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ORIGINAL RESEARCH ARTICLE

IMPACT OF SOCIO-DEMOGRAPHIC VARIABLES ON DENTAL ANXIETY AMONG PATIENTS VISITING TERTIARY HOSPITAL IN KATHMANDU

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ABSTRACT

Background: Dental anxiety is a common problem that affects people all over the world, causing them to avoid or be distressed during dental procedures and negatively influencing their oral health. This cross-sectional study was aimed to assess dental anxiety among patients at TU Teaching Hospital in Kathmandu, Nepal.

Methods: This cross-sectional study was undertaken in a department of prosthodontics, Institute of medicine, Maharajgunj, Kathmandu. Modified Dental Anxiety Scale-Nepali (MDAS-N) was utilized to assess the levels of dental anxiety. Non-probability (purposive) sampling was used and face-to-face interviews were conducted among 73 participants visiting the hospital for dental procedures. Data was analyzed using SPSS version 17.

Results: The findings revealed that participants generally experienced moderate dental anxiety, with 11% reporting extreme anxiety, 20.5% high anxiety, 34.2% moderate anxiety, and 30.1% low anxiety. Additionally, 4.1% of respondents were classified as not anxious based on MDAS-N scores. Younger individuals and women tended to exhibit higher levels of dental anxiety. The findings indicate the significance of addressing dental anxiety to improve oral health-seeking behaviors as well as overall oral health outcomes.

Conclusions: The level of anxiety depended upon specific dental procedures; the greatest anxiety was prior to tooth drilling and least anxiety before teeth scaling and polishing. Recommendations include collaboration with mental health professionals, encouraging patient feedback, and community outreach initiatives to raise awareness and support individuals experiencing dental anxiety.

INTRODUCTION

Dental anxiety (DA), which is characterized by an intense fear of dental operations that results in avoidance behaviors and poor oral health outcomes, is a serious public health concern.[1] The discomfort raises the possibility of cavities, missing teeth, as well as dental fillings, all of which lower quality of life.[2] Even with the advancements in dentistry, a significant portion of the population between 3 and 20% continues to suffer from severe dental dread.[3] This fear affects both adults and children and can cause serious disruptive behaviors during dental care as well as missed visits.[4]

This study addresses the critical need to comprehend as well as reduce dental anxiety in Kathmandu, Nepal, where the issue is made worse by cultural beliefs, a lack of understanding about oral health, and restricted access to dental care.[5] The urgent need for targeted research is highlighted by the shortage of literature on the topic and a high prevalence of dental care avoidance. The study's findings are meant to improve dental care treatments for policymakers and healthcare practitioners. The main aim was to examine the dental anxiety level among patients visiting teaching hospital in Kathmandu; comparing the dental anxiety level across several dental treatments and analyzing variations in anxiety based on demographic factors.

METHODS

This cross-sectional study was undertaken among patients visiting for consultation in the department of Prosthodontics, Institute of Medicine, Kathmandu. Data collection was done by principal researcher from 2nd January 2024 to 28th February 2024. The ethical approval for this study was gained from Institutional Review Committee (IRC) of Institute of Medicine, Tribhuvan University {Reference no: 395(6-11) E2}. Formal permission to conduct study was also taken from Tribhuvan University Teaching Hospital.

Patients between 18 to 60 years of age group keen to participate in the study were included in this study. Data was collected by the principal investigator herself. Those who were unable to comprehend questions despite support by the enumerator

were excluded. The participants were asked to provide their basic information and were instructed to fill the questionnaires along with a consent form. Respondents were allowed to refuse the interview at any time during the interview.

Non-probability purposive sampling was used to select sample. Estimation of sample size was done from the following formula, the prevalence of dental anxiety was 95.49%, was taken from the previous study.[6]

$n = Z^2pq/d^2$ where, n= sample size; Z = 1.96 at 95% Confidence Interval (CI); p= prevalence of dental anxiety, 95.49%; q= 1-p= 4.51%, d= margin of error, 5%. The calculated sample size was 73 after adding the non-response rate.

