



## Dental Anxiety and Fear among Medical Field Students at Al Quds University

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### Authors' contributions

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

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### ABSTRACT

**Aims:** This study aimed to assess the levels of dental anxiety among dental, medical, and pharmacy students at AL Quds University and to find out the sources of dental fear among them.

**Study Design:** Retrospective study.

**Place and Duration of Study:** AL Quds University, between June, 2012-July, 2013.

**Methodology:** Dental anxiety scale (DAS) and Dental Fear Survey (DFS) were completed by four hundred and five students (113 males and 292 females). The population included undergraduate dental (n=198), medical (n=114) and pharmacy students (n=93). Ages ranged from 18 to 27 (the mean age of the subjects was 22.5±2.1 years).

**Results:** Dental students were significantly less anxious (using the dental anxiety scale) compared to the other groups (medical and pharmacy students) (P<0.05). Dental students were significantly more relaxed in the dental treatment as assessed by DFS than other groups (medical and pharmacy students (P<0.05)). Fear of seeing the anesthetic needle (39.2%) and feeling the needle injection (46.2%) were the most common sources of dental fear reactions among the study population. The Pearson correlations ( $r_p$ ) between the measurements DAS and DFS mean scores were evaluated and the correlation is significant (P<0.05).

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**Conclusions:** Dental students have a significantly lower level of dental anxiety than medical and pharmacy students. Females showed higher fear scores than males. Seeing the anesthetic needles and feeling the anesthetic solutions injection were the major stimuli of dental fear.

*Keywords: Dental anxiety; fear; education programs.*

## 1. INTRODUCTION

Dental fear is a common problem among patients. They avoid dental treatment due to that fear [1]. Investigators have tried to understand the causes of dental fear, its management and mechanisms to reduce it in the dental surgery.

Dental Anxiety is considered a limiting barrier for many patients who want to visit a dental clinic [1,2,3,4].

Many scales were used to measure the dental fear. Beyond any doubt, there is strong evidence in the relevant literature that the use of the Corah Dental Anxiety Scale proved to be a viable, valid and reliable test in the measurement of dental anxiety [5,6,7,8].

The Dental fear survey is another scale used in the assessment and measurement of dental phobia and anxiety [9,10]. Newton and Buck [11] suggested that the dental fear survey is reliable and valid for the assessment of dental phobia among dental patients.

Mărginean and Filimon [12] found that the dental anxiety scale and dental fear survey were positively correlated with internal consistency to be valid in assessment of dental anxiety.

The related literature does not provide a clear answer on the effect of the course that is studied by the students and its relationship to the dental fear among the Palestinian university students. Therefore, the present study was conducted to investigate the subjective ratings of the dental anxiety levels among dental, medical and pharmacy Palestinian students at AL Quds University. In addition, the validity and the internal consistency between DAS and DFS tests were also explored.

## 2. MATERIALS AND METHODS

Four hundred and five students in AL Quds university were participated in the study. They were asked to fill two questionnaires retrospectively between June, 2012 till July, 2013.

Corah's Dental anxiety scale [5] (DAS) was used in this study. Dental anxiety scale (DAS) consists of four questions with five choices, measured in scores of 1 to 5, including the followings:

1. If you had to go to the dentist tomorrow, how would you feel about it?
2. When you are waiting in the dentist's office for your turn in the chair, how do you feel?
3. When you are in the dentist's chair waiting while he gets his drill ready to begin working on your teeth, how do you feel?

4. You are in the dentist's chair to have your teeth cleaned, while you are waiting and the dentist is getting out the instruments which he will use to scrape your teeth around the gums, how do you feel?

The scores for each of the 4 questions were summed to give the level of dental anxiety. The overall maximum score is 20. A score less than 14 indicates low anxiety, whereas 15 and more scores indicate high anxiety level. It is worth mentioning that a score of 19 or 20 scores indicate severe anxiety level.

