JOURNAL OF CLINICAL AND BIOMEDICAL SCIENCES

ORIGINAL ARTICLE

OPEN ACCESS

Received: 22.10.2024
Accepted: 11.02.2025
Published: 11.07.2025

Citation: Rajesh KA, Sowjeeniya S, Sendil KB, Nandha KRS, Deepiga G, Priyanka K. Assessment of Dental Anxiety among College Students in Salem - A Cross Sectional Study. J Clin Biomed Sci 2025; 15(2): 112-117. https://doi.org/10.58739/jcbs/v15i2.24.189

* **Corresponding author**.

Deepigasurgeon05@gmail.com

Funding: None

Competing Interests: None

Copyright: This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Published By Sri Devaraj Urs Academy of Higher Education, Kolar, Karnataka

ISSN
Print: 2231-4180
Electronic: 2319-2453

Assessment of Dental Anxiety among College Students in Salem - A Cross Sectional Study

Rajesh Kumar A[1], Sowjeeniya S[1], Sendil Kumar B[2], Nandha Kumar R S[1], Deepiga G[3]*, Priyanka K[3]

1 Postgraduate, School of allied health sciences, VIMS, Salem, 636308, Tamil Nadu, India
2 Dean & Director-SAHS, School of allied health sciences, VIMS, Salem, 636308, Tamil Nadu, India
3 Assistant professor, School of allied health sciences, VIMS, Salem, 636308, Tamil Nadu, India

Abstract

Background: Mitigating dental anxiety in the present context is essential for enhancing individual oral health and cultivating a more informed, healthier community. **Aim**: The study aims to assess the prevalence of dental anxiety among college students and identify factors that contribute to their apprehension about dental visit. **Materials and methods**: A descriptive Cross- sectional study was done in Salem between April to June 2024 among college students. Data were collected from 385students by face to face interview using semi-structured questionnaire. Chi-Square test was used to examine the association. **Results**: The Prevalence of dental anxiety among the study population was 85%. Majority of the study participants were anxious for (slightly extreme anxious) tooth drilled procedure (Frequency 74%, 2.69 +1.34SD) followed by higher anxiety for local anesthetic injection (67%, 2.47 +1.349SD) and for scaling treatment (64%, 2.21+1.15SD). Women demonstrated a significantly higher level of dental anxiety than men ($p<0.05$) and also participants belonging to the family income level of < RS.37,325 shows high level of dental anxiety ($p<0.05$). **Conclusion:** Results shows that Gender and family income were significantly associated with dental anxiety, out of all the socio demographic factors. Reducing avulsion brought on by dental anxiety in clinics and improving patient management are two benefits of addressing dental anxiety levels in various groups.

Keywords: Dental fear; Oral Health status; Traumatic Dental Experience; Socio Demographic Factors

1 Introduction

Oral diseases have a substantial impact on a person's general health and are typically given less priority in developing countries like India.[1] Anxiety is typically described as a perceived threat over a new or uncertain process. On the other hand, fear is a known risk or threat that triggers a bodily reaction in response to it.[2] Dental anxiety (DA) is characterized as a patient's situation –specific stress reaction towards dental procedures. Among prevalent Anxiety situations, Dental anxiety is ranked 5th with 6-15% of the population experiencing strong DA.[2]

Dental fear and anxiety may be the reason for many patients' avoidance of dental care. The causes of dental anxiety are complex and include a variety of factors such as socio economic status, traumatic dental experiences in the past, lack of dental awareness, inconsistent dental attendance and attitude of the dentist. Dental anxiety is a person's extreme, fearful psychological response to a potential or current dental intervention that they perceive as being hazardous or harmful. The Worst kind of dental anxiety is called severe dental anxiety.[3]

Individual differences exist in dental anxiety, which is correlated with age, gender, educational attainment, socio economical level, and culture. For effective management and treatment results, it is imperative to identify the dental anxiety sufferers[4]. It has been noted in earlier research that dental instruments may contribute to dental anxiety because, when it inserted into the mouth, they can cause a gag reflex and make breathing difficult. As a result, patients who are sensitive to these things may be more likely to have dental anxiety.[5]