MDAS (Modified Dental Anxiety Scale) was used as the tool for the study. MDAS consists of 5 questions designed to evaluate levels of dental anxiety in various dental scenarios. Each question employs a Likert scale with 5 response options, spanning from "not anxious" to "extremely anxious." A score from 1 to 5 is assigned to each response. Accordingly, a response indicating "not anxious" is attributed a score of 1, while an "extremely anxious" response corresponds to a score of 5. The scores from all 5 questions are added. The cumulative score on this scale ranges from 5 to 25, with threshold scores of 14 and 19 indicating elevated dental anxiety. The MDAS scores were classified as "Not anxious" (0-5), "Slightly anxious" (6-10), "Fairly anxious" (11-14), "Very anxious" (15-18), and "Extremely anxious" (19-25).

Data entry was done in excel and then transferred to Statistical Package for Social Science for analysis (SPSS) version 17 was utilized for the analysis of data. The frequencies and percentages together with other descriptive measures such as mean, median, as well as standard deviation were utilized for descriptive analysis. For inferential analysis, Chi square and t test was utilized to examine the association between categorical variables. A p-value less than 0.05 was referred as significant.

RESULTS

The participants' average age was 37.84 years (S.D= 13. 86), with 18 as minimum and 60 as maximum. The majority of participants (34.2 %) were between age group 20-30 years. There was female preponderance (60.3%) in the study population, compared to males. Regarding the ethnicity of the participants, the majority of them (61.6%) belonged to the Brahmin ethnic group (Table 1).

Most of the respondents didn't feel anxious 23(31.5%) or only felt slightly anxious 25(34.2%) about visiting the dentist. Present study also found 20(27.4%) of the participants stated they were "not anxious", while 25(34.2%) said they were "slightly anxious" while waiting for the treatment. Patients' anxiety levels in the waiting room were rather low on average, with a mean score of 2.32, indicating that most people had mild to moderate anxiety while waiting for treatment. When asked how they felt before having a tooth drilled, the majority

Table 1: Distribution of socio-demographic characteristics of the study population (n=73)

Variables	Category	Frequency (%)
Age (in years)	Below 20 years	5(6.8)
	20-30 years	25(34.2)
	30-40 years	13(17.8)
	40-50 years	13(17.8)
	50-60 years	17(23.3)
Gender	Male	29(39.7)
	Female	44(60.3)
Ethnicity	Brahmin	45(61.6)
	Chhetri	8(11)
	Janajati/Adhibasi	17(23.3)
	Dalit	2(2.7)
	Madhesi	1(1.4)

of people (28.8%) said they were "Very anxious," followed by 17(23.3%) who said they were "Slightly anxious." 9(12.3%) of respondents responded that they were "Not anxious" about the procedure. The mean anxiety level for this situation was 3.24, demonstrating some anxiety variability among participants (Table 2). From table 2, with a mean anxiety level of 1.77, 56.2% of respondents said they were "not anxious" about having their teeth scaled and polished. A mean anxiety level of 3.069 was reported by 27.4% of respondents who felt "slightly anxious" and 23.3% who felt "fairly anxious" prior to receiving a local anesthetic injection. With an overall MDAS-N score of 12.63, 11% of dental procedures resulted in intense anxiety, 20.5% in high anxiety, 34.2% in moderate anxiety, 30.1% in low anxiety, and 4.1% in no anxiety.

The majority of participants under the age of twenty fell into the "slightly anxious" and "extremely anxious" groups. 13.7 percent of people in the 20–30 age range reported being "very anxious." The biggest percentage of people in the "fairly anxious" age group (9.6%) belonged to the 30–40 age group. The largest percentages of those in the "fairly anxious" category (9.6% and 6.8%, respectively) were seen in the 40–50 and 50–60 age groups (Table 3).

Anxiety levels were highest among Brahmins, with 19.2% reporting "slightly anxious" and 6.8% reporting "extremely anxious." Less anxiety was shown by Chhetri respondents, who reported being 1.4% very anxious and 5.5% "fairly anxious." With 1.4% of respondents in the "extremely anxious" category, Madhesi and Muslim respondents reported having moderate anxiety levels (Table 4).