The Dental Fear Survey [9,10,13] was also used in the study, it consists of 20 questions with five choices, measured in scores of 1 to 5 Appendix 1.

The scores for each of the 20 questions were summed to give the level of dental fear. The overall maximum score is 100. A score of less than 33 indicates a low fear level, between 33 and 67 it is referred to as a medium fear level and more than 67 indicates a high fear level.

The questionnaires were distributed to undergraduate dental, medical and pharmacy students at AL Quds University in Palestine. Students were informed about the study and they were asked to fill the aforementioned two questionnaires (DAS and DFS).

Descriptive data was obtained and the means, frequency of distribution and standard deviation were analyzed. Two-tailed Student's t-test as well as one way analysis of variance (ANOVA) were used to analyze within and between the groups. Tukey's Post Hoc test was used to conduct multiple group comparisons and correlations. Statistical significance was based at  $P \leq 0.05$ .

### 3. RESULTS

Four hundred and five students (113 males and 292 females) from three different medical field faculties at AL Quds University participated in the study. The population included third year dental (n=198), medical (n=114) and pharmacy (n=93) undergraduate students. Ages ranged from 18 to 27 (the mean age was  $22.5 \pm 2.1$  years). The distribution of the respondents according to the faculty and gender is illustrated in Tables 1 and 2.

**Table 1. Distribution of students by faculty**

Faculty	Number of students	Percentage %
Dentistry	198	48.9
Medicine	114	28.1
Pharmacy	93	23.0
Total	405	100

**Table 2. Distribution of students by Gender**

Gender	Number of students	Percentage %
Females	292	72.1
Males	113	27.9

The distribution of students by the level of dental anxiety as assessed by DAS showed that 81.2% (n=329) of students reported to have low anxiety levels, 12.6% (n=51) had high levels

and, 6.2% (n=25) had severe levels of anxiety Table 3. The minimum score was 4 and it was scored by a dental student. The maximum score was 19, and it was scored by a pharmacy student. Most of dental students showed low anxiety on the other hand, the highest sample which showed severe anxiety was from the faculty of medicine.

**Table 3. Distribution of students' anxiety level according to Faculty**

Faculty	Anxiety Level		
	Low	High	Severe
Dentistry	175	19	4
Medicine	82	21	11
Pharmacy	72	11	10
Total	329	51	25
(%)	(81.2%)	(12.6%)	(6.2%)

Dental students were significantly less anxious in dental anxiety scale than other groups (medical and pharmaceutical students) (F=12.13, P=0.001) Table 4.

**Table 4. Dental anxiety scale response differences between dental and non dental students using ANOVA analysis**

	Sum of Squares	Df	F	P (value)
Between Groups	255.49	2	12.13	0.001*
Within Groups	4233.62	402		

\*P is significant <0.001

Dental students were significantly relaxed in dental treatment as assessed by DFS than other groups (medical and pharmaceutical students) (P=0.001) Table 5.

**Table 5. Mean dental fear survey score of students by faculty**

Faculty	Number of students	Mean Score	SD	P value (t-test)
Dentistry	198	35.48	13.60	0.001*
Medicine	114	43.40	16.63	
Pharmacy	93	46.05	16.77	
Total	405	40.14	15.92	

\*P is significant <0.001

The distribution of students by the degree of dental fear as assessed by DFS showed that 41.7% (n=169) of students were relaxed, 52.1% (n=211) were frightened, while 6.2% (25) were severely frightened Table 6. The minimum score was 6 scored again by a dental student. The highest score was 84 scored by medical student. Most of the dental students were relaxed when they go for dental treatment. The highest sample which showed severe fear from dental treatment was from the faculty of Pharmacy.

Females were significantly more afraid of dental visits compared to males (P < 0.05) when assessed using the DFS Table 7.

Feeling the needle injection was the most anxious situation of all dental procedures followed by seeing the needle (P<0.05). 28.3% of the students (114 students) were extremely feared

the needle being injected. Whereas 54.6% of the students (221 students) showed no fear towards the dental work Table 8.