Reports of dental anxiety and phobia are more common among Women. Despite their low pain threshold, they tend to exhibit their anguish more visibly. Men may be less likely to openly disclose feeling concerned about dental care because they are socially and culturally conditioned to hide their emotions. Additionally, it was noted that women experienced greater Dental anxiety prior to receiving treatment.[6]

Reducing a patient's anxiety when a dental problem arises can enhance the quality of dental care and, in turn, the patient's quality of life. An anxious patient exhibits diminished pain sensitivity and postpones or cancels his dental appointment. During treatment, this serves as a deterrent for the patient as well as the dentist.[7]

Severe dental anxiety can lead to misdiagnosis and have an impact on the patient-dentist relationship. A useful indicator of dental anxiety that may be applied in clinical and research contexts is one tool for deciphering, recognizing, and minimizing the condition. Clinicians must identify the illness and consider treatment options. Measurement concerns must be carefully considered by researchers when evaluating trends and drawing comparisons.[8]

Hence, the aim of this study was to evaluate and compare the prevalence of dental anxiety based on the socio demographic status and previous dental visits among the selected colleges in Salem, Tamil Nadu.

Objective

1. To assess the level of dental anxiety in study population.
2. To identify the demographic factors that influencing dental anxiety.
3. To explore the dental health behavior among the study population.

2 Methodology

2.1 Study Design

A Cross sectional study was done in Salem between April to June 2024 among the selected colleges.

2.2 Sample Size Details

The exact prevalence of Dental anxiety among the study population is not known. Hence , the prevalence is assumed to be 50% with a confidence level of 95%, the sample size is calculated as follows, [n = z^2 p* (1-p)/ e^2] where, n = required sample size z is the Z score corresponding to the intended level of confidence (in this case 95%confidence level correspondents to a Z score of 1.96) p is the estimated prevalence (in decimal form , so 50%= 0.5) e is the desired margin of error (in decimal notation, so5%=0.05) Substituting the assumed values in to the formula , we get [n= (1.96^2 0.5* (1-0.5)/ (0.05^2) =384.16]. The sample size, rounded to the closest whole number, is 385.

2.3 Sampling Technique

One allied health science college was chosen out of the clusters of all the allied health colleges in salem. All undergraduate students enrolled in that college for the 2024-2025 academic year are the target population. A total of 385 participants were selected for the study using the simple random sampling technique.

2.4 Instrument and Data Collection

SEC A: Semi structured questionnaire used to record the Socio-Demographic profile of the participants.

SEC B : Anxiety scales were administrated through the use of MDAS[9] to all the research participants designed in both English and Tamil Languages (Regional language). This scale includes information on patient's anxiety in the following scenarios:

- Looking forward to seeing the Dentist.
- Holding out for treatment at the dentist's office.
- Sitting in the dental chair while teeth are being drilled.
- Sitting in the dental chair while teeth are being scaled.

- Sitting in the dental chair while a local anesthetic injection is being given.

A Rating of 1 would indicate 'non anxious' while a value of 5 would indicate 'extremely anxious'. For the MDAS, the total summation of values varies from a minimum of 5 to maximum of 25.

SEC C : Semi structured questionnaire adapted to collect the previous Dental visits of the participants.

2.5 Data (Statistical) Analysis

Data gathered during the survey were imported in to excel sheets and were statistically analyzed. Data analysis was performed using IBM SPSS statistics 21. Demographic information and questions about previous dental visits were analyzed using descriptive statistics. With significance thresholds set at ($P < 0.05$), the CHI-SQUARE test was utilized to identify a significant correlation between variables like gender and the family income status.

3 Results

The Current investigation comprised of 385participants. This Research sample was composed of 159 boys and 226 females aged 17 years and above. The Majority of those taking part were 18 to 20 years (81%). 44% of the Participants family income were <Rs.12444 (Table 1).

