The Prevalence of Dental Anxiety among Dental Patients in Qassim Region

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

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ABSTRACT

Objective: This study aimed to assess the prevalence of dental anxiety among patients visiting dental clinics in Al-Qassim region of Kingdom of Saudi Arabia.
Methods: The 377 participants were selected from three major cities of Al-Qassim region - Buridah, Onizah, and Alrass. A self-administered questionnaire based on Modified Dental Anxiety Scale (MDAS) was used to gather the responses of the participants. The questionnaires were handed to respondents during their regular visits to the dental clinics.
Results: The findings of the study revealed that 18% of the sample population suffer from severe dental anxiety. The analysis showed that feelings associated with anesthetic injection are the most-anxiety provoking factor while the next day visit is the least anxiety-provoking item. The findings show that female participants (M = 3.1, *p* = .001) significantly manifest more dental anxiety than their male counterparts (M = 2.8, *p* = .001). The younger participants demonstrate higher dental anxiety than other age groups.
Conclusion: The dental anxiety exists in the sample population. Gender and age are associated with varying MDAS scores.

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1. INTRODUCTION

Dental anxiety (DA) refers to a physical or emotional response to a perceived threat where the stimulus is unknown, ambiguous, or even when it does not exist [1,2]. This perceived threat could be a fear of dental injection or procedure, the uneasiness of keeping the mouth open for an extended period, or lengthy treatment. In general, dental fear and anxiety refers to negative feelings associated with the dental setting [3].

The incidence of dental anxiety is a global phenomenon. The patients' perceived uneasiness, discomfort, and pain associated with dental procedures promotes anxiety among them [4]. However, the occurrence of dental anxiety is not uniform across the globe as it varies from country to country and even within a country. In the USA, up to 50% of the population suffer from some form of DA, while 3% to 20% of them have dental treatment-related fear and anxiety that is considered problematic [5,6].

There is a multitude of factors that are associated with the occurrence of dental anxiety, such as age [7], gender [8], qualification [9,10], and socioeconomic background of the patients [11,12]. The results of the studies indicate being a woman and young individual enhances the likelihood of developing DA compared to other segments of the general population [13,14]. The list does not end here; a few studies found some additional factors that may also relate to the development of an anxious state of mind towards dental treatment. The factors such as a previous traumatic dental experience [14,15], or indirect learning from the bad experiences of peers and family members [16,17,18] may lead people to feel anxious.

The prevalence of dental anxiety has become a global public health concern since it causes numerous health and wellbeing-related outcomes for patients. It can prevent people from visiting the clinics and is a leading reason for appointment cancellations [19]. The patients may avoid cooperating with the dentists, and at worst, they may refuse dental treatment [20]. They tend to self-medicate themselves to avoid visiting dentists [21]. Therefore, such patients are more likely to have missing teeth, untreated carious teeth surfaces, and poor oral health [13,22,23]. A recent study conducted in the Eastern Province of Saudi Arabia found mothers' dental anxiety is significantly related to untreated decay in the primary dentition of kids [24].

In Saudi Arabia, different studies concluded different percentages of the general population suffering from dental treatment-related anxiety. One study, examining the prevalence of dental anxiety among patients visiting dental clinics in Al-Jouf University, found more than 11% of the patients suffer from it [14]. Another study conducted in outpatient clinics of the university in Jeddah concluded about 50% of their sample population suffer from moderate anxiety while 29% of the patients experience high dental anxiety [10].

Despite the dedication of resources, the unchanged incidence of oral diseases among the Saudi population is worrisome and it has turned the attention of policymakers to barriers that prevent utilization of dental care services [25]. For example, the incidence of dental caries in the Saudi Kingdom is the highest in the world [18,26,27].

Comparing the incidence of DA between cities of Jeddah and Dammam, the results of a study showed the DA prevalence is 32% in Jeddah and 23% in Dammam [28]. The studies also noted a low occurrence of dental anxiety among medical and dental students compared to the students from other faculties such as computer sciences [8,29). The results of a recent study show 36% of the adult population suffer from a dental phobia [30].

The variation in dental anxiety scores among various cities highlights the need for policymakers to have accurate data on the prevalence of DA in a specific geographic location for designing effective strategies to deal with the effects of dental anxiety among patients.

Since no past study has investigated the prevalence of dental anxiety at the level of the entire Al-Qassim region, this study fills the gap and investigates the extent to which dental anxiety is common among dental patients. Using a Modified Dental Anxiety Scale (MDAS), the present study sheds light on the state of DA prevalence in Al-Qassim region.

