Original Article

Evaluation of Dental Anxiety and its Influence on Dental Visiting Pattern among Young Adults in India: A Multicentre Cross Sectional Study

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Abstract

Background: Dental Anxiety (DA) is a multidimensional and complex experience that interferes with dental care seeking behaviour. The current study intended to measure self-reported dental anxiety, recognize factors that possibly influence DA and appraise the dental visiting pattern based on their severity of DA among young adults in the Indian population. **Materials and Methods:** A total of 1836 subjects aged 18-30 years participated and survey forms were administered in both English and Tamil languages. The Modified Dental Anxiety Scale (MDAS) was used for assessment of DA. Subjects were students from an engineering college and an Arts, Science College also the patients and their escorts, visiting the outpatient clinics of SRM Dental College. **Results:** DA was reported to be highest for the thought of receiving local anesthetic injection (Q5, mean score 2.79), followed by drilling of the tooth (Q3, mean score 2.72), sitting in the waiting room of the dental clinic (Q2, mean score 2.02), visiting the dentist (Q1, mean score 1.94) and finally the least anxiety provoking dental situation was tooth cleaning and polishing among this study subjects (Q4, mean score 1.90). History regarding previous visit to dentist revealed that 50.8% never visited a dentist and they were more anxious ($p<0.05$). Irregular visiting pattern was observed among those who visited a dentist previously with 47% of them visiting more than a year back. Furthermore, DA predicted dental non-attendance and avoidance behaviour in this study group. Bad experience at the dentist office was associated with high anxiety scores ($p<0.001$) and 3.34 times odds of avoiding dental visit. Those scoring ≥ 19 and 10-18 on MDAS were 4.8 and 2.36 times respectively more likely to avoiding dental visit due to DA. **Conclusion:** Thus the study underscores the importance of identifying and alleviating DA among younger adults thereby instilling a positive attitude towards dental visits which can improve their oral health condition.

Keywords: Dental anxiety; Dental Attendance; Indian population; Modified Dental anxiety scale; Young adults

Introduction

Oral diseases significantly affect overall general health of an individual and is frequently less prioritized in developing countries like India. [1,2] Multiple factors influence dental service utilization and among them dental anxiety notably interferes with dental visits. Dental anxiety (DA) and fear are both significant concerns faced by dental clinicians and dental auxiliaries. The prevalence of dental anxiety ranges from approximately 5% to 30% in the general population and inquest among young adults in countries like Australia and Canada have shown the prevalence to be 14.9% and 12.5% respectively. [3-5]

DA is a multidimensional and complex experience. Based on the source of origin, it can be either endogenous or exogenous wherein the former refers to acquisition from conditioning or aversive experiences and the latter indicates individual personality traits such as susceptibility to generalized anxiety disorders, mood disorders, neuroticism, self-consciousness. In the dental circumstances, DA can arise due to fear of pain, fear of unknown, fear of losing control, fear of bleeding, fear of gagging, fear of criticism, fear associated with needle, noise of dental instrument and smell associated with practice. Coping mode and prior traumatic dental experience are also capable of giving rise to dental anxiety. [6-8]

The age of onset of dental anxiety is controversial with few studies suggesting that dental anxiety is acquired during childhood while others have hypothesized that it originates in adolescence or adulthood or during different stages of an individual's life. Multiple factors influence DA such as a person's age, gender and other confounding factors such as socioeconomic status. [9-11] Lahiti et al., Hagglin et al., Kirova et al. suggested that younger adults are more anxious than older individuals. [12-14] On the contrary, Liddell and Locker suggested that DA originates in childhood, peaks in early adulthood and then wanes away with age. [15] Despite these expected hypotheses, the association of DA with age is frequently unpredictable with discrepancies based on the population studied and case defined.

