Attributed Factors of Dental Anxiety on MDAS Score:
A Cross Sectional Study

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ABSTRACT

OBJECTIVES: To find an association of dental anxiety with age, education status, previous dental experience and reason for visiting dentist in Bahria Dental University Hospital, Karachi and to assess the MDAS score of male and female patients visited to dental OPD.

METHODOLOGY: All those patients who were reported to oral medicine OPD, between the age group of 18-65 years were included. The patients with neuro-psychological and depressive symptoms for less than six weeks and had bereavement in the last six weeks were excluded from the study. Total 550 MDAS (modified dental anxiety scale) questionnaires were distributed from which 512 questionnaires were completed and entered on SPSS version 23 for data analysis. P value < 0.05 was considered as statistically significant.

RESULTS: The prevalence of anxiety was found to be 31(6.1%). The mean MDAS score was 10.53+5.25. In this study; 18-30 and 31-45 years of patients were equally anxious (35%); on the other hand intermediate/graduate patients were found to be more (64.5%) anxious as compare to other educational levels. Patients having positive experience (93.5%) of past dental treatment were more anxious. Upon MDAS responses; majority of participants (n=29-5.7%) were extremely anxious during local anesthesia. Male participants were found to be very anxious then female participants.

CONCLUSION: Dental anxiety was associated with educational status and visited to dentists for RCT. MDAS score was found more in male patients as compare to female patients. The dental procedures in which injection or anesthesia was used made the patients more anxious according to MDAS score.

KEY WORDS: Dental Anxiety, Fear, Modified Dental Anxiety Scale (MDAS) Score.

INTRODUCTION

Oral Health is as imperative as general health and quality of life is highly influenced by maintaining oral health[1]. Oral health is worsened when treatment is avoided. Fear and anxiety towards dental treatment is one of the reasons of not availing the treatment in western world. In United States; 15.5% subjects were escaped dental treatment due to dental fear[2]. Thereby; dental fear restricts people to maintain good oral health[3,4].

Dental fear and anxiety is rated among fourth common fears and rated ninth as intense fears[5]. Dental anxiety and fear is often used interchangeably in literature despite of distinguish characteristics[6]. Dental anxiety corresponds to patient's response toward dental procedures; though the stimulus is vague, anonymous, or sometimes not present in reality[7]. Dental fear is also expressed as biological reflex action towards the anxious stimuli for the dental treatment.[5] Regardless of having difference; literature is unable to express this overlap of underlying behavior and brain mechanism. Personality or psychological traits and imaginary learning may be associated with dental anxiety. Literature revealed that highest (25.1%) level of dental anxiety is due to the application of local anesthesia[5] and 2.5-20% population reported high level of dental anxiety despite of using advanced technologies to reduce anxiety[5]. Epidemiological studies stated that 3% and 20 % of population have increased levels of dental fear and anxiety towards relative procedures[8]. Dental fear results in broken and cancelled appointments[8]. According to the study conducted in Lahore Pakistan; the reported prevalence of dental anxiety was 37.9%[5]. Dental anxiety can be reduced gradually through regular dental visits[9].

Dental anxiety was assessed by various scales. Corah Dental Anxiety Scale was proven to be popular among dental researchers. Modified Dental Anxiety Scale (MDAS) is commonly used to measure anxiety[10]. To reduce dental anxiety among patients; it is important to assess attributing factors related to dental anxiety as to opt for most suitable dental anxiety reduction strategy and indeed was the rationale of this study. Therefore; the objective of the study was to find an association of dental anxiety with age, education status, previous dental experience and reason for visiting dentist in Bahria Dental University Hospital and to assess the MDAS score of male and female patients visited to dental OPD.

METHODOLOGY

It was a cross sectional study conducted at oral medicine outpatient department of Bahria Dental College Karachi from September to December 2019. The study was commenced after obtaining ERC from Bahria University Medical and Dental College Karachi (BUMDC) referenced: 43/2019. The sample size was calculated by keeping 50% prevalence as 384 subjects with the help of standard sample size formula of $N = Z^2 * P(I-P)/ d^2$. To bring more significant results and to avoid wastage; the sample size was augmented as 550. Patients reported to oral medicine OPD, between the age group of 18-65 years and gave consent were included in study by convenient sample technique.

The pregnant females, patients with neuro-psychological symptoms and had bereavement during last six weeks were excluded from the study. The purpose of the study was well explained to every patient by investigator and assured anonymity of responses. The MDAS (Modified dental anxiety scale) questionnaire is a validated tool and used to assess dental anxiety in this study[10]. MDAS scale is comprised of 5 items related to feelings; if patient went to dental treatment tomorrow, waiting for treatment in waiting room, if patient were about to have tooth drilled, about to have scaling and polishing treatment and finally patient was about to have given local anesthetic injection in gum or on posterior teeth.