Table 2: Responses to Nepali version of the modified dental anxiety scale, n (%) (n=73)

Questions	Not anxious	Slightly anxious	Fairly anxious	Very anxious	Extremely anxious	Mean ± SD
If you went to your dentist tomorrow, how would you feel?	23 (31.5)	25 (34.2)	13 (17.8)	10 (13.7)	2 (2.7)	2.21± 1.12
If you were sitting in the waiting room (waiting for treatment), how would you feel?	20 (27.4)	25 (34.2)	17 (23.3)	6 (8.2)	5 (6.8)	2.32 ± 1.16
If you were about to have a tooth drilled, how would you feel?	9 (12.3)	17 (23.3)	10 (13.7)	21 (28.8)	16 (21.9)	3.24 ± 1.36
If you were about to have your teeth scaled and polished, how would you feel?	41 (56.2)	17 (23.3)	8 (11)	5 (6.8)	2 (2.7)	1.77 ± 1.07
If you were about to have a local anesthetic injection in your gum, above an upper back tooth, how would you feel?	8 (11)	20 (27.4)	17 (23.3)	15 (20.5)	13 (17.8)	3.06 ± 1.28

MDAS-N Score: 12.63 ± 4.408 Minimum= 5, Maximum=24

Table 3: Distribution of age and gender with MDAS-N scores, n (%) (n=73)

MDAS Scores	Not anxious (0-5) n(%)	Slightly anxious (6-10) n(%)	Fairly anxious (11-14) n(%)	Very anxious (15-18) n(%)	Extremely anxious (19-25) n(%)	Total (%)
Gender						
Male	3 (4.1)	8 (11)	9 (12.3)	5 (6.8)	4 (5.5)	29 (39.7)
Female	0	14 (19.2)	16 (21.9)	10 (13.7)	4 (5.5)	44 (60.3)
Age						
Below 20	0	2 (2.7)	1 (1.4)	0	2 (2.7)	5 (6.8)
20-30	0	5 (6.8)	5 (6.8)	10 (13.7)	5 (6.8)	25 (34.2)
30-40	2 (2.7)	3 (4.1)	7 (9.6)	1 (1.4)	0	13 (17.8)
40-50	0	3 (4.1)	7 (9.6)	3 (4.1)	0	13 (17.8)
50-60	1 (1.4)	9 (12.3)	5 (6.8)	1 (1.4)	1 (1.4)	17 (23.3)

Table 4: Distribution of ethnicity with MDAS-N scores, n (%) (n=73)

MDAS scores	Not anxious (0-5) n(%)	Slightly anxious (6-10) n(%)	Fairly anxious (11-14) n(%)	Very anxious (15-18) n(%)	Extremely anxious (19-25) n(%)	Total n(%)
Ethnicity						
Brhamin	3 (4.1)	14 (19.2)	17 (23.3)	6 (8.2)	5 (6.8)	45 (61.6)
Chhetri	0	2 (2.7)	4 (5.5)	1 (1.4)	1 (1.4)	8 (11)
Adhibasi/Janajati	0	5 (6.8)	4 (5.5)	8 (11)	0	17 (23.3)
Madhesi	0	1 (1.4)	0	0	1 (1.4)	2 (2.7)
Muslim	0	0	0	0	1 (1.4)	1 (1.4)
Total	3 (4.1)	22 (30.1)	25 (34.2)	15 (20.5)	8 (11)	73 (100)

Table 5: Category of anxiety (n=73)

Anxiety categories	Frequency (%)
Extreme anxiety	8 (11.0)
High anxiety	15 (20.5)
Moderate anxiety	25 (34.2)
Low anxiety	22 (30.1)
Not anxious	3 (4.1)
Total	73 (100.0)

The t-test comparing the means of male and female resulted in a t-value of -0.44 and a p-value of 0.65, indicating no statistically significant difference in dental anxiety between males and females (Table 6).

