

Assessment of Dental Anxiety among Medical students studying in a Medical College, Himachal Pradesh

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Abstract

Background: Though significant advances have been made in the field of dentistry over a period of time but the fear of pain and anxiety for dental treatment remains widespread among patients and is a significant barrier to dental treatment.

Aim: To provide information about various levels of anxiety patients experience while seeking dental treatment so as to minimize them and aid in planning stress-free treatment and environment to the patients. **Setting and Design:** This is a cross-sectional survey conducted in a Maharishi Markandeshwar Medical College and Hospital (MMMC&H), Solan, Himachal Pradesh. **Material and Methods:** It utilized a self-reported questionnaire based on Modified Corah's Dental Anxiety Scale (MDAS). The study was performed on 250 medical students (aged 18- 25 years) studying in MMMC&H, Solan, Himachal Pradesh. **Statistical Analysis:** The data was put into Microsoft Excel software and was analysed using SPSS 22. The level of significance was kept at 5%. **Results:** Out of 285 questionnaires, 250 questionnaires were returned (response rate – 97.3%). Overall, prevalence of dental anxiety was high (69.8%). It was seen to be significantly higher in females (mean 12.90) than in males (mean –10.95) . This difference being statistically significant ($p = 0.0005$). However, prevalence of severe anxiety (phobia) was quite low (7.2%). **Conclusion:** Patients anxious about dental procedures are often more difficult to treat. Anxious patients should be identified and managed appropriately by behavioural/pharmacological measures. Communication between dental and behavioral health professionals is needed to implement a multidisciplinary team approach involving behavioural and psychological interventions.

Keywords: Dental anxiety, questionnaire, dentistry

Introduction: Is fear and anxiety same? While we often use both these terms interchangeably and they share much in common but there are differences that make them distinct, Fear is an emotional response to a known or definite threat whereas Anxiety, by definition, is described as a vague, unpleasant feeling accompanied by the premonition that something undesirable is about to happen. It is a reaction to a perceived danger that is unknown to the individual^{1,2} Phobia, which shares features with both anxiety and fear, involves an avoidance response and is associated with a debilitating loss of function. Anxiety towards dental treatment has been widespread among patients and is often barrier to dental treatment. Dental anxiety is the patient's response to the stress specific to the dental situation. A study reported that 73% to 79% of patients had at least some dental anxiety towards dental procedures³. Possible factors related to dental anxiety that have been studied include age⁴, gender⁵, objects and situations⁶ etc.

Many scales have been developed to measure dental anxiety, however, for brief assessment Corah's Dental Anxiety Scale has often been employed. Published by Norman Corah in 1968, the scale contains four multiple-choice items dealing with the patient's subjective reactions to different dental situations. It was modified later in the year 1995 by adding a question

on local anaesthetic injection since LA injections are considered one of the strongest stimuli to evoke dental anxiety. The scale has shown favourable psychometric properties in comparison to the original Dental Anxiety Scale of Corah and has good specificity and sensitivity for dental phobia⁷.

High levels of anxiety may make treatment unsuccessful and such patients may continue to avoid dental treatment for life. If the dentist is aware of the level of anxiety of his patient, appropriate methods could be employed to help alleviate the anxiety during the operative procedure. To help patients reduce their dental anxiety, many treatment modalities have been suggested such as behaviour modification including systemic desensitization, reinforcement, biofeedback, hypnosis, intravenous sedation and inhalation sedation.

The rationale of the study is to provide information regarding various levels of anxiety so as to minimize them and help in planning stress free treatment for the patients seeking dental care. The aim of the present study was to assess the levels of dental anxiety in students visiting Dental Department in a Medical college in Himachal Pradesh.

Material and Methods: The subjects for this cross sectional survey were the Medical students studying in Maharishi Markandeshwar Medical College and Hospital (MMMCH), Solan, Himachal Pradesh. Inclusion criteria comprised of students in the age group of 18 - 25 years and students who already had previous dental experience. Whereas students on anxiolytic drugs and students undergoing any psychological therapy were excluded from the study. The STROBE guidelines were adhered to while conducting this cross sectional study. A questionnaire was structured to assess students' anxiety levels before the dental treatment. This cross-sectional study utilized questions modified from Corah's Dental Anxiety Scale (9), termed as Modified Corah's Dental Anxiety Scale (MDAS). These questions inquired about participant's feelings in specific situations, namely:

