

## Gender Differences in Anxiety Levels about Dentistry in Saudi Dental College Students

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### Abstract

The purpose of this study was to investigate dental anxiety levels in dental students and to compare those reported by female and male students. This study was conducted at King Saud University Dental College, Riyadh, Saudi Arabia. The Corah's Dental Anxiety Scale (DAS) questionnaire was used to measure students' dental anxiety levels. The DAS tool contains four questions that assess the level of anxiety and has a maximum possible score of 20. Five options are available for each question. Scoring was performed as A = 1, B = 2, C = 3, D = 4, and E = 5. A score between 4 and 8 indicates no anxiety, one between 9 and 12 indicates moderate anxiety, one between 13 and 14 indicates high anxiety, and one between 15 and 20 indicates severe anxiety (phobia). The data were analyzed using SPSS software version 22. A total of 356 questionnaires were returned by 156 female students (response rate 86%) and 200 male students (response rate 94%), giving an overall response rate of 90%. Male dental students had significantly higher DAS scores than their female counterparts; however, anxiety levels in the male dental students decreased as the number of years of clinical training increased. Male dental students are more prone to dental anxiety than female dental students. However, dental anxiety decreased with increasing clinical year. Educational sessions and graded exposure therapy during the initial phase of dental training could help to decrease dental anxiety levels in dental students.

**Keywords:** Dental Students; Dental Anxiety; Phobia; Gender Difference; Fear

### Abbreviation

DAS: Corah's Dental Anxiety Scale

### Introduction

Dental anxiety is a major issue affecting the attendance for and provision of dental care [1] and can be the main reason for missed or cancelled dental appointments in general practice [2]. Avoidance of dental treatment because of dental anxiety not only affects the oral health of the patient but also poses a severe threat to general health as a result of the increased risk of serious medical conditions, including septicemia, sepsis, sinusitis, and osteomyelitis of the facial bones [3].

A study by Kirova., *et al.* found that individuals aged 25 - 26 years tended to experience the highest levels of dental anxiety [4], which could reflect the diverse impact of a number of psychological factors that provoke fear and anxiety about a dental visit [5]. Dental anxiety not only affects the general adult population but also students who are training to become dental health professionals. In a study performed in Brazil, Serra-Negra., *et al.* found that 27% of dental students reported experiencing fear when they become dental patients [6]. Many instruments have been developed and used to assess dental anxiety, the best known of which is Corah's Dental Anxiety Scale (DAS),

which was developed in 1969 and has been used widely as a research tool [7]. However, there have been no studies of dental anxiety levels in undergraduate dental students in Saudi Arabia. The aim of the present study was to investigate dental anxiety levels in dental students at King Saud University Dental College in Riyadh, Saudi Arabia, and to determine if there are any gender-related differences in the anxiety levels experienced by these students.

**Materials and Methods**

The study protocol was approved by the College of Dentistry Research Committee. Two questionnaires were prepared. The first questionnaire consisted of items concerning demographics (including gender) and year of study and the second was the DAS questionnaire, which consists of four items related to different situations that can be encountered at a dental office. Five answers are possible for each question. One point is given when the respondent answers option “A” for a question, 2 for “B”, 3 for “C”, 4 for “D”, and 5 for “E”. Option “A” indicates the lowest level of anxiety whereas option “E” represents the highest level of anxiety (phobia). The maximum possible score is 20.

Before distributing the questionnaires, pilot questionnaires were completed by 20 students not included in the final sample to evaluate the ease of reading, clarity of wording, and understanding of the questions. No modifications to the questionnaire were necessary.

The questionnaires were distributed at the end of scheduled classes to all undergraduate year 3, year 4, and year 5 male and female students at the King Saud University College of Dentistry campuses in October 2017. No attempt was made to obtain responses from students who were absent on the day of the study. A cover letter was attached to the questionnaires clarifying the purpose of the study, explaining the confidentiality of the information provided, confirming that participation was voluntary, and seeking written consent to participate. After testing the data for normality, the t-test was used to determine the statistical significance of differences in anxiety scores between the male and female students. The statistical analysis was performed using SPSS version 22 software (IBM Corp., Armonk, NY, USA). P-values < 0.05 were considered to be statistically significant.

**Results**

In total, 356 of 393 dental students present on campus on the day of the study returned completed questionnaires, giving an overall response of 90% (156 women, 86%; 200 men, 94%). One hundred and seventy-one students were found to be in the non-anxious category (Table 1). The overall mean DAS score was significantly higher for the female students than for the male students (12.1 vs 11.1; P < 0.05; Table 2). When the data were analyzed according to year of study, male students had consistently higher anxiety scores than female dental students (Table 3). Twenty-five of the 356 respondents (7/156 female students and 18/200 male students) were identified to have very high dental anxiety levels (Figure 1).

		n	%
Gender	Male	125	67.6
	Female	60	32.4
Year	3	79	42.7
	4	53	28.6
	5	53	28.6
Anxiety	None	171	48.0
	Moderate	126	35.4
	High	34	9.6
	Severe	25	7.0

**Table 1:** Responses of dental students on the Corah’s Dental Anxiety Scale questionnaire.

Gender	n	Mean anxiety score	SD	t-value	P-value
Male	125	12.112	2.31	2.65	0.009*
Female	60	11.1	2.68		

