-** Dental anxiety, dental caries, oral health

### INTRODUCTION

Dental anxiety denotes a state of apprehension that something dreadful is going to happen in relation to dental treatment, coupled with a sense of losing control<sup>1</sup>. This anxiety associated with the dental treatment is a well-known problem for patients as well as for the dental health professionals<sup>2</sup>. Fear and anxiety toward the dentist and dental treatment are both significant characteristics that contribute to avoidance of dental care. It has been seen that people with dental anxiety tend to avoid seeking dental care. Dental anxiety, therefore, may be considered as a health-damaging behavior as it may prevent the patient from accessing essential dental care needed for maintaining optimal oral health<sup>3</sup>.

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Individuals with dental anxiety are not a homogeneous group as there are several differences with regard to the onset, origin, and manifestations of dental anxiety<sup>4</sup>. According to the source of anxiety, dentally anxious individuals can be classified into two groups: exogenous and endogenous groups. In the exogenous group, dental anxiety is due to the conditioning through traumatic dental experiences<sup>5</sup>. Locker et al. found association between dental anxiety and negative experiences confirming the fact that dental anxiety can develop

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as a result of past negative experiences related to dental treatment<sup>6</sup>. In the endogenous group, dental anxiety may originate in an inherent susceptibility to anxiety disorders, suggesting that all dentally anxious participants do not become fearful as a result of conditioning<sup>5</sup>. Locker et al. found that dental anxiety is a simple conditioned fear in younger participants, while in older participants, it is more likely to be related to generalized anxiety<sup>4</sup>.

Dental anxiety has also been observed to be associated with self-reported measures of oral health. In a study, dentally anxious individuals reported a poorer oral health as compared to non-anxious individuals. Dentally anxious individuals may have a bias in the way, they process the information causing them to perceive their oral health in a more negative way<sup>7</sup>.

Dental anxiety, thus, appears to be a complex of various inter-related factors, making it difficult to establish one factor as solely responsible. This indicates the presence of related social determinants. The social determinants of health are the conditions in which people are born, grow, live, work, and age. These factors affect the oral health-related behaviour and dental anxiety is one such aspect that has a negative impact on the oral health<sup>8</sup>.

The purpose of this study was to look into the subjective ratings of dental anxiety ranges among the dental patients attending a dental institute in Paonta Sahib, Himachal Pradesh. Furthermore, the current study sought to investigate the sources of dental tension as well as the impact of socio-demographic factors on perceived dental anxiety. This will help to improve patient management and development of better treatment strategies for anxious dental patients.

## **MATERIALS AND METHODS**

A cross-sectional questionnaire-based survey was conducted among dental patients aged 18 years and above. A convenience sample of 200 patients

visiting the Himachal Institute of Dental Sciences, Paonta Sahib (HP) was used for the study. Before the beginning of the study, ethical approval was obtained from the Institutional Ethics Committee of Himachal Institute of Dental Sciences, Paonta Sahib. Patients with known systemic illness, or patients who were currently under treatment for known physical/mental health problems were excluded from the study. A voluntary, written informed consent was obtained from all the participants before the study. After the patients consented to participate, they were given a brief explanation of the purpose of the study and that the investigation concerns the assessment of dental anxiety through the completion of a questionnaire. The patients were given the opportunity to ask questions regarding the study. The questionnaires were completed by the patients in the department of Oral Medicine before beginning of any treatment. The participation in the study was entirely at will of the patients, though none of the patient declined participation, giving a response rate of 100%.

