Original Research Article

The Prevalence of Dental Anxiety Among Dental Patients in Qassim Region

Abstract

Objective

This study aimed to assess the prevalence of Dental Anxiety among patients visiting dental clinics in the Al-Qassim region of Saudi Arabia.

Methods

The 377 participants were selected from three major cities of the 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 19% of the sample population suffers 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 also found female patients are more anxious than their male counterparts and the difference between means of both genders is statistically significant. The study also noted that young age is associated with a high prevalence of dental anxiety.

Conclusion

The patients who come to visit dental clinics located in the Al-Qassim region feel dental anxiety. The prevalence is higher among females than male patients. Moreover, young patients demonstrated a higher prevalence of dental anxiety than patients of mature ages.

Keywords: Dental anxiety, Modified Dental Anxiety Scale, MDAS, Al-Qassim

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 (Humphris et al., 2009; Jaakkola et al., 2009). 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 (Shim et al., 2015)

The incidence of dental anxiety is a global phenomenon. The patients' perceived uneasiness, discomfort, and pain associated with dental procedures promotes anxiety among them (White et al., 2017). 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 (Krochak and Friedman, 1998; Milgrom et al., 1988).

There is a multitude of factors that are associated with the occurrence of dental anxiety, such as age (Yildirim et al., 2017), gender (Sghaireen et al., 2013), qualification (Jasser et al., 2019; Kamel et al., 2019), and socioeconomic background of the patients (Abanto et al., 2017; Malvania and Ajithkrishnan, 2011). 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 (Carlsson et al., 2015; Fayad et al., 2017). 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 (Fayad et al., 2017), or indirect learning from the bad experiences of peers and family members (Barreto et al., 2017; Boka et al., 2016; Morgan et al., 2017) may lead people to feel anxious.

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 (Fayad et al., 2017). Another study conducted in outpatient clinics of the university in Jeddah concluded about 50% of their sample population suffers from moderate anxiety while 29% of the patients experience high dental anxiety (Kamel et al., 2019).

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 (Al-Khalifa, 2015). Sghaireen et al. (2013) noted a low occurrence of dental anxiety among medical and dental students compared to computer sciences and art students. The results of a recent study show 36% of the adult population suffer from a dental phobia (Alyami et al., 2020).

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 (Sanikop et al., 2011). The patients may avoid cooperating with the dentists, and at worst, they may refuse dental treatment (Esa et al., 2010). They tend to self-medicate themselves to avoid visiting dentists (Minja and Kahabuka, 2019). Therefore, such patients are more likely to have missing teeth, untreated carious teeth surfaces, and poor oral health (Carlsson, 2015; Moore et al., 1993; McGrath and Bedi, 2004). 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 (Alhareky et al., 2021).

Given the high prevalence of DA and its effects on health and wellbeing, dental anxiety is among the most pressing public health concerns in Saudi Arabia. The increase in the number of research studies to explore the prevalence of dental anxiety in the kingdom points to the growing interest of academics and policymakers in this issue. 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 (Gaffar et al., 2014). For example, the incidence of dental caries in the Saudi Kingdom is the highest in the world (Al-Khalifa, 2015; Al-Malik and Rebini, 2006; Gandeh and Milaat, 2000).

The studies conducted in the Saudi context have used a variety of geographic locations as their unit of analysis, such as city (Al-Madi and AbdelLatif, 2002), province (Alhareky, 2021), university (Alshammary et al., 2017), and clinic (Kamel et al., 2019) involving varying participants such as dentists (Alyami et al., 2020), students (Sghaireen et al., 2013), patients (Gaffar et al., 2014), and children-mom pairs (Alhareky et al., 2021).

The results of the studies conducted in the Saudi context show dental anxiety prevails in the general population, which tends to be higher in the younger population, females, and people with

a previous traumatic experience (Fayad et al., 2017). The findings of these studies clearly show the prevalence of DA is not uniform across the entire kingdom, such that it varies from one geographic location to another. For example, Al-Khalifa (2015) noted a higher prevalence of anxiety among people in Jeddah city than in Dammam.

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 the 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 (Alhareky et al., 2021; Bahammam, 2016; Campos et a., 2013). The popularity of this scale comes from the fact it is a simple scale that offers high reliability, validity, and good psychometric properties (Humphris et al., 2000). The Arabic version of the scale also showed high validity and reliability (Al-Nasser et al., 2016; Bahammam and Hassan, 2014).