Table 1. Distribution of participants based on their demographic details (N=385)

Category	N (%)
Age distribution	
17 yrs	3%
18yrs	31%
19yrs	25%
20yrs	25%
21yrs	9%
22-25yrs	7%
Gender	
Male	41%
Female	59%
Income status of the family (based on modified kuppusamy scale) (in rupees)	
>2,49.044	5%
1,24,489-2,49,043	3%
93,381-1,24,488	5%
62273-93,380	8%
37,325-62272	12%
12,445-37,324	22%
<12444	44%

In the study population, dental anxiety was prevalent with 85%. When it comes to dental procedures, participants showed higher level of anxiety. Majority of those taking part were anxious for (slightly extreme anxious) tooth drilled procedure (Frequency 74%, 2.69 +1.34SD) followed by higher anxiety for local anesthetic injection (67%, 2.47 +1.349SD) and for scaling treatment (64%, 2.21+1.15SD). In this, 69% of the participants were experiencing anxiety while waiting for the dental treatment (Table 2).

Out Of 385 participants, 105 participants had previously visited dentist (28%). In this, 19% were undergone for tooth cleaning and 10% participants were undergone for Root Canal Treatment (Figure 1).

Compared to men, women showed a noticeably higher level of dental anxiety for being scheduled for the forthcoming appointment ($p<0.05$) and Sitting in the waiting room ($p<0.05$) [Table 3].

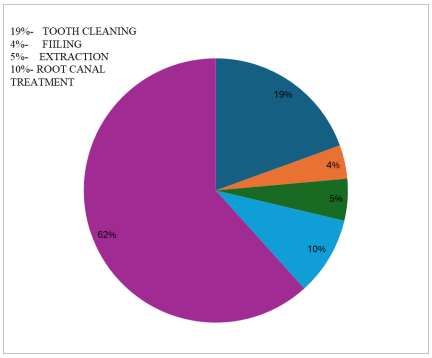

Fig 1. Previous Dental Visits of Participants

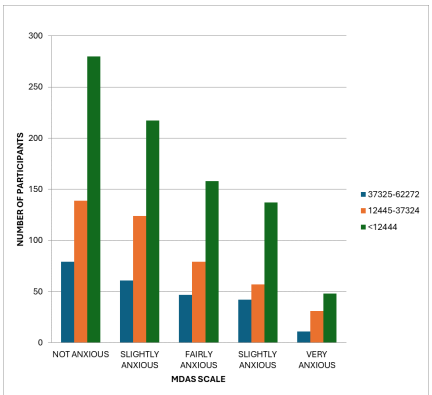

Fig 2. Association Between Income & Dental Anxiety

Among the study participants, it was shown that there is a significant association between dental anxiety and total family income (< Rs.32,375).

Participants Total family income < Rs.12,500 has shown the highest level of dental anxiety. ($p<0.05$) (Table 4).

Table 2. Level of dental anxiety among study participants at different settings (n=385)

	Not anxious	Slightly anxious	Fairly anxious	Very anxious	Extremely anxious
Treatment Scheduled Tomorrow	36%	32%	12%	16%	4%
Sitting in waiting Room	31%	32%	18%	15%	3%
Tooth being drilled	25%	22%	20%	22%	11%
Teeth are cleaned	36%	28%	22%	12%	3%
Injection being Given	32%	24%	18%	16%	9%

Table 3. Association between gender and dental anxiety

		Not anxious	Slightly anxious	Fairly anxious	Very anxious	Extremely anxious	p- value
Treatment scheduled tomorrow	male	42	50	26	29	12	0.006425*
	female	96	73	21	31	5	
Waiting room	male	41	48	33	27	9	0.0426*
	female	78	76	38	31	3	
Tooth Being drilled	male	40	31	34	34	19	0.641
	female	57	57	42	49	21	
Scaling	male	51	40	36	25	7	0.129
	female	86	66	49	21	4	
Needle	male	44	36	28	34	17	0.1255
	female	81	57	42	29	17	

Table 4. Association between income and dental anxiety

	Not anxious	Slightly anxious	Fairly anxious	Very anxious	Extremely anxious	p-value
RS.37325-62272	79	61	47	42	11	
RS.12445-37324	139	124	79	57	31	0.046881*
<RS.12444	280	217	158	137	48	

