

# Dental anxiety: Prevalence and associated factors

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## ABSTRACT

**Objectives:** This study aimed to estimate the prevalence of dental anxiety and examine the socio-demographic associations of dental anxiety among a representative sample of UAE college populations. **Materials and Methods:** Four hundred and thirteen college students of Sharjah University in the UAE completed Modified Corah's Dental Anxiety Scale (MDAS) (47% males and 53% females). The survey also included questions in a yes/no format with which respondents rated attributions for their anxiety. **Results:** Prevalence of dental anxiety (MDAS score of 13 or more) was 36%, with overall severity represented by a mean score of 11.52 (SD: 4.88). Students who visited their dentist more than two years ago had significantly higher MDAS scores compared with those who visited their dentist less than two years ago (*t*-test, *P*=0.02). Compared with female students, a significantly higher proportion of males indicated that their last visit to the dentist was more than two years ago (17% vs. 30%, respectively,  $\chi^2$ -test, *P*=0.002). In addition, more than half of the students (55%) perceived a need for a checkup and 54% indicated that they visited the dentist because of problems with their teeth. **Conclusions:** The findings of this study indicate that although dental anxiety was not associated with gender and frequency of dental visits, feeling of lack of control and pain anticipation were strong predictors of anxiety. These results highlight the important role that dental healthcare providers could play in counseling anxious patients to reduce the impact of these factors on seeking dental care.

## Key words

Anxiety, dental anxiety, university students, United Arab Emirates

## INTRODUCTION

The utilization of any implemented healthcare program done effectively on a large extent is based on the ability of the population targeted in order to reach provided services with minimal restricting factors. However, in dentistry, there have been several reports showing dental anxiety is an important limiting factor that interferes or rather prevents the effective utilization of the services available.<sup>[1-3]</sup> For many patients, fear and anxiety is a real problem that can become a barrier to treatment in the long run. Moreover, there are some patients who avoid dentists altogether because of their extreme fears,<sup>[4,5]</sup> even in cases of emergency such as toothache.<sup>[4]</sup> In addition, dentists may also become anxious when dealing with anxious patients, leading to management difficulties, which may cause the treatment time to prolong. The

most common origins of dental anxiety happen to be a previously painful or negative experience during visits to a dentist. A patient's anxiety also poses major management problems for the dental team as more treatment time will be required for an anxious patient and is very likely to miss appointments.

In the UAE, health programs are provided through governmental and private institutions to the general population. Most importantly, it is dental services that are important components of such programs. Effective utilization of the services offered may have a great impact on the dental status of the individuals served. Dental anxiety has clearly shown to be associated with avoidance of regular dental care.<sup>[6,7]</sup> Since there is evidence of adverse dental health, consequences of such avoidance means that estimation of the prevalence and severity of dental anxiety has become of great importance to the public health in the UAE.<sup>[8]</sup> A review of the literature indicated lack of information about the prevalence of dental anxiety among people in the Emirates. Moreover, recent evidence further highlight the need for more information on dental anxiety due to the substantial intercultural differences and the prevalence of dental anxiety.<sup>[9]</sup> The aims of the current study were to determine the prevalence of dental anxiety and to explore some possible etiologic factors in a sample of university students in UAE.

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## MATERIALS AND METHODS

Four hundred and thirteen male and female (195 males, 218 females) undergraduate college students at University of Sharjah were invited to participate in the study. All students were between the ages of 18 and 25 and the majority of the respondents were non-national Arabs (62%). Most participants indicated that their last visit to the dentist was less than 2 years ago and 58% indicated that the reason for visit was dental problems [Table 1].

Dental anxiety was measured by Modified Corah's Dental Anxiety Scale (MDAS).<sup>[8]</sup> MDAS consists of five questions each of which has five scores, ranging from 'not anxious' to 'extremely anxious,' in ascending order from 1 to 5. Each question thus carries a possible maximum score of 5, with a total possible maximum score of 25 and a minimum score of 5 on the entire scale. A score of 13 or above is considered a case of dental anxiety.<sup>[8]</sup> This answering scheme is a simplified rating system in comparison with Corah's Dental Scale that was an early four-question measure of dental anxiety. MDAS includes an extra item about the respondent's anxiety to a local anesthetic injection, which is a major focus of anxiety for many. MDAS has been found to be reliable and valid in several samples from UK, Scotland, Wales, Ireland, Finland, Dubai, Brazil and Turkey.<sup>[5-12]</sup> The survey also included questions in a yes/no format on which the respondents rated their attributions for their anxiety (such as anticipated pain, feeling out of control, unpleasant stories heard from others and negative experiences such as gagging). The study received ethical approval from the Ethics and Research Committee of University of Sharjah.