Anxiety towards dental treatment is demonstrated to interfere with dental care seeking behavior. Anxious individuals

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eventually experience poorer oral health and request for treatment only in extremely painful or emergency situations, thus further intensifying dental anxiety. Treating these individuals is difficult requiring longer treatment time and they are less satisfied with their dentist and the treatment planned. [16-19]

Therefore, it is imperative to explore the multifaceted aspects of DA for several possible reasons: (a) DA causes avoidance behavior resulting in poor oral health and quality of life; (b) dentist-patient relationship is affected preventing efficient dental treatment, and can be a reason for intra-operative complications; (c) anxiety can induce stress, leading to adverse events like vaso-vagal syncope, hypertension, tachycardia and cardiovascular accidents; (d) anxious individuals have poor oral health related quality of life affecting their physical, social and psychological attributes. Additionally, there is an added economic burden on the healthcare system due to the need for more complicated dental treatment. [20-22]

Assessment of DA is extremely essential for patient management and several questionnaires are available for evaluation. Modified Dental Anxiety Scale (MDAS), a modification of the original Corah's Dental Anxiety Scale (CDAS) is the most commonly used tool. It is brief, simple, easy to complete, reliable and valid cross culturally, and can be used as a cost-effective instrument for population-based research. The current study primarily intended to measure self-reported dental anxiety using validated Tamil and English MDAS questionnaire. Secondarily, to recognize factors that possibly influence dental anxiety and to appraise the dental visiting pattern based on their severity of dental anxiety among young adults, aged 18-30 years in Indian population.

Materials and Methods

A total of 1836 subjects participated in this study. The survey was completed using self-reported English and Tamil questionnaires from January 2015 to February 2016. Approval was obtained from the institutional ethical committee of SRM Dental College and Hospital, Chennai.

Survey forms were circulated to students at an Engineering College and an Arts, Science College after acquiring permission from the respective institutional authorities. The students were from different ethnic background from various parts of India. In addition, the patients and their escorts, visiting the outpatient clinics of SRM Dental College were also requested to participate. The study protocol was briefly explained and consent was obtained from those who agreed to participate. At the outset of the study, the subjects who refused to participate, NRI/immigrants, subjects with acute dental pain or undergoing psychiatric therapy and suffering from Generalized Anxiety Disorders (GAD) were excluded.

Survey form

The survey forms were administered in both English and Tamil languages. The Tamil questionnaire included the validated and pre-tested Modified Dental Anxiety Scale (MDAS) Tamil version. [23,24] The MDAS is a tool which comprises of five multiple choice questions dealing with the subjective assessment of dental anxiety. The self-reported survey form administered in the study included two segments: the first segment enquired on relevant demographic information of subjects like age, gender, educational qualification, occupational status, income, details of previous dental experience, self-perceived oral health status, and postponement or avoidance of dental treatment due to anxiety, the second segment included the MDAS tool dealing with the subjective reaction about going to a dentist, waiting in the dental clinic for treatment, awaiting drilling, scaling and local anesthetic injections. The subjects were asked to choose the answer from Likert scale responses such as "not anxious, slightly anxious, fairly anxious, very anxious, or extremely anxious" scored from 1 to 5 respectively. The total score ranged from 5 to 25 with the lower scores indicating no anxiety and higher scores indicating extreme dental anxiety or dental phobia. The survey sheets were given and participants were briefed about filling the form, in case of any queries the authors and study coordinators were available for clarification.

Statistical analysis

The raw data was entered into excel sheet and analysis was done using IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp. The descriptive statistics were analyzed for all the variables evaluated in the study. The comparison of means between the sub categories within the variables either one way ANOVA or independent t test as applicable was done. The difference in mean scores was statistically significant when $p<0.05$. Tukeys post hoc was done for pair wise comparisons when the test was statistically significant in one way ANOVA. Binary logistic regression was carried to analyze which of the independent factors influenced the outcome i.e., avoidance of dental visit due to dental anxiety and the magnitude of their potential influence to odds of the outcome. The Wald Chi-Squared Test was used to identify which of the independent variables in the regression model had significant influence on the outcome following which only significant variables were retained and binary logistic regression carried out.