Assessment of dental anxiety was done using the Modified Dental Anxiety Scale (MDAS) which is a modification of Corah's Dental Anxiety Scale (CDAS)<sup>9</sup>. The CDAS does not inquire about the local anaesthetic injection, which can be a focus for some patients' anxiety. A self-administered MDAS scale questionnaire was used in both English as well as in the Hindi-version for participants who could not understand English. The MDAS is a brief, five-item questionnaire which asks participants to rate their emotional reaction to the prospect of a dental visit the day previous, then when in the waiting room, receipt of drilling, scaling, and a local anaesthetic injection. Pre-coded responses range from "not anxious" (Scoring 1) to "extremely anxious" (Scoring 5). It is summed together to construct a Likert scale with a minimum score of 5 and a maximum of 25. It had good psychometric properties, is relatively quick to

complete and scoring is easy<sup>10</sup>. A score below 11 is considered normal, 11–18 represents moderate anxiety, and a score above 18 represents extreme anxiety<sup>11</sup>. Data were also collected on participants' age, sex, and past dental visits.

Statistical analysis was done using Statistical Package for the Social Sciences (SPSS for Windows, Version 16.0. Chicago, SPSS Inc.). Comparison of the mean MDAS scores in relation to participants' gender, dental visiting pattern, and past negative dental history was done using independent t-test. Comparison of participants' scores in relation to their self-perceived oral health was carried out using Analysis of Variance. Correlation between participants' age and their MDAS scores was analysed using Pearson's correlation analysis. Comparison of participants' dental caries experience based on their dental visiting pattern was done using independent t-test. The level of significance for the present study was set at a P value of less than 0.05.

**RESULTS**

The present study was conducted on 200 participants with a mean age of 35.1±13.7 years (Range 18-76 years). Table 1 shows the socio-demographic distribution of the study participants. There were 90 (45%) men and 110 (55%) women in this study.

The MDAS score of the study participants was 9.3±4.0. Based on the cut-off score for dental anxiety, 74 (37%) participants were found to be dentally anxious. Majority of the participants (n=181) had visited the dentist before. Past negative dental experience was reported by 41 (20.5%) study participants. Most of the study subjects rated the oral health as average to good. There were 15 (7.5%) participants who rated their oral health as poor (Table 2).

Table 3 shows the analysis of comparison of mean MDAS score in relation to participants' characteristics. Results showed that females

reported higher dental anxiety compared to males (P<0.001). It was also found that participants who had never visited the dentist before had higher dental anxiety compared to those who had visited the dentist before (P=0.028). A higher dental anxiety was reported by participants who perceived their oral health to be poor (P=0.053). A mild negative correlation was observed between age and mean MDAS scores (r = -0.292, P<0.001).

Comparison of participant's dental caries experience with presence or absence of dental anxiety (Table 4) showed that participants who exhibited dental anxiety had lower mean filled teeth compared to those who were not dentally anxious (P=0.02).

**Table 1. Socio-demographic characteristics of study participants**

	Number (%)
<b>Gender</b>	
Male	90 (45%)
Female	110 (55%)
<b>Education</b>	
Illiterate	26 (13%)
Primary	28 (14%)
Senior Secondary	47 (23.5%)
Graduate	84 (42%)
Postgraduate	15 (7.5%)
<b>Occupation</b>	
Working	79 (39.5%)
Non-working	121 (60.5%)
<b>Age (Mean±SD)</b>	35.1±13.7 years

**Table 2. Distribution of study participants according to dental anxiety, dental visits, past negative dental experience and self-perceived oral health**

	Number (%)
<b>Dental Anxiety</b>	
Anxiety present	74 (37%)
No Dental Anxiety	126 (63%)
<b>Visited Dentist Before</b>	
Visited	181 (90.5%)
Never Visited	19 (9.5%)
<b>Past Negative Dental Experience</b>	
Yes	41 (20.5%)
No	159 (79.5%)
<b>Self-Perceived Oral Health</b>	
Excellent	9 (4.5%)
Good	84 (42.5%)
Average	92 (46%)
Poor	15 (7.5%)