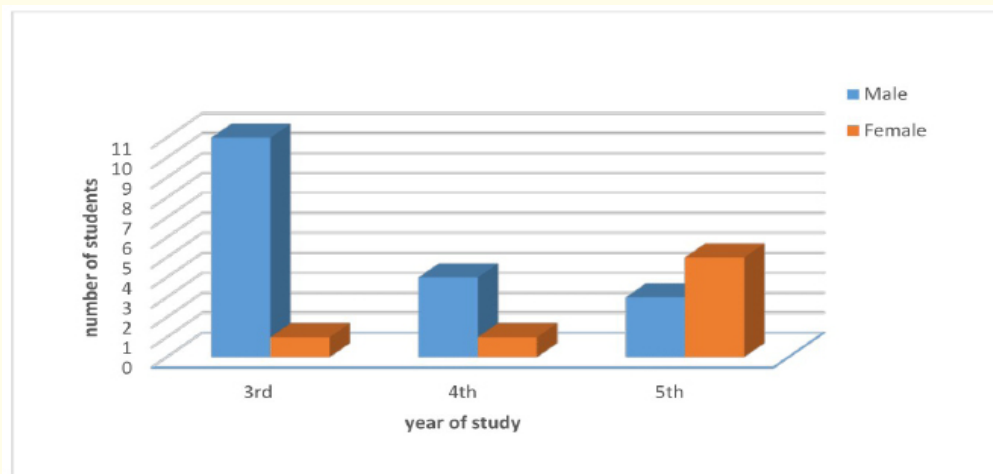
**Table 2:** Mean dental anxiety scores in female and male dental students.

\*Statistically significant difference. SD, standard deviation

Students	n	Mean anxiety level score	SD	t-value	P-value
<b>Year 3</b>					
Male	62	12.60	2.02	3.536	0.001*
Female	17	10.53	2.53		
<b>Year 4</b>					
Male	36	11.83	2.69	2.04	0.047*
Female	17	10.35	1.90		
<b>Year 5</b>					
Male	27	11.37	2.20	-0.815	0.419
Female	26	11.96	3.03		

**Table 3:** Numbers of students with anxiety and their mean dental anxiety scores according to year of study.

\*Statistically significant difference. SD: Standard Deviation



**Figure 1:** Students scoring between 15 and 20 (phobic levels of anxiety) on Corah's Dental Anxiety Scale questionnaire.

**Discussion**

Despite all the technologic advances in dentistry, anxiety about dental treatment and fear of the associated pain remain prevalent [8]. The results of the present study show that even dental students are not immune to dental phobia. Similar findings were reported in Brazil, where 27.5% of dental students admitted to being fearful of various dental procedures when they were in the position of being patients [6].

Several studies have reported significantly higher levels of dental anxiety in women, but the clinical significance of this gender-related difference has been questioned [9,10]. Some studies have found no difference in dental anxiety levels between the genders [11-14]. However, the results of this study show that male dental students experience higher dental anxiety levels than their female counterparts. This finding could be attributed to the higher response rate of male students in this study and/or to cultural differences (e.g. in many societies, men tend to not express their feelings to the same degree as women).

In the present study, senior male dental students had a lower mean DAS score than younger male dental students, possibly reflecting their increased level of education and clinical experience. Kirova, et al. [5] also found that dental students reported higher anxiety levels at the start of training than at the end. However, our study results indicate an increase in DAS scores in senior female dental students. One reason for this trend could be that men tend to hide their fears as part of their stereotyped gender role [15]. In addition, it has been reported that women are generally more reactive to a specific stimulus (such as a needle prick) than men, which could account for the higher anxiety levels reported by female subjects in various studies [16,17]. Another reason for this observation is that women tend to score more highly on 'neuroticism' [18], so could be more likely to experience anxiety and fear.

A DAS score  $\geq 15$  indicates phobic levels of anxiety. Twenty-five of the 356 respondents in this study were found to have severe dental anxiety levels. A worrying potential long-term consequence of this finding is that these severely anxious dental students could communicate their dental anxiety to their patients, which would increase the prevalence of dental anxiety at the general population level even further [6,19]. Counseling sessions conducted by trained professionals for dental students with dental anxiety could help to decrease their anxiety levels. In addition, 'exposure therapy' should be introduced at an early stage of dental training; this would not only eliminate bad memories of past dental treatment but also decrease students' dental anxiety levels in general.

This study has several limitations in that it included a small sample size and obtained data from only one dental college. Another limitation is the difference in response rate between the male and female respondents, which could have affected the results of the statistical analysis. The causes of dental anxiety were not addressed in this study. Future studies that investigate the causes of dental anxiety could prove useful in decreasing anxiety levels among dental students. Similar studies should be performed in other parts of Saudi Arabia so that we can understand dental anxiety at a national level.

### Conclusion

In this study, male dental students suffered more severe dental anxiety than female dental students. However, dental anxiety decreased with increasing clinical year of training. Educational sessions and graded exposure therapy during the initial phase of dental training could help to decrease these anxiety levels.

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### Conflicts of Interest

The authors report no conflicts of interest.

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