Results

Age and gender

Survey forms were collected from 1836 individuals. The mean age was 21.2 years (SD 3.2). The frequency distribution and percentage of subjects in each age group is given in Table 1. Majority of the subjects fell within 18-21 age groups. Analysis of mean MDAS score based on specific age group showed that highest anxiety level was reported by subjects belonging to 19 years and the lowest anxiety level by those aged 28 years. Gender wise grouping showed that 1157 (63%) were men and 679(37%) were women. Women were more anxious than men and the difference in mean scores were statistically significant $p<0.001$ [Table 2].

Frequency of response and mean score for each item in the MDAS scale

Based on the total MDAS score, subjects were categorized and it was noted that 5.9% of subjects were dental phobics scoring more than 19 on MDAS scale and majority of them i.e., 69.9% were mild to moderately anxious about dental treatments.

Table 1: Shows the frequency distribution and mean MDAS score with the statistical test among the different age groups.

Parameters	Variables/ Category	Study Population Distribution		Mean MDAS Score	Standard Deviation	Overall Mean MDAS Score	Statistical Analysis
		N	%				
Age Mean : 21.20 yrs SD : 3.200	18	317	17.3	11.97	4.734	11.35 ± 4.342	ANOVA F value 6.613 P value <0.001
	19	362	19.7	12.46	4.463		
	20	378	20.6	11.59	4.503		
	21	212	11.5	11.11	3.507		
	22	107	5.8	10.86	3.898		
	23	81	4.4	10.53	4.120		
	24	75	4.1	10.07	3.546		
	25	54	2.9	9.80	4.044		
	26	56	3.1	10.02	3.661		
	27	60	3.3	10.27	3.493		
	28	49	2.7	9.49	4.642		
	29	37	2.0	10.97	4.406		
	30	48	2.6	9.52	3.820		

Table 2: Shows the descriptive statistics of the variable assessed in the study population.

Parameters	Variables/Category	Study Population Distribution		Mean Total Score	Standard Deviation	Statistical Analysis	Significance
		N	%				
Gender	Men	1157	63.01	10.50	3.910	**t Test** 10.947	**P value** <0.001
	Women	679	36.98	12.82	4.643		
Education (n=1836)	School	171	9.3	10.47	4.416	**ANOVA** F value 3.278	**P value** 0.020
	Degree/Diploma	1571	85.6	11.48	4.365		
	Post-graduation	80	4.4	10.79	3.627		
	Not educated	14	.8	11.43	3.413		
Occupation (n=1836)	Employed	402	21.9	9.95	3.860	**ANOVA** F value 28.601	**P value** <0.001
	Unemployed	87	4.7	11.20	4.168		
	Student	1347	73.4	11.78	4.402		
	Retired	0	.0	NA	NA		
	Nil	1441	78.5	11.75	4.389		
Income per month (n=1836)	<10,000	325	17.7	9.94	3.854	**ANOVA** F value 19.136	**P value** <0.001
	10001 - 20000	55	3.0	10.13	3.930		
	> 20000	15	.8	8.80	3.364		
Self-perceived OH (n=1836)	Excellent	332	18.1	10.34	4.551	ANOVA F value 9.723	P value <0.001
	Good	896	48.8	11.35	4.097		
	Average	546	29.7	11.96	4.465		
	Poor	62	3.4	11.47	4.640		
	Extraction	125	13.8	11.25	4.651		
	Orthodontic	56	6.2	10.50	3.374		
	Pain	11	1.2	14.91	5.009		
	Prosthodontic	13	1.4	10.08	3.616		
	Restoration	158	17.5	10.80	4.180		
	Scaling	378	41.8	10.79	4.103		

Observation of the mean scores for each of the five items of MDAS scale indicated that anxiety was reported to be highest for the thought of receiving local anesthetic injection (Q5, mean score 2.79), which was followed by drilling of the tooth(Q3,meanscore 2.72), sitting in the waiting room of the dental clinic (Q2,mean score 2.02), visiting the dentist (Q1,mean score 1.94)and finally the least anxiety provoking dental situation was tooth cleaning and polishing among this study subjects (Q4,mean score 1.90). The mean, median and standard deviation of each item in the scale are given in the Table 3.