*statistically significant

4 Discussion

The Modified Dental anxiety scale (MDAS) is a tool for assessing dental anxiety. The benefit of MDAS is that reported appropriate cut-off has been supported by clinical and scientific data. The Corah's Dental anxiety scale was modified to create MDAS, which included information regarding local anesthetic injection.[10]

The Present study revealed that 85% of participants experienced Dental anxiety. This prevalence was more than the findings of studies conducted by do Nascimento et al. (23%),[11], Malvania and Ajithkrishnan (46%)[12], Madfa et al. (63%)[13], and Fotedar et al. (29%)[14]. Geographical variance or methodological variations can be partially blamed for this discrepancy[4]. It also implies that a large portion of the research population experienced anxiety related to receiving dental care, despite the technological advancements made in contemporary dentistry.[15]

The present study Sheds lights on the association between dental anxiety and gender. Compared to their male counterparts, women were more likely to experience dental anxiety and phobia; 62% of female respondents said they had dental fear. Numerous other types of research confirmed this noteworthy correlation[16–19] Despite the fact that kanegane et al. discovered no connection between gender and dental anxiety in the literature.[20]

According to Deogade et al. and Waseem et al., women are more Willing than males to talk about their anxieties because they perceive fewer social repercussions from doing so[21,22]. Women may be better at expressing their fears, which could account for this discrepancy. Dental anxiety may also be linked to physiological disorders such social anxiety, panic attacks, sadness, Tension and dread, which are more prevalent in women[14]. Our findings are Consistent with the most current data, which show that women have higher Level of dental anxiety (62% among 226 participants).

The current study found that participants with family incomes under <Rs.37,325 had high levels of dental anxiety ($p<0.05$) (Table 4) This pattern aligned with the findings of many other research as well, which found that Dental anxiety increased with a lower socio economic status[21,23,24]. The Majority of the time, it can be related to the expense

of the dental procedure[23], which is thought to be a more costly kind of treatment. It was evident that, in comparison to communities that were not impoverished, those who lived in areas with greater need were likely to experience dental anxiety.[25]

Indeed, there is a strong correlation between dental anxiety and a person's age, gender, financial status, and degree of education. These variables include the people's exposure to dentists and their care, their comprehension of life's inequalities, and their financial capacity for dental care. By being aware of these characteristics, dentists may better educate patients and help them comprehend dental treatments that can effectively allay their fear[26].

This Cross-sectional study was carried out on small sample of college students who were all from same age groups and same educational qualification. Thus, research on a wider population is required to investigate the connection between dental anxiety and educational qualification. It is necessary to do more research using various designs in order to look into the many causes of dental anxiety.

5 Conclusion

The study's results imply that a significant number of the participants had dental anxiety. Gender and family income were the two socio demographic characteristics that were most strongly linked to dental anxiety.

Our research led us to establish the following trends:

- Women were assessed to be more apprehensive of receiving dental care because they were more likely to admit to having dental anxiety.
- It has been noted that dental anxiety is more common in those with Low Socio economic status.

The degree of Surgical pain and recovery is typically accurately predicted by preoperative anxiety. Dental fear has been reduced by techniques that focus on the four Primary stimuli of anxiety triggers: Vision (needles), smell (cut dentine), Hearing (drills) and feeling (vibrations). Aromatherapy, specifically lavender, orange and apple fragrances has been demonstrated to have a significant anxiolytic effect on patients as they wait for dental treatment. We may envisage a brave and fear less dental visits in the future with numerous new technologies that are coming forth, such the plasma torch tooth brush technique to ease dental concerns.[7]