- * Prior to visiting the dentist
- * When they are waiting in the reception area
- * When they are sitting in the dentist's chair and the dentist gets the machine ready for filling their teeth.
- * When they are sitting in the dentist's chair and the instruments are being set up to clean their teeth
- * When they are sitting in the dentist's chair and the dentist is about to put a local anaesthetic injection in their gums

Participants were allowed to choose from **five responses (scored 1 to 5)** as under

Not anxious/ relaxed: score of 1

Slightly anxious: score of 2

Fairly anxious: score of 3

Very anxious: score of 4

Extremely anxious: score of 5

A pilot study of the questionnaire was carried out on 20 students and the problems encountered were modified. The final score was analysed as

Score between 5–9: Mild anxiety,

Score between 10–15: Moderate anxiety,

Score between 16–18: High anxiety

Score between 19–25: Severe anxiety (Phobia).

Informed consent was obtained from all the participants included in the study. The study was approved by Institutional Ethical Committee (MMMCH/IEC/23/757).

The data was put into Microsoft Excel software where it was checked and errors were corrected before data analysis. The data were analysed using SPSS 22. For quantitative variables, mean and standard deviation were calculated while categorical variables were expressed as percentages. The comparison between the mean anxiety score for both genders was done by unpaired T test. The association between gender and different levels of anxiety in relation to the five parameters/questions was done by the use of chi-square test. The level of significance was set to be 0.05.

Results: Out of 285 questionnaires distributed, 250 questionnaires were received back (response rate – 87.7%). The majority of the patients were females 150 (60%) and the rest 100 (40%) were males. Mean age of both male and female participants stands almost equal (22.21 years and 22.12 years respectively).

Every student included in the study had visited dentist previously for one or the other reason. Maximum visits (31.6%) were made for scaling and polishing, followed by fillings (26.8%), for checkups (20.8%), 18 % for toothache and near about 2.8% for tooth extraction as depicted in Figure No.1

The mean anxiety scores for females (12.90) was slightly higher than the male counterparts (10.95) and this difference was

found to be extremely statistically significant ($P = 0.0005$) as we can refer to in Table No. 1.

Relating to anxiety levels, 42% males and 33% females did not feel anxious or we can say were relaxed before visiting the dentist. About 35% males felt slightly anxious in the waiting room in contrast to 38% females. As far as drilling of tooth was concerned, about 12% males felt very anxious, while near about 22% females felt the same. With scaling and polishing only 4% males felt very anxious in contrast to more than three times this percentage i.e. 13 % females felt very anxious with the same procedure. As far as the use of injection was concerned 14% males in contrast to 40% females felt extremely anxious. (Figure No. 2 and 3)

It is discerned from the analysis that drilling evoked extreme anxiety in thrice the number of females than males and this difference was statistically highly significant (P value= 0.0022675). A comparable observation was noted when injections were used, with nearly three times as many females experiencing extreme anxiety as males. This difference was also statistically highly significant as the p value is 0.0000096. (Table No. 2)

Figures and Legends

Figure No.1- Representation of previous visits made by the students for different reasons.

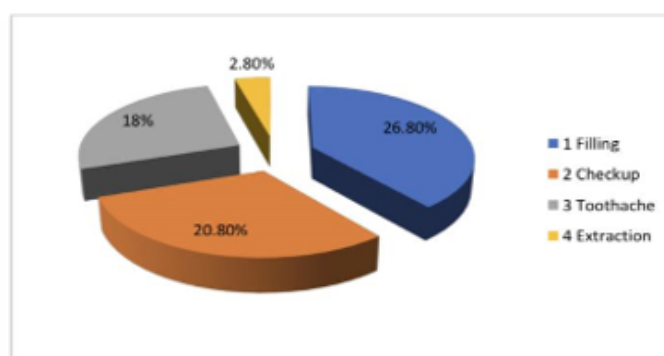


Table No. 1: Male and female comparison with regards to anxiety

Sex	N	Mean	Standard deviation	Standard error of mean
Male	100	10.9500	4.52016	0.45202
Female	150	12.9067	4.16980	0.34046

$P=0.0005$ (Highly significant)

Table no. 2: Association between different levels of anxiety, factors leading to anxiety and gender