Further analysis of the responses to each item in MDAS revealed the following: On questioning "If you went to your Dentist for treatment tomorrow, how you would feel?"44.8% of them felt they were not anxious of visiting a dentist whereas only 4.2% were extremely anxious of visiting a dentist. When the subjects were asked "If you were sitting in the waiting room (waiting for treatment), how would you feel?" majority of them i.e., 70% felt they would be not anxious or slightly anxious, whereas 4.1% felt that they would feel extremely anxious. Questioning the subjects regarding anxiety response before specific dental treatment situations revealed that the thought of getting their tooth drilled made 29% of them feel very anxious or extremely anxious, and 48.5% of the individuals felt that they wouldn't be anxious to get their teeth cleaned and polished nevertheless a meager 3.4% felt they would get extremely anxious. Among all the dental treatment situations evaluated using MDAS, it was observed that majority of subjects acknowledged that they were very or extremely anxious of getting local anesthetic injection in their gums i.e., 31.8% [Table 3].

Table 3: Shows the item wise response and mean of each item evaluated in MDAS.

Variables		N	%	Mean	SD	Median
Q01 (n=1836)	Not anxious	823	44.8	1.94	1.073	2.00
	Slightly anxious	517	28.2			
	Fairly anxious	358	19.5			
	Very anxious	61	3.3			
	Extremely anxious	77	4.2			
Q02 (n=1836)	Not anxious	765	41.7	2.02	1.099	2.00
	Slightly anxious	520	28.3			
	Fairly anxious	375	20.4			
	Very anxious	101	5.5			
	Extremely anxious	75	4.1			
Q03 (n=1836)	Not anxious	398	21.7	2.72	1.328	3.00
	Slightly anxious	508	27.7			
	Fairly anxious	398	21.7			
	Very anxious	281	15.3			
	Extremely anxious	251	13.7			
Q04 (n=1836)	Not anxious	890	48.5	1.90	1.087	2.00
	Slightly anxious	478	26.0			
	Fairly anxious	296	16.1			
	Very anxious	109	5.9			
	Extremely anxious	63	3.4			
Q05 (n=1836)	Not anxious	375	20.4	2.79	1.345	3.00
	Slightly anxious	495	27.0			
	Fairly anxious	382	20.8			
	Very anxious	310	16.9			
	Extremely anxious	274	14.9			
Total score				**11.35**	**4.342**	**11.00**

MDAS score, socio-demographic variables and Self-perceived oral health

Individuals with degree or diploma had the highest mean anxiety score followed by those who were not educated and the lowest score was seen among those with school education. One way ANOVA showed statistically significant difference in mean scores between subjects based on their educational qualification($p<0.05$) and Tukeys post hoc for multiple comparisons showed existence of statistically significant difference in anxiety levels between degree or diploma holders and those with school education ($p<0.05$). [Table 2].

Majority of the participants were students (73.4%) therefore apparently, 78.5% did not have any income and were dependent on their family members financially. Furthermore, 17.7% of them were earning less than ten thousand rupees every month. Mean total score was lowest for those who were employed and highest among students, furthermore ANOVA showed a statistically significant difference in anxiety levels based on employment status($p<0.001$). Tukeys post hoc showed significant difference in anxiety scores between students and those employed($p<0.001$). [Table 2].

On comparing anxiety scores based on income, participants earning more than twenty thousand rupees per month had lower score whereas those without income had higher score, this is as expected because the latter group comprised predominantly of students. Significant difference in anxiety levels was seen between subjects based on their income ($p<0.001$). Respondents with good opinion on their oral health status had the lowest anxiety scores and the difference in anxiety scores were statistically significant ($p<0.001$). [Table 2].