2. METHODS

2.1 Instruments

The present study uses the Arabic version of MDAS to explore the level of dental anxiety that prevails in Al-Qassim region. MDAS is a widely used instrument since several global and local

studies have gathered data on dental anxiety using this anxiety measuring scale [24,31,32].

The popularity of MDAS comes from the fact that it is a simple scale with high reliability, validity, and good psychometric properties [31]. The Arabic version of the scale also showed high validity and reliability [34,33,35].

This decision to use MDAS Arabic version is based on the facts that target population of the study can conveniently communicate in Arabic while it demonstrates high validity and reliability [35].

The data for the study is gathered using a self-administered questionnaire which consists of two parts. The first part involves a scale based on MDAS which measures respondents' subjective reaction to different dental situations using multiple-choice items. Each questionnaire item offers five scores ranging from not anxious (1) to extremely anxious (5). The maximum possible score for each question is 5 and, in this way, the total maximum score for the entire scale is 25.

The patients are divided into three groups based on their MDAS scores. The maximum possible MDAS score is 25. The sum of MDAS score for each participant is calculated; then the aggregated scores are used to categorize participants into three groups [18]. As such, Group 1 (slightly anxious) possesses a score below 11, Group 2 (moderately anxious) has scored between 11 and 18, while Group 3 (extremely anxious) demonstrates a score between 19 to 25.

2.2 Participants

The questionnaires were distributed to the dental patients who came to visit dental clinics in three major cities - Buridah, Onizah, and Alrass - of Al-Qassim region.

2.3 Inclusion Criteria

The inclusion criteria consist of being 18 years old, mentally and medically fit, and living in any of three cities in Al-Qassim region. Only Arabic-speaking, literate patients are selected to take part in the study.

2.4 Statistical Analysis

The gathered data was analyzed using the Statistical Package of Social Sciences (SPSS 17.0). First, descriptive statistics are calculated

based on city, gender, age, and MDAS score. These results reflect light on the composition of sample on the basis of city, gender, and age.

3. RESULTS

The data in Table 1 shows that almost an equal number of participants are selected from three cities of Al-Qassim region. In terms of gender participation, 52% of the participants are males while 48% are females. The findings show that 18% of participants have severe dental anxiety, 42% are moderately anxious and the rest 40% demonstrate slight dental anxiety.

Next, descriptive statistics for each MDAS item are calculated as shown in Table 2. These results shed light on the level of dental anxiety associated with each item.

The results show that 41% of participants are slightly anxious, 42% are moderately anxious, while the rest 19% are extremely anxious. The findings of Table 2 demonstrate that the most fear-provoking feeling is an anesthetic injection (mean score = 3.07) while the next day visit is the least anxiety-provoking item (mean score = 2.12).

The independent t test is run to demonstrate the difference of DA between male and female participants of the study as shown in Table 3.

The comparison of anxiety scores of males and females exhibits, females (M=3.0, SD=.83) respondents have higher dental anxiety than their male counterparts (M=2.7, SD= .79). To assess if differences between the means of male and female participants are statistically significant, an independent samples t-test is performed. The findings of this comparison $t(376)= 57.35$, $p=.001$ show the difference between the two genders is statistically significant.

Finally, the effect of age on respondents' DA is calculated by performing the Oneway ANOVA test as shown in Table 4. Before conducting ANOVA, the assumptions of homogeneity are tested and satisfied based on Leven's F test, $F(3,373)=2.57$, $p=.064$. The independent between groups analysis yielded a statistically significant effect, $F(3,373)=4.51$, $p=.004$. According to descriptive data, the prevalence of dental anxiety is highest among young age (18-30) participants (M=3.1) as shown in Table 4.

Table 1. Descriptive Statistics

		N	Percentage
City	Buridah	120	32
	Onizah	125	33
	Alrass	132	35
Gende r	Male	197	52
	Female	180	48
Age	18-30	125	33
	31-40	111	29
	41-50	72	19
	50 & above	69	18
MDAS	Slightly anxious (<11)	152	40
	Moderately anxious (11-18)	160	42
	Extremely anxious (>18)	65	18
MDAS - Modified Dental Anxiety Scale			

Table 2. Descriptive statistics of MDAS items

Sr No.	MDAS items	Mean	Mode
1	Next day visit	2.12	1
2	Waiting for treatment	2.16	1
3	Tooth drilling	2.63	3
4	Scaling and polishing	2.38	1
5	Anesthetic injection	3.07	4