Descriptive statistics were used to assess the frequencies of responses to the questionnaire items. Independent *t*-test was used to compare MDAS scores by gender. In addition, multivariate logistic regression was used to assess the association between anxiety level (MDAS score >13 'anxious' vs. MDAS score <13 'not anxious') and participants' characteristics, anticipated pain, feeling out of control, unpleasant stories and afraid of chocking.

## RESULTS

The prevalence of dental anxiety (MDAS score of 13 or more) in the sample was 36%, with overall severity represented by a mean score of 11.52 (SD: 4.88). Students who visited their dentist more than 2 years ago had significantly higher MDAS scores compared with those who visited their dentist less than 2 years ago (*t*-test,  $P = 0.02$ ). Compared with female students, a significantly higher proportion of males indicated that their last visit to the dentist was more than 2 years ago (17% vs. 30%, respectively,  $\chi^2$ -test,  $P = 0.002$ ) [Table 2].

**Table 1: Frequency distribution of demographic and variables related to dentist visit**

Variable	N (%)
Sex	
Males	195 (47)
Females	218 (52)
Nationality	
Nationals	101 (25)
Non-national arabs	254 (62)
Others	56 (13)
Perceived need for dental checkup	
Yes	231 (57)
No	173 (43)
Time since last dental visit	
<2 years	307 (77)
≥2 years	94 (23)
Usual reason for dental visit	
Checkup	166 (42)
Problem	228 (58)

**Table 2: Dental anxiety by gender, perceived need for dental checkup and contact with dental services**

	Prevalence high dental anxiety (MDAS=13+)	Severity Mean MDAS (SD)
All subjects	36%	11.52 (4.88)
Gender		
Male	50 (28)	17.6 (2.7)
Female	75 (35)	17.4 (3.0)
Perceived need for dental checkup		
Yes	69 (31)	17.5 (3.0)
No	54 (34)	17.6 (2.8)
Time since last dental visit		
<2 years	89 (30)	17.2 (2.8)*
≥2 years	33 (38)	18.4 (3.1)
Usual reason for dental visit		
Checkup	47 (29)	17.6 (3.1)
Problem	72 (34)	(2.7)

MDAS – Modified Corah's dental anxiety scale; SD – Standard deviation

As shown in Table 3, participants' responses on the five-item MDAS indicated that there were no significant sex differences and that the highest MDAS scores for both males and females were for local injection anxiety (mean = 2.85 (SD: 1.47) and 2.98 (SD: 1.35), respectively).

Multivariate logistic regression analysis [Table 4] revealed that respondents who indicated their cause of anxiety was to be anticipated pain were 2.89 times more likely (95% confidence interval: 1.81, 4.63,  $P = 0.00$ ) to be anxious about dental visits compared with the other participants. In addition, the odds of being anxious was 3.34 time higher (95% confidence interval: 1.55, 7.22,  $P = 0.002$ ) among participants who indicated that feeling out of control was their reason for anxiety than among

**Table 3: Mean and SDs for responses to MDAS by sex**

Item	Males Mean (SD)	Females Mean (SD)
Next day treatment anxiety	1.88 (1.14)	2.00 (1.16)
Waiting room anxiety	1.91 (1.09)	2.07 (1.15)
Drill-related anxiety	2.63 (1.31)	2.83 (1.33)
Teeth scaling and polishing anxiety	2.00 (1.18)	1.90 (1.14)
Local injection anxiety	2.85 (1.47)	2.98 (1.35)
Total score	11.26 (4.81)	11.78 (4.92)

All P values are non-significant; based on independent t-test analysis; SD – Standard deviation; MDAS – Modified Corah's dental anxiety scale

**Table 4: Logistic regression analysis for the association between dental anxiety, and reasons for anxiety and other participants' characteristics**

Variable	Odds ratio	95% confidence interval	P value
Female	1.31	0.83, 2.10	0.25
Time since last visit >+2 years	1.39	0.83, 2.10	0.22
Anticipated pain	2.89	1.81, 4.63	0.00
Afraid of chocking	2.03	0.99, 4.16	0.05
Feeling out of control	3.34	1.55, 7.22	0.002
Unpleasant stories	1.97	0.96, 4.02	0.06