Pattern of dental visit and dental anxiety scores

History regarding previous visit to dentist revealed that 50.8% never visited a dentist before. 90.5% of the individuals who visited a dentist before felt it to be a pleasant experience. It was observed that subjects who never visited a dentist previously were more anxious and significant difference in anxiety scores were seen between subjects based on their previous dental visits($p<0.05$). It was also noticed that awful or bad experience at the dentist office was associated with high anxiety scores and significant difference was seen in anxiety scores between individuals based on their previous good or bad dental experience ($p<0.001$). On questioning the subjects "whether they postponed their visit to dentist because of anxiety" majority of them i.e., 79.8% didn't do so. Apparently, respondents who postponed their dental visits had higher anxiety scores and significant difference was observed between the subjects based on this behavior ($p<0.001$). [Table 4].

Majority of subjects had visited the dentist previously i.e., 41.8% for scaling and 18% had visited for consultation regarding their dental problem. Furthermore, 17.5% and 13.8% of them had visited for restoration and extraction of their teeth respectively. 11 subjects had visited for pain and they reported the highest anxiety score i.e., 14.91 among all the treatment procedures with lowest anxiety score reported by those visiting for prosthodontic purposes. ANOVA showed statistically significant difference in anxiety scores based on the treatment undergone ($p<0.05$) and Tukeys post hoc showed significant difference statistically between those undergone restorative, orthodontic and scaling treatment when compared with those who had visited for pain complaints ($p<0.05$). [Table 4].

Table 4: Shows the frequency distribution of the variables assessed related to dental visit and the statistical test with significance.

Parameters	Variables/Category	Study Population Distribution		Mean Total Score	Standard Deviation	Statistical Analysis	Significance
		N	%				
Visit to dentist (n=1836)	Yes	904	49.2	11.03	4.308	t Test 3.131	P-value 0.002
	No	932	50.8	11.67	4.355		
Avoidance of visit (n=1836)	Yes	370	20.2	13.26	4.670	t Test 8.970	P-value <0.001
	No	1466	79.8	10.87	4.120		
When was the last visit (n=904)	Within 6 months	318	35.2	10.97	4.387	ANOVA F value 0.625	P-value 0.599
	6 - 12 months	161	17.8	11.16	4.047		
	1 - 2 yrs	140	15.5	11.42	4.453		
	> 2 yrs	285	31.5	10.85	4.298		
Previous experience (n=904)	Good	818	90.5	10.83	4.137	t Test 3.699	P-value <0.001
	Fair	0	.0	NA	NA		
	Bad	86	9.5	13.01	5.315		
Treatment done (n=904)	Consultation	163	18.0	11.60	4.771	ANOVA F value 2.554	P-value 0.019
	Extraction	125	13.8	11.25	4.651		
	Orthodontic	56	6.2	10.50	3.374		
	Pain	11	1.2	14.91	5.009		
	Prosthodontic	13	1.4	10.08	3.616		
	Restoration	158	17.5	10.80	4.180		
	Scaling	378	41.8	10.79	4.103		

Table 5: Binary logistic Regression analysis to identify factors influencing avoidance of dental visit due to anxiety.