The responses of anxiety were based on five point likert scale such as not anxious, slightly anxious, fairly anxious, very anxious and extremely anxious. The minimum score was 5 and the maximum score was 25. The score < 19 was considered as absence of anxiety and score > 19 was calculated as presence of dental anxiety. In addition; the attributed factors for dental anxiety such as age, gender, educational status, past experience of dental treatment and reason of visiting to dentist were also included in the final questionnaire. The final questionnaire was translated in Urdu language for better comprehension and distributed among 550 subjects. Total 512 questionnaires were completed in all aspects and entered on SPSS version 23 for data analysis. Kolmogorov Shapiro Test was used to assess the normality of data. The qualitative variables were analyzed via descriptive statistics as frequency/ percentage. Fischer exact test was used to find an association of dental anxiety with attributed factors. MDAS score among male and female was assessed by Mann whitney U Test. P value < 0.05 was considered as statistically significant.

RESULTS

The response rate was 93% and prevalence of anxiety was 31(6.1%). The mean MDAS score was 10.53+5.25. From the total 512 subjects; n=248 (48.5%) were female and n=264 (51.5%) were male. Majority of subjects (n=240, 46.8%) were of 18-30 years. Among the four age groups; 18-30 and 31-45 years were equally (35%) anxious. Intermediate and graduate patients were found to be more (64.5%) anxious as compare to other educational levels. Total 93.5% patients had positive experience of past dental treatment and were anxious. When asked the reason for dental visit; majority (80.6%) of patients was visited for filling/RCT but was anxious. Educational status and reason of visit to dentist were significant attributed factors towards dental anxiety at p-value of 0.009 and 0.000 respectively –Table I. Upon MDAS responses; n=29 (5.7%) were responded for extremely anxious during local anesthesia-Table II.

There was significant difference found among male and female in all responses of MDAS questionnaire. Male participants were found to be very anxious then female participants. Only one response of waiting for treatment in waiting room; male and female participants were responded equally (n=13) for very anxious. Majority of females were not anxious (156/248) as compare to male (107/264) Table III.

TABLE I: ASSOCIATION OF DENTAL ANXIETY WITH ATTRIBUTED FACTORS

Demographic variables		Anxiety		P-Value
		Yes	No	
Age Stratification	18-30 Years	11	229	
	31-45 Years	11	157	0.521
	46-60 Years	7	76	
	> 60 Years	2	19	
Educational Status				
Primary		2	54	
Secondary		3	114	
Metric-O-Level		1	81	
Intermediate/Graduate		20	152	0.009
Masters		3	28	
Don't Know		0	2	
Uneducated		2	50	
Experience about dental Treatment				
Positive		29	429	
Negative		2	44	0.666
No Previous experience		0	8	
Reason of Visit to Dentist				
Routine Checkup		1	26	
Scaling		0	148	
Extraction		5	101	0.0001*
Filling/RCT		25	171	
Prosthetic Treatment		0	35	
Fischer Exact Test				

TABLE II: OVERALL RESPONSES OF MDAS

Responses	Not Anxious	Slightly Anxious	Fairly Anxious	Very Anxious	Extremely Anxious
MDAS Scale	N (%)	N (%)	N (%)	N (%)	N (%)
Visiting dentists	251(49)	117(22.9)	110(21.5)	33(6.4)	1(.2)
Sitting in waiting Room	263(51.4)	79(15.4)	143(27.9)	26(5.1)	1(.2)
Tooth drilled	211(41.2)	100(19.5)	128(25)	72(14.1)	1(.2)
Tooth scaled	220(43)	74(14.5)	99(19.3)	108(21)	11(2.1)
Local Anesthesia	206(40.2)	70(13.7)	74(14.5)	133(26)	29(5.7)

TABLE III: MEAN RANK OF MDAS RESPONSES AMONG MALE AND FEMALE SUBJECTS

MDAS		Gender		P-Value*
		Male (n=264)	Female (n=248)	
If you went to your dentist for treatment tomorrow, how would you feel?	Not anxious	189.66	179.84	0.002
	Slightly anxious	173.42	194.50	
	Fairly anxious	71.65	72.35	
	Very anxious	73.17	70.83	
	Extremely anxious	27.50	7.50	
If you were sitting in the waiting room (waiting for treatment), how would you feel?	Not anxious	182.93	160.57	0.000
	Slightly anxious	133.45	207.89	
	Fairly anxious	83.32	86.68	
	Very anxious	94.25	75.75	
	Extremely anxious	20.50	7.50	
If you were about to have a tooth drilled, how would you feel?	Not anxious	154.28	157.32	0.003
	Slightly anxious	159.64	152.37	
	Fairly anxious	102.34	99.16	
	Very anxious	97.22	102.89	
	Extremely anxious	60.50	14.00	
If you were about to have your teeth scaled and polished, how would you feel?	Not anxious	142.85	152.15	0.010
	Slightly anxious	161.64	133.66	
	Fairly anxious	95.73	112.77	
	Very anxious	111.58	95.96	
	Extremely anxious	71.36	49.14	
If you were about to have a local anesthetic injection in your gum, above an upper back tooth, how would you feel?	Not anxious	133.19	143.81	0.006
	Slightly anxious	154.13	122.87	
	Fairly anxious	94.37	114.13	
	Very anxious	109.36	98.36	
	Extremely anxious	78.22	85.28	