The present study uses the Arabic version of MDAS to explore the level of dental anxiety that prevails in the Al-Qassim region. This decision to used MDAS Arabic version is based on the facts that target population of the study can conveniently conversate in Arabic while it demonstrates high validity and reliability (Bahammam and Hassan, 2014). The findings of the study would help to improve patient management and develop better treatment strategies for anxious dental patients.

2. Methods

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 second part of the questionnaire involves questions that intend to gather demographic information of respondents, such as age, gender.

The questionnaires were distributed to the dental patients who came to visit dental clinics in three major cities - Buridah, Onizah, and Alrass - of the Al-Qassim region. The inclusion criteria consist of being 18 years old, mentally and medically fit, and living in any of three cities Al-Qassim region. Only Arabic-speaking, literate patients are selected to take part in the study. The gathered data was analyzed using the Statistical Package of Social Sciences (SPSS 17.0).

Table 1. Descriptive Statistics

		N	Percentage
City	Buridah	120	32
	Onizah	125	33
	Alrass	132	35
Gender	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	17

MDAS - Modified Dental Anxiety Scale

The data in Table 1 shows that almost an equal number of participants are selected from three cities of the Al-Qassim region. In terms of gender participation, 52% of the participants are male while 48% are females. The patients are divided into three groups based on their MDAS scores. 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 (Al-Khalifa, 2015).

Table 2. Descriptive statists 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

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).

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			

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.

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		

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.

3. Result and Discussion

Dental anxiety is a global phenomenon. The present study effectively assessed the prevalence of dental anxiety among residents of the Al-Qassim region of Saudi Arabia. The study evaluated DA using MDAS – an instrument that demonstrates high reliability and validity scores in multiple studies (Appukuttan et al., 2012).

The findings categorized 17% of the population of the study as extremely anxious. 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 (Taani, 2002). The results of the study support previous studies that concluded a significant portion of the population in Saudi Arabia suffers from high dental anxiety (Alyami et al., 2020; Fayad et al. 2017; Kamel et al. 2019). 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 the Al-Qassim region. The previous studies conducted in other parts of Saudi Arabia also found females are more dentally anxious than male dental patients (Al-

Khalifa, 2015; Sghaireen et al., 2013). The present study supports the findings of the previous studies that conclude gender plays a role in the generation of dental anxiety.

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 (Kamel et al. 2019; Yildirim et al., 2017).

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 (2015) concluded dental injection is the highest anxiety-provoking item of MDAS (Mean=3.15); while with M=2.45, Humphris et al., (2009) 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.

Given the fact, majority of dental patients in Saudi Arabia do not visit dental clinics on regular basis but seek emergency treatment; therefore, not sure about the solution of the dental problems they get apprehended 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 toward all five MDAS items. Since most people in KSA visit dental clinics only to seek emergency relief, therefore these findings are not surprising. Unambiguity about what lies ahead in terms of treatment provokes anxiety among them. However, further research is required to investigate if there is a difference in DA among people who regularly visit dental clinics and those who only go to get emergency treatment.

The findings also suggest that being female and young makes patients more vulnerable to developing anxious thoughts. 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. 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 health by regularly visiting dental clinics could promote preventive care and help address the anxiety related to dental procedures.

4. Limitations

This study has several limitations which need to be considered before explaining its findings. First, the study was conducted involving dental patients who visit dental clinics in three major cities of the Al-Qassim region. Caution needs to exercise while generalizing the findings of the study to other contexts and settings.

The study finds the prevalence of DA among the sample population following a cross-sectional design, which determines the occurrence of a phenomenon only at a specific point in time. This research design limitation needs to be focused on while drawing insights from the findings of this study.

Other demographic and socioeconomic factors such as education, income level could also play a role in provoking anxiety among dental patients. Consideration of these factors could help overgeneralization of the study to other contexts.

5. Conclusion

Dental anxiety is determined as a problem in the sample population. Some level of dental anxiety exists among all respondents irrespective of their gender and age. Dental anxiety continues to have implications both for dentists and patients. Despite efforts to determine the level of DA and find ways to address it, the problem persists.

Future research needs to focus on investigating if DA scores vary for patients who have more information on dental procedures than those who are less informed. Similarly, little attention has been paid to explore if the effects of the female gender on DA subside with age. Finally, studies

with longitudinal designs involving multiple factors and respondents from several regions can better shed light on the prevalence of DA in Saudi Arabia.

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