Factors		Avoidance of Visit Due To DA		Crude OR		P Value	Adjusted OR		P Value
		N	%	OR	95% CI		OR	95% CI	
Gender	Male	219	18.9	1.00	-	-	1.00	-	-
	Female	151	22.2	1.23	0.97-1.55	0.088	1.03	0.30-1.32	0.814
Self-perceived OH	Excellent	66	19.9	1.00			1.00		
	Good	160	17.9	0.88	0.64-1.21	0.417	0.77	0.55-1.07	0.121
	Average	125	22.9	1.20	0.86-1.67	0.294	0.99	0.70-1.40	0.958
	Poor	19	30.6	1.78	0.97-3.26	0.061	1.46	0.77-2.75	0.248
Visit to dentist*	No	163	17.5	1.00	-	-	-	-	-
	Yes	207	22.9	1.40	1.11-1.76	0.004	-	-	-
Previous experience	No experience	163	17.5	1.00	-	-	1.00	-	-
	Good	168	20.5	1.22	0.96-1.55	0.105	1.35	1.05-1.73	0.017*
	Bad	39	45.3	3.92	2.48-6.18	<0.001	3.34	2.07-5.38	<0.001**
MDAS score	5 - 9	82	11.8	1.00	-	-	1.00	-	-
	10 - 18	243	23.5	2.28	1.74-3.00	<0.001	2.36	1.08-3.12	<0.001**
	≥ 19	45	41.7	5.31	3.40-8.31	<0.001	4.81	2.99 -7.75	<0.001**

* Not included in the MLR because of redundancy.

Binary logistic regression

Wald chi squared test showed that among the variables evaluated gender, self-perceived oral health, visit to dentist, previous dental experience and self-reported total MDAS score significantly predicted the avoidance behavior of the subjects to visit a dentist due to dental anxiety. On observing the odds ratio it was seen that subjects who had bad past dental experience were 3.34 times more likely to avoid dental visit due to anxiety. Subjects scoring ≥ 19 i.e., dental phobics and 10-18 (moderate to high dental anxiety) on MDAS were 4.8 and 2.36 times respectively more likely to avoiding dental visit due to dental anxiety when compared with those scoring 5-8 (no or mild dental anxiety). [Table 5].

Discussion

Dental attendance is influenced by several factors including socioeconomic and psychological characteristics. [25-27] Identifying cognitive factors facilitate behavioral management to enhance the dental visits.

Schneider and colleagues explored a theoretical model of "psychological cycle" to explain dental attendance which included three stages. They suggested that past dental experiences influence anticipations for future dental visits, which in turn affect behavioral intentions to attend appointments. Their research on 311 psychology undergraduate students was consistent with their hypothesized model proposing that recollections of past experiences influenced behavioral intentions to attend future appointments. The presence of extreme dental anxiety and poor perceived oral health ratings affected planning and attendance intentions with lower behavioral intentions to attend appointments and explained for 20% of variance of participants' behavioral intentions. Remembrance or evaluation of past negative dental experience and pain resulted in avoidance behavior. [28] The younger population in the present study showed

similar characteristic wherein subjects reporting previous bad dental experience (9.5%) and those reporting avoidance of dental visit due to dental anxiety (20.2%) had associated higher anxiety scores. Skaret et al., Quetish suggested that DA was the primary reason for avoidance of dental visits. [29,30] However, Eli Schwarz refutes such a notion and reported no such association between DA and dental visits. [31]

The present study intended to identify the prevalence, severity and factors influencing dental anxiety among young individuals in Indian population. The visiting pattern to the dentist and impact of anxiety on dental visits was also evaluated. Based on the above results it was shown that 9% were not anxious, 85% were anxious and 6% were dental phobics. Further, analysis of the statistics revealed that majority of them were mild to moderately anxious about dental treatment and a fair majority of them never visited a dentist for any purpose. Irregular visiting pattern was observed among those who visited a dentist previously with 47% of them visiting more than a year back. Furthermore, dental anxiety predicted dental non-attendance and avoidance behavior in this study group. Thus the study underscores the importance of identifying and alleviating dental anxiety among younger adults thereby instilling a positive attitude towards dental visits which can potentially ameliorate their overall oral health condition.

Quteishi Taani in his study among undergraduate university students in Saudi Arabia (mean age 23.2 years) observed that females were more anxious than males and majority of the students were not regular dental attendees and had higher dental anxiety level. Highest fear was reported for sight of needle, followed by sight, sound, feel of drill and sitting on dental chair. Irregular dental attendees were more dentally anxious than regular attendees and they concluded that DA affected the dental care seeking behavior, which is in accordance with our present study. [32] Even though, women constituted only 37% in this sample population, higher anxiety score were observed and multitude studies [33-35] exploring the association between gender and DA positively concurs with our findings. This perhaps could be attributed to the fact that women frequently communicate their feelings better than men and hence tend to report more anxiety and fear.