References

1) Appukuttan DP, Cholan PK, Tadepalli A, Subramanian S. Evaluation of Dental Anxiety and its Influence on Dental Visiting Pattern among Young Adults in India: A Multicentre Cross Sectional Study. *Annals of Medical and Health Sciences Research*. 2017;7(6):393–400. Available from: https://www.amhsr.org/articles/evaluation-of-dental-anxiety-and-its-influence-ondental-visiting-pattern-among-young-adults-in-india-amulticentre-cross.pdf.
2) Mohammed RB, Lalithamma T, Varma DM, Sudhakar KNV, Srinivas B, Krishnamraju PV, et al. Prevalence of dental anxiety and its relation to age and gender in coastal Andhra (Visakhapatnam) population, India. *Journal of Natural Science, Biology and Medicine*. 2014;5(2):409–414. Available from: https://dx.doi.org/10.4103/0976-9668.136210.
3) Thomas M, Kumar V, Sooraparaju SG, Mathew T, Kumar A, Ealla KKR. Dental anxiety among dental, medical, and nursing students in India and its correlation with their field of study. *Journal of International Oral Health*. 2016;8(8):860–864. Available from: https://doi.org/10.2047/jioh-08-08-05.
4) Sinha E, Rekha R, Nagashree SR. Anxiety of dental treatment among patients visiting primary health centers. *Journal of Indian Association of Public Health Dentistry*. 2019;17(3):235–245. Available from: https://dx.doi.org/10.4103/jiaphd.jiaphd_178_18.
5) Faisal S, Zehra N, Hussain M, Jaliawala HA, Faisal A. Dental anxiety among patients attending public and private dental hospitals of Karachi. *Journal of The Pakistan Dental Association*. 2015;24(01):46. Available from: https://www.jpda.com.pk/dental-anxiety-among-patients-attending-public-and-private-dental-hospitals-of-karachi.
6) Muneer MU, Ismail F, Munir N, Shakoor A, Das G, Ahmed AR, et al. Dental Anxiety and Influencing Factors in Adults. *Healthcare*. 2022;10(12):1–7. Available from: https://doi.org/10.3390/healthcare10122352.
7) Nithya S, Jeddy N, Radhika T, Jeddy N. Dental anxiety and influencing factors: A cross-sectional questionnaire-based survey. *Indian Journal of Dental Research*. 2018;29(1):10–15. Available from: https://dx.doi.org/10.4103/ijdr.ijdr_33_17.
8) Mishra P, Chowdhry R, Lamichhane A, Dhaliwal JS. Prevalence of Dental Anxiety Among Students in A Medical Institute in India. *Progress in Drug Discovery & Biomedical Science*. 2022;5(1):1–11. Available from: https://dx.doi.org/10.36877/pddbs.a0000321.
9) Humphris GM, Freeman R, Campbell J, Tuutti H, D'Souza V. Further evidence for the reliability and validity of the Modified Dental Anxiety Scale. *International Dental Journal*. 2000;50(6):367–370. Available from: https://dx.doi.org/10.1111/j.1875-595x.2000.tb00570.x.
10) Humphris GM, Dyer TA, Robinson PG. The modified dental anxiety scale: UK general public population norms in 2008 with further psychometrics and effects of age. *BMC Oral Health*. 2009;9(1):1–8. Available from: https://dx.doi.org/10.1186/1472-6831-9-20.
11) Nascimento DLD, Araújo ACDS, Gusmão ES, Cimões R. Anxiety and fear of dental treatment among users of public health services. *Oral Health and Preventive Dentistry*. 2011;9(4):329–337. Available from: https://pubmed.ncbi.nlm.nih.gov/22238731/.
12) Malvania EA, Ajithkrishnan CG. Prevalence and socio-demographic correlates of dental anxiety among a group of adult patients attending a dental institution in Vadodara city, Gujarat, India. *Indian Journal of Dental Research*. 2011;22(1):179–180. Available from: https://dx.doi.org/10.4103/0970-9290.79989.
13) Madfa AA, Amran AG, Al-Sanabani FA, Alhajj MN, Al-Qudaimi NH, AL-Malahy NA, et al. Prevalence of Dental Anxiety and Fear among Medical Students at University of Thamar. *American Journal of Health Research*. 2015;3(1-2):5–9. Available from: https://dx.doi.org/10.11648/j.ajhr.s.2015030102.12.
14) Fotedar S, Bhardwaj V, Fotedar V. Dental anxiety levels and factors associated with it among patients attending a dental teaching institute in Himachal Pradesh. *SRM Journal of Research in Dental Sciences*. 2016;7(3):153–157. Available from: https://dx.doi.org/10.4103/0976-433x.188799.
15) Ganesh R, Goswami C, Munshi R. Comparison of dental anxiety among patients visiting a dental college and private dental clinics in Thiruvallur district, India. *SRM Journal of Research in Dental Sciences*. 2014;5(1):14–20. Available from: https://dx.doi.org/10.4103/0976-433x.129060.
16) Bhardwaj SS, Almulhim B, Alghamdi S, Assaf AA, Bhardwaj A. Effect of Age ,Gender and Socioeconomic Status on Perceived Dental Anxiety , Rev Argent. *Revista Argentina de Clínica Psicológica*. 2021;XXX(1):525–530. Available from: https://revistaclinicapsicologica.com/data-cms/articles/20210323044020pmSSCI-518.pdf.