Grouping Variable: Gender
*Mann-Whitney U- Asymp. Sig. (2-tailed)

DISCUSSION

Dental anxiety is complex and multi-factorial. Many factors play pivotal role to elevate dental anxiety such as fear of pain, betrayal, fear of the unknown and fear of intrusion[11]. Dental anxiety is been reported among people of all ages, gender, educational status. It is evident that dental anxiety starts from early age and prevails especially during adolescence[12]. Dental fear and anxiety placed a huge burden on oral health care system[8].

This study was focused to assess dental anxiety on MDAS scale and to find the attributed factors of dental anxiety such as age, education status, previous dental experience and reason for visiting dentist. In this study; prevalence of anxiety was 31(6.1%) and was lower (27%) than the study conducted in Saudi Arabia, United Kingdom (11%), Northern Ireland (19.5%), Turkey (23.5%), and Brazil (23%) and higher than the study conducted in Finland (3%), Sweden (4.7%) and Denmark (4.2%). In contrast, a high percentage of dental anxiety was reported in Jeddah and Saudi Arabia (48.3%); India (46%), and Iran (58.8%)[13]. The reduce level of anxiety was might be

due to previous exposure to dental treatment which was 93.5% and this is human behavior that individual is more comfortable in known environment.

Dental anxiety was found mostly (35%) among age group (18-30-years) of patients in a study conducted in Karachi[14] and these results were comparable with our study in which (35%) of 18-30 and 31-45 years were anxious.

Regarding educational status; the intermediate/ graduate patients were found to be more (64.5%) anxious and it might be associated to personality aspects, increased awareness, past childhood experiences[15] or by professional development and education. These findings beat the results of studies which revealed that in old age dental anxiety is declined[16].

It is evident in literature that gender difference played an important role for dental anxiety for clinicians and researchers.[17] Hence women were found to be more anxious towards every procedure of dental treatment in MDAS questionnaire as literature[18] as compare to males. Whereas in our study; males were found to be more anxious than females and these results were comparable with the study conducted in India[7].

The MDAS score of our study showed that patients waiting for their treatment in waiting room exhibited highest levels (51.4%) of dental anxiety which corroborated with a study by Fux-Noy A et al[19]. This finding may be due to their expectations towards the operative dental procedures or due to the fear of pain in their minds. Whereas on the other hand, relatively absence of anxiety were observed towards tooth drilling (41.2%) and scaling (43%) procedures; and may be due to non-invasive procedure, or positive previous dental experience of the subjects.

Root Canal Treatment was found to be the highest (80.6%) anxiety provoking procedure among patients coming to dental OPD in our study. This was in agreement by Park CH 2018[20].

White AM 2017[21] reported that patients having worse experience towards dental treatment found to be more anxious and these findings were proved opposite in our study where 89% of patients reported positive past experience towards their dental treatment.

The strength of the study included the validated Urdu version of MDAS questionnaire; which was more comprehensible in our local study population. The sample size was appreciable and the data findings can be generalize to the private dental institutions of Karachi. Among the limitation; due to subjective nature of MDAS; the chances of response bias may increase as participants may hide their true feelings regarding dental fear/anxiety, past dental experience.

It is recommended that the epidemiological studies regarding neglected dental treatment should be studied. Levels of anxiety can be assessed before and after dental treatment. Moreover; level of anxiety can be varied from patient to patient, affordability/ accessibility for dental treatment, awareness of oral health and patient dentist relationship. This information can be utilized to manage patient anxiety level, training of dental healthcare force and to develop various anxiety reduction strategies to overcome negative effects of personalities towards dental treatment at large. Oral health care systems have a great concern to assess the intensity of this problem[22].

CONCLUSION

Dental anxiety was associated with educational status and visited to dentists for RCT. MDAS score was found more in male patients as compare to female patients. The dental procedures in which injection or anesthesia was used made the patients more anxious according to MDAS score.

AUTHOR CONTRIBUTIONS

BANA KFMA: Manuscript writing, data collection
Mazhar S: Data collection, introduction writing
Sadia H: Literature review, write-up

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