**Table 3. Comparison of mean MDAS scores according to participants' characteristics**

	Mean MDAS Score	P value
<b>Gender</b>		
Male	8.2±3.5	<0.001*
Female	10.2±4.2	
<b>Dental Visiting Pattern</b>		
Visited before	9.1±3.9	0.028*
Never visited before	11.2±4.3	
<b>Past Negative Dental Experience</b>		
Yes	10.2±3.9	0.096
No	9±4	
<b>Self-Perceived Oral Health</b>		
Excellent	6.4±1.3	<0.001#
Good	9.8±4.4	
Average	8.9±3.6	
Poor	10.1±4.2	
<b>Age (Correlation)</b>	r = -0.292	

\*Statistically significant (P<0.05, Independent t-test)

#Statistically significant (P<0.05, Pearson's correlation)

**Table 4. Comparison of dental anxiety and caries experience**

	Anxiety	Mean	P value
Decayed Teeth (DT)	No Dental Anxiety	2.3±2.6	0.298
	Dental Anxiety Present	2.7±2.5	
Missing Teeth (MT)	No Dental Anxiety	2.3±4.3	0.786
	Dental Anxiety Present	2.5±6.1	
Filled Teeth (FT)	No Dental Anxiety	1.1±1.3	0.020*
	Dental Anxiety Present	0.6±1.1	
DMFT	No Dental Anxiety	5.6±4.9	0.832
	Dental Anxiety Present	5.8±6.4	

\*Statistically significant (P<0.05, Independent t-test)

**DISCUSSION**

The present study was conducted on 200 participants visiting the Himachal Institute of Dental Sciences, Paonta Sahib (HP). Assessment of dental anxiety showed that the prevalence of dental anxiety in this sample was 37%. Majority of study subjects (n=181) had visited the dentist before and

41 (20.5%) of the participants reported at least one past negative dental experience.

In this study dental anxiety was found to be associated with participants' age, gender and dental visiting pattern. Women reported a higher mean MDAS score compared to men. This is in accordance with several previous studies which have consistently shown that women report more dental anxiety compared to men. This finding was in agreement with various reported studies.<sup>2,12</sup> Women, in general, are more likely than men to meet criteria for all anxiety disorders<sup>13</sup> and this might be the reason for higher levels of dental anxiety. More emotional stability among men has also been suggested as one of the reasons why women report higher dental anxiety.<sup>14</sup> Other possible causes suggested for this difference are higher levels of neuroticism in women which is positively associated with anxiety, possible lower tolerance to pain among women, real gender differences in anxiety, and a greater readiness among women to acknowledge their feelings and anxiety than men<sup>12,15,16</sup>.

The dental anxiety scores were found to be negatively correlated with participants' age. Similar results have been reported in previous studies which showed that dental anxiety decreases with increasing age<sup>8,17</sup>.

It was also seen that people who had previously visited the dentist reported lower mean MDAS score compared to those who had never visited the dentist before. Dental anxiety is a known barrier to accessing dental care. People with dental anxiety tend to avoid regular and preventive dental care leading to worsening oral health.

It was also observed that participants who perceived their oral health to be excellent had lower dental anxiety compared to those who rated their oral health to be good to poor. This difference, although not statistically significant, is clinically relevant. Dental anxiety has also been observed to be associated with self-reported measures of oral

health. In a study, dentally anxious individuals reported a poorer oral health as compared to non-anxious individuals. Dentally anxious individuals may have a bias in the way, they process the information causing them to perceive their oral health in a more negative way<sup>18</sup>.

A comparison of dental caries status of participants with and without dental anxiety showed that people who showed no dental anxiety had higher mean filled teeth compared to dentally anxious individuals. This could be due to the fact that dentally anxious people tend to avoid seeking restorative care. In addition, it has been estimated a much larger percentage of the population avoids dental treatment except when they are symptomatic.<sup>19</sup> Cohen et al. found that having symptoms as the reason for the last dental visit is significantly related to dental anxiety<sup>20</sup>.

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## CONCLUSION

Women, younger individuals and participants who had never visited the dentist before had a higher dental anxiety. Dental anxiety was seen to be associated with participants' restorative experience. Importance of understanding the social determinants and awareness toward dental treatment by means of oral health education is essential to minimize this public health problem.

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