A prospective study among 828, 15-32 year birth cohorts by Thomson et al. recognized six dental anxiety trajectories: stable non-anxious low (39.6%); stable non-anxious medium (37.9%); recovery (1.6%); adult-onset anxious (7.7%); stable anxious (7.2%) and adolescent-onset anxious (5.9%). Furthermore, greater relative decline was seen in regular dental attendance among the late-adolescent-onset anxious, adult-onset anxious and stable anxious trajectory groups. [36] Owing to the cross sectional study design neither the onset nor the varied anxiety levels could be evaluated which is a possible limitation however, there is a future scope for extending this research with further incursion on this topic based on longitudinal follow up of cohorts.

Eli Schwarz et al. attributed the lower dental anxiety levels(mean MDAS score 7.26) among young adults in Danes, to the positive influence of the Child Dental Health Services implemented in their country. [31] Majority of the respondents in spite of being only mild to moderately anxious, never visited a dentist in this population possibly indicating the poor dental awareness, lack of active nationwide oral health awareness projects, influence of socio-economic factors, individual personality traits, type of preoperative information, education level, gender, parental influence, personal dental experience and due to multiple other factors.

Humphris, Dyer suggest that clinical levels of depression and anxiety supplement positively to dental anxiety in young people. [33] Suhas Kulkarni et al. carried out a survey among 25-30 yearsyoung adult inhabitants of Udaipur, India and speculated that majority i.e., 68% of the subjects were anxious. [37] In an observational study among university students aged 17-28 years, it was seen that medical students were less anxious than non-medical students and females were more anxious than males.76.8% of the students scored 13-20 on MDAS, and anticipation of local anesthetic injection provoked most DA followed by drilling of teeth. [38] This study showed a possible tendency towards reduction in anxiety scores with increasing age however the pattern was not very consistent across all the age groups with participants aged 26,27 and 29 showing slightly more anxiety. Hence, drawing definitive conclusion from such an inconsistent pattern was not possible and this probably could be attributed to the smaller sample size in those age groups and inherent problem with self-reported questionnaires.

Regression analysis showed that negative experience and mean anxiety score $\geq$ 19 significantly predicted avoidance behavior among this young adults population. Thus signifying the importance of DA management. Similar study by Moore et al. concluded that extreme DA and lower education level most likely reduced the visit to dentist. [19] Sohn and Ismail in their bi-variate analysis identified that gender, increasing age, higher income, good /excellent perception of oral health and dental insurance were determinants strongly associated with regular dental visits. [17]

The authors in their previous study have evaluated DA in 1,148 subjects aged 18-70 years in the South Indian population and reported that only 3% were dentally phobic with mean anxiety score of 10.4± 4.3.9 Thus, the present study in an unprecedented way showed the greater prevalence of dentally phobic (6%) and higher anxiety scores (11.35± 4.3) in this young adult Indian population (18-30 years). The strength of this research was the larger sample size which ensures an accurate population mean and smaller error and secondly, the multicenter study design which enabled more patients to be recruited within a short period of time and allowed us to generalize the study findings to the population in question.

Conclusion

To the author's knowledge, the study is unexampled as there are no other available studies that have evaluated DA so explicitly in this age group, among the Indian population with multi centre recruitment. Thus, to conclude dental practitioners in addition to having comprehensive knowledge on various pharmacological and non –pharmacological approaches to manage DA, should also be highly watchful in recognizing anxious patients so that

they can be appropriately managed thereby enhancing patient satisfaction and better dentist –patient relationship.

Conflict of Interest

All authors disclose that there was no conflict of interest.

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