Analysis based on logistic regression analysis for the dependent variable dental anxiety (anxious, MDAS score >13 vs. non-anxious, MDAS score ≤13); Reference categories; Male <2 years

those who did not. Although fear of chocking and hearing unpleasant stories did not reach statistical significance, there was a tendency for these two factors to be associated with dental anxiety levels (afraid of chocking: odds ratio = 2.03, 95% confidence interval: 0.99, 4.16,  $P = 0.05$ , and unpleasant stories: odds ratio = 1.97, 95% confidence interval: 0.96, 4.02,  $P = 0.06$ ). Gender and time since last visit were not significant predictors of dental anxiety level.

## DISCUSSION

The results clearly indicate that prevalence of dental anxiety, expressed by a mean MDAS score of 11.52, is in the lower reference range compared with those reported in other parts of the world.<sup>[11]</sup> These results could be attributed to the selected sample of university students. Similar results<sup>[13-15]</sup> were also reported by other researchers in which higher levels of education were associated with decline in anxiety levels. After much observation, the highest level of dental anxiety was shown among housewives and school students compared with those self-employed and professionals.<sup>[13]</sup> This finding may relate to the lack of independence and feeling of insecurity among these groups.

Noteworthy in this study is that the majority of the respondents had visited a dental clinical before. This finding may reflect the near-total literacy along with excellent penetration of dental care in the study area.

In addition, there is an enormous variation in prevalence estimates due to use of different instruments. This must be taken into account when assessing whether differences among populations are actual or operational in origin.

Consistent with previous findings by Thomson *et al.*,<sup>[15]</sup> and Berggren and Carlsson,<sup>[7]</sup> our findings indicate that dental anxiety was not significantly different between females and males. However, unlike results obtained by others,<sup>[16-19]</sup> ratings of dental anxiety were higher in females than males. Intercultural study findings indicate that the level of anxiety in females is more likely to have a constant value, whereas males provided a wide range of different responses in terms of their level of anxiety based on their cultural background.<sup>[20,21]</sup> Cultural differences of the subjects may explain the findings.

Furthermore, Schuurs and Hoogstraten<sup>[13]</sup> suggested that the higher dental anxiety score of women in their study did not necessarily mean that women are more anxious than men, but that they express anxiety more readily than men do. In this study, it may be that both genders are likely to self-report and men were able to express their fears as openly as women. The levels of anxiety were higher in the needle injection situation. This result confirms the results of other studies that determined that the needle is still one of the main stimuli that invokes fear in connection with dental treatment.<sup>[18,21,22]</sup>

Anxious students attributed their nervousness mainly to anticipated pain and feeling out of control. Anticipation of pain during dental treatment and fear of the unknown or feeling of loss of control were frequently reported reasons for fear and dental anxiety.<sup>[10,16-18,23,24]</sup> Replication of such a finding in this study underscores the need for well-trained supporting staff able to identify anxious patients. Furthermore, a patient can be reassured that everything will be done to make the procedure as pain-free as possible to the best of the clinician's ability, if the anxious patient thinks that the procedure is going to be painful. In addition, anxious clients who feel out of control can be reassured that the procedure is entitled to be stopped at any time.

Understanding the extent and reasons of dental anxiety in this population is important, as it relates to poor oral health. Accordingly, assessment of the level of patient anxiety could provide important information regarding patients' attitude toward different dental procedures.<sup>[25]</sup> Provision of suitable intervention could minimize adverse dental outcomes that may occur as a result of dental fear or anxiety.

Furthermore, the findings of this study and those in other countries<sup>[13,19,25,26]</sup> underscore the importance of training dentists in the management of dental anxiety, which could reduce the difficulties of delivering successful treatment.

A limitation of this study is that all participants were university students, which could affect the generalizability of the findings for the entire UAE population. In addition, as participants' responses required recall of past dental experience from memory, the possibility of various biases cannot be ruled out, such as diminished or exaggerated traumatic events, and hence caution is required in interpreting these results.

In conclusion, the findings of this study indicate that although dental anxiety was not associated with gender and frequency of dental visits, feeling of lack of control and pain anticipation were strong predictors of anxiety. These results highlight the important role that dental healthcare providers could play in counseling anxious patients to reduce the impact of these factors on seeking dental care.

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