Table 6: Comparison of mean anxiety scores between males and females

Gender	Mean	Std. Dev	P*
Male	12.34	4.99	0.65
Female	12.81	4.02	

*t-test

DISCUSSION

Dental anxiety is characterized by a sense of fear that something negative will happen during dental procedures, coupled with a perceived loss of control.[7] Skipping dental appointments, recalling inadequate dental habits, as well as gender and age factors, can predict dental anxiety. Dental anxiety levels differ based on age, gender. The MDAS, a modified form of Norman Corah's Dental Anxiety Scale, inquiries about the administration of local anesthetic injections.

The existing literature presents several scales designed to evaluate dental anxiety, each with its own set of limitations. Notably, differences among these scales are evident, with some emphasizing the discomfort associated with dental procedures, others concentrating on the patient-dentist relationship, and the majority centering on the clinical scenarios encountered in dental settings.[8] The study employed modified form of DAS due to its straightforward application, comprising only five questions for simplicity. The scale is deemed a standard and frequently referenced tool for assessing dental anxiety.[9, 10]

In Nepal, Risal et al. found a 22.7% prevalence of anxiety and depression among adults, significantly higher than global results.[11] According to our study, 20.5% of participants had high anxiety, 34.2% had moderate anxiety, and 30.1% had low anxiety. Eleven percent of respondents reported having extreme anxiety.

Study revealed that 11% of respondents reported extreme anxiety, while 20.5 % indicated high anxiety, 34.2% moderate anxiety, and 30.1% low anxiety. Additionally, 4.1% of respondents reported feeling not anxious. Respondents rated their anxiety levels on a scale for different scenarios. The prospect of having a tooth drilled elicited a mean anxiety score of 3.24, indicating a significant level of anxiety. Similarly, anticipating a local anesthetic injection above an upper back tooth scored 3.06 on average. In contrast, anxiety levels were notably lower, with a mean score of 1.77, when respondents considered teeth scaling and polishing. This suggests that less invasive procedures tend to be associated with lower levels of anxiety among dental patients.

Also, this study is in agreement with past studies where a significant number of people reported experiencing dental fear. Unlike a previous article,[12] we have a mean MDAS-N score which is slightly higher at 12.6 as opposed to 11.59, indicating that our patients might be having a bit more dental anxiety. The reason for this difference could be characteristics peculiar to our own population under investigation or survey methodology and analysis variances.

The study participants had a diverse age range, with an average age close to 38 years. Most participants fell within their twenties to thirties, spanning from young adulthood to middle age. The mean anxiety score in the 20-30 years age group was higher compared to other age groups, which contrasts with findings from a reference study indicating a significant increase in dental anxiety among the youngest age group. The results align with prior research, [13,14] emphasizing a consistent negative correlation between age and dental anxiety.

The majority of responders (60.3%) identified as women. A comparison with a similar study found some variations among participant demographics. We found that women had higher dental anxiety, which agreed with the previous finding of the study, [15-17] but not reported by others. [18,19]

Dental anxiety, a prevalent issue affecting both patients and dental professionals, can manifest in various negative consequences if left unaddressed. It disrupts the dental care process, often resulting in delayed or incomplete treatments, increased discomfort for the patient, and heightened stress for both parties involved. Recognizing the significance of managing dental anxiety, dental professionals must undergo comprehensive training to identify and effectively address this common concern. [20]

This study's major limitation is that it was only conducted at a single center in Kathmandu, the outcomes may not be applicable universally. Other factors including occupation, education and economic status were not taken into consideration as possible determinants. More research is required with an emphasis on further multicentric investigations involving larger numbers of subjects.

CONCLUSION

The study evaluated participant dental fear while considering age, sex, and race into account. Findings from the Modified Dental Anxiety Scale-Nepali (MDAS-N) indicated that anxiety levels varied depending on the type of dental procedure; before tooth drilling, patients reported the highest degree of stress, and before teeth scaling and polishing, the lowest. In comparison to other demographic groups, participants who were female and younger tended to display higher levels of anxiety.

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