Dental Anxiety	Gender	Not Anxious	Slightly Anxious	Fairly Anxious	Very Anxious	Extremely Anxious	P value
Visit	Males	42	35	17	3	3	0.6241

tomorrow	Females	50	62	26	8	4	
Waiting room	Males	40	35	16	4	5	0.28616
	Females	45	58	28	14	5	
Drilling	Males	25	22	32	12	9	0.00268
	Females	14	35	41	33	27	
Scaling & polishing	Males	39	39	14	4	4	0.159
	Females	48	53	23	20	6	
Use of injection	Males	25	31	24	6	14	0.0000096
	Females	12	35	29	34	40	

Figure No.2: Graphical representation of males showing different anxiety levels based on 5 parametres

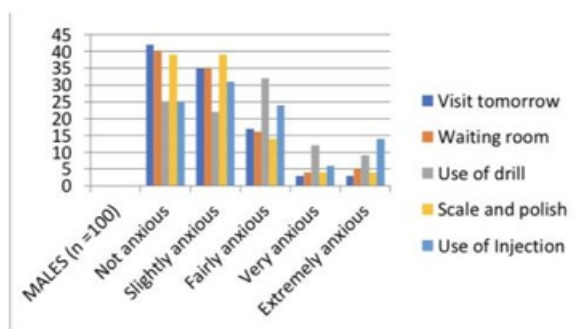
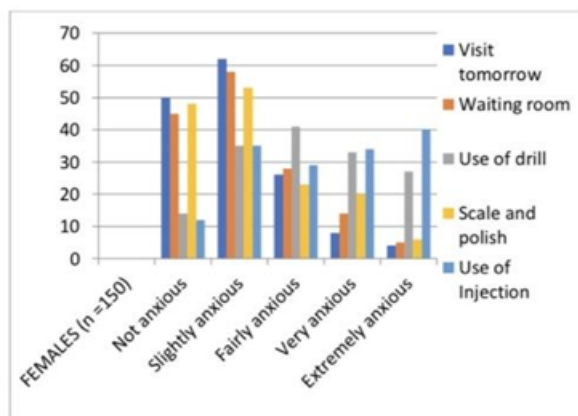


Figure No.3: Graphical representation of females showing different anxiety levels based on 5 parametres



Discussion: Dental anxiety is an important, if not the major, component of distress to patients in the dental operatory. It has both patient related and clinical implications. It has often proven to be a barrier for dental treatment since the patients with high level of anxiety may make treatment unsuccessful by avoiding dental visits

In this study, the prevalence of dental anxiety was quite high 30.8% (patients having a score ≥ 10), but severe anxiety (phobia) was low (7.2%). These findings are similar to the study of Al Madi and Abdel Latif. Also the students included

in this age group were relatively young i.e. 18-25 years So, the possible reason for the high levels of anxiety can be attributed to the high percentage of young patients who are usually apprehensive⁸. Anxiety is most common and has increased most rapidly among young adults. Young adulthood is the key period of vulnerability for the onset of anxiety disorders, depression, substance use disorders etc In addition, anxiety or stress has been shown to influence brain development, which is not completed until approximately age 25⁹. Increased persistent anxiety among young adults therefore could have long-term impact on academic, psychological and social development. Further, the explosion of social media, which is associated with increased anxiety and depression among young people, may be a contributing factor to the increase in anxiety over time, especially after 2011¹⁰.

The subjects included in our study were all educated (medical students) there have been studies which advocated that educated people were less dentally anxious than their counterparts¹¹. This could be due to the fact that higher education enables a person to cope better with stress by rationalisation

The literature shows that women have a lower tolerance to pain and generally report higher levels of anxiety^{12,13}. Similar results are obtained in the present study which reports a significant difference in the anxiety of males and females. This finding may be explained on the basis that women have higher levels of neuroticism (tendency to experience negative emotional states) than men and that anxiety is positively associated with neuroticism^{14,15}. The mean dental anxiety scores were higher for those who had visited a dentist earlier for filling ($p = 0.00268$) and who had received injection (0.0000096). This finding is similar to the study by Shrestha et al¹⁶. The fact that any previous traumatic dental experience might elevate the level of fear and anxiety in patients at subsequent dental visits could attribute to the weakness in the present study.

On the other hand, the strength of this study could be attributed to the fact that by employing dental anxiety scales the dentist not only gets forewarned about the patient's behaviour but can also take measures in advance to help alleviate the anxiety during the operative procedure. This would aid in planning a stress free treatment for the patients, since the success of any dental treatment depends upon the patient compliance. There is ample scope for future research in case of patients with anxiety disorders requiring dental treatment for their tooth related ailments.

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