17) Hajj HKE, Fares Y, Abou-Abbas L. Assessment of dental anxiety and dental phobia among adults in Lebanon. *BMC Oral Health*. 2021;21(1):1–10. Available from: https://dx.doi.org/10.1186/s12903-021-01409-2.
18) Khan SDAA, Alqannass NM, Alwadei MM, Alnajrani MD, Alshahrani ZM, Alhareth AYA, et al. Assessment of the Relationship between Dental Anxiety and Oral Health-Related Quality of Life. *Journal of Pharmacy and Bioallied Sciences*. 2021;13(Suppl 1):S359–S362. Available from: https://dx.doi.org/10.4103/jpbs.jpbs_742_20.
19) Stabholz A, Peretz B. Dental anxiety among patients prior to different dental treatments. *International Dental Journal*. 1999;49(2):90–94. Available from: https://dx.doi.org/10.1111/j.1875-595x.1999.tb00514.x.
20) Kanegane K, Penha SS, Munhoz CD, Rocha RG. Dental anxiety and salivary cortisol levels before urgent dental care. *Journal of Oral Science*. 2009;51(4):515–520. Available from: https://dx.doi.org/10.2334/josnusd.51.515.
21) Deogade SC, Suresan V. Psychometric assessment of anxiety with the Modified Dental Anxiety scale among central Indian adults seeking oral health care to a dental school. *Industrial Psychiatry Journal*. 2016;25(2):202–209. Available from: https://dx.doi.org/10.4103/ipj.ipj_16_16.
22) Waseem A, Hussain V, Zahid RB, Shahbaz M. Reasons for not seeking early dental care in patients presenting in the exodontia department at a Tertiary Care Hospital in Lahore, Pakistan. *The Professional Medical Journal*. 2021;28(08):1107–1113. Available from: https://dx.doi.org/10.29309/tpmj/2021.28.08.5044.
23) Doerr PA, Lang WP, Nyquist LV, Ronis DL. Factors associated with dental anxiety. *The Journal of the American Dental Association*. 1998;129(8):1111–1119. Available from: https://dx.doi.org/10.14219/jada.archive.1998.0386.
24) Sukumaran I, Taylor S, Thomson WM. The Prevalence and Impact of Dental Anxiety Among Adult New Zealanders. *International Dental Journal*. 2021;71(2):122–126. Available from: https://dx.doi.org/10.1111/idj.12613.
25) Xiang B, Wong HM, Perfecto AP, McGrath CPJ. The association of socio-economic status, dental anxiety, and behavioral and clinical variables with adolescents' oral health-related quality of life. *Quality of Life Research*. 2020;29(9):2455–2464. Available from: https://dx.doi.org/10.1007/s11136-020-02504-7.
26) Muneer MU, Ismail F, Munir N, Shakoor A, Das G, Ahmed AR, et al. Dental Anxiety and Influencing Factors in Adults. *Healthcare*. 2022;10(12):1–7. Available from: https://dx.doi.org/10.3390/healthcare10122352.