Table 3. Independent *t* test

	N	Mean	SD	t	Df	Sig(2-tailed)
Male	197	2.7	0.79	57.35	376	0.001
Female	180	3.0	0.83			

Table 4. Oneway ANOVA

Groups		Descriptive statistics				ANOVA	
		N	Percentage	Mean	SD	F	sign
Age	18-30	125	33	3.1	0.07	4.51	0.004
	31-40	111	30	2.8	0.08		
	41-50	72	19	2.8	0.1		
	50 & above	69	18	2.7	0.1		

All the respondents who are above 30 years of age have lower DA scores, for example, the DA score of 31-40 and 41-50 age groups is 2.8 score, while 50 & above age group has 2.7 score. It shows the differences in DA scores of different age groups are not due to a difference in number of participants in each age group.

4. DISCUSSION

Dental anxiety is a global phenomenon. The present study evaluated DA using MDAS – an instrument that demonstrates high reliability and validity scores in multiple studies [36].

The findings categorized 18% of the population of the study as extremely anxious. It shows a significant portion of population in Al-Qassim region suffers from severe dental anxiety. The prevalence of high DA is detrimental to oral health and wellbeing since it not only prompts patients to refuse seeking treatment but makes it difficult for dentists to accomplish their treatments [37]. The results of the study support previous studies that concluded a significant portion of the population in Saudi Arabia suffers from high dental anxiety [19,14,10]. These studies ended up with high DA scores ranging from 11% to 36%. The difference could be attributed to varying cut-off points to categorize respondents into slightly anxious, moderately anxious, and extremely anxious groups.

The findings of the present study highlight high prevalence of DA among females than male respondents living in Al-Qassim region. The previous studies conducted in other parts of Saudi Arabia also found females are more dentally anxious than male dental patients [18,8,38,39].

Age is an important factor that plays a role in the generation of dental treatment-related anxious thoughts. The young age is associated with a high DA score as demonstrated by M=3.01. People at a young age tend to feel more anxiety about dental treatment; and it is in line with the findings of studies conducted in varying national contexts [10,7].

In relation to the MDAS scale, the study found the anesthetic injection is associated with the highest level of anxious thoughts (M=3.07). People feel the greatest level of anxiety when they need to get jabbed. This finding is consistent with the results of the studies conducted in Saudi and other contexts. For example, Al-Khalifa concluded dental injection is the highest anxiety-provoking item of MDAS (Mean=3.15); while with M=2.45, Humphris et al described dental injection as the greatest anxiety-provoking item.

Feelings associated with the next day visit with M=2.12 are the least anxiety-provoking item, while anxious thoughts associated with sitting in the waiting room (M=2.16) are next higher anxiety-provoking item of MDAS.

The dental patients lack information and are not sure about the solution of the dental problems [40], this could lead to create fears before the start of actual treatment.

Overall, the findings of the study suggest that patients visiting different dental clinics located in Al-Qassim region feel anxiety about the entire treatment process. From feelings toward next day treatment, sitting in the waiting room, to dental injection, they feel anxiety towards all five MDAS items. Since usually people tend to visit dental clinics only to seek emergency relief [41], therefore these findings are not surprising. Unambiguity about what lies ahead in terms of treatment provokes anxiety among them. The research shows that a dental visit leads to reduction in dental anxiety for future dental treatments [42].

The findings also suggest that being female and young makes patients more vulnerable to developing anxious thoughts [43]. Again, further research can explore what is the difference in DA among young and matured age females.

The study has important implications for dentists and healthcare administrators. The improvement in dental clinic's environment and behavior of dentists can help patients overcome their anxiety [44]. By targeting groups highly vulnerable to dental anxiety, such as females, they can explain treatment and pain management procedures to help reduce the fear associated with dental treatments. Particularly, they should find ways to address the fear of dental injections, the highest anxiety-provoking factor among dental patients. Encouraging people to improve their oral hygiene [42] and health by regularly visiting dental clinics could promote preventive care and help address the anxiety related to dental procedures.

5. CONCLUSION

Dental anxiety exists in the sample population irrespective of gender and age. Despite the focus on DA and finding ways to address it, the problem persists.

Future research needs to focus on investigating if dental procedures related information has any impact on DA scores. Similarly, it is important to analyze if mature age affects prevalence of DA among females.

6. LIMITATIONS

This study has several limitations which need to be considered before explaining its findings. The study only involving respondents living in Al-Qassim region and the cross-sectional design of the study are its major limitations.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

Ethical approval for this research was obtained from the regional research ethics committee in the general directorate of health affairs in Al-Qassim region in Saudi Arabia.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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