Pearson correlation was used to investigate the internal consistency between DAS and DFS tests. The correlation was significant at the 0.01 level (2-tailed test) ( $P < 0.001$ ).

**Table 6. Distribution of students according to DFS response according to Faculty**

Faculty	Low Fear	Mild to Moderate	High
Dentistry	105	87	6
Medicine	43	62	9
Pharmacy	21	62	10
Total	169	211	25
(%)	(41.7%)	(52.1%)	(6.2%)

**Table 7. Mean severe dental fear survey score of students by Gender**

Gender	Mean Score	SD	t	P value (t-test)
Males	37.30	15.42	2.244	0.0025*
Females	41.24	15.99		

\*P is significant <0.05

**Table 8. Prevalence and the means of responses by students according to perceived sources of fear resulting from certain stimuli**

Source of fear	Number (%) of students			Mean (SD)	P value
	No fear	Low to moderate	High Fear		
Seeing the anesthetic needle	125 (30.9%)	183 (45.4%)	95 (23.4%)	2.44 (1.364)	
Feeling the needle injection	83 (20.5%)	206 (51.1%)	114 (28.3%)	2.68 (1.332)	0.001*
Overall fear of dental work	221(54.6%)	132 (32.8%)	50 (12.5%)	1.89 (1.212)	

\*P is significant <0.001

#### 4. DISCUSSION

Dental anxiety is a major concern that should be dealt with and managed. Abandoning dental care is thought to be due to traumatic experiences [13], classical conditioning [14], pain [15] and fear [16]. Therefore, lowering dental anxiety might help in increasing the utilization of dental services which could improve and maintain oral hygiene. This fact should be investigated in further researches.

The relevant study showed that dental students had low dental anxiety ( $P < 0.05$ ) in DAS and they were relaxed when assessed using DFS ( $P = 0.01$ ). However, medical students scored the highest scales in DAS which reflected their high anxiety in dental treatment. Similarly, pharmacy students were characterized by severe fear in the DFS score when they visit dental clinics. This could be due to the absence of the dental education courses for medical and pharmacy students through their study at Al Quds University. Adding such courses in

their plan, might help anxious students in fear reduction [7] In Palestine, only dental students have adequate knowledge and awareness in dental health as a part of their graduation requirements. This clarifies low anxiety and fear amongst dental students when compared with medical and pharmacy students.

It is worth mentioning that, dental visits for routine check up and treatments still considered a strict barrier for non dental students in comparison to dental students. Lack of dental visits will influence on the dental health of non dental students and hence will reduce their educational achievements in their studies through their suffering from dental pain when occurs and avoiding the dental treatment because of their dental fear. More attention should be paid for this aspect in order to achieve better educational performance and good life style.

Low dental anxiety by dental students can be justified by the fact that dental students are more educated and motivated for dental treatment than others. On the contrary, medical and pharmacy students showed the opposite because of low dental educational level and previous dental traumatic experiences. High levels of anxiety will complicate dental treatments as it is difficult to control such patients due to their fears and low cooperation at the dental chair side.

With regard to gender, dental fears were higher in females than in males. This could be due to the fact that males are more emotionally stable than females [17,18] as well as males are far more reluctant to show their fears. This finding is consistent with other studies [7,8,19].

The sense of fear to stimuli varies noticeably because each individual has a special fear responses due to different stimuli during dental treatments. This study revealed that seeing the anesthetic needle and feeling the needle injection were the most common fear from dental procedures. This is consistent with previous studies [7,10,20]. The comparison of our results with the results of another study conducted at the King Saudi University [7] and another relevant study at the National University of Singapore [20] using the DFS showed that the overall level of fear of dental work among our study population (45%) was higher than that of Saudi (39%) and Singapore (21%) students. This finding may be associated to the fact that dental education programs and prevention protocols are limited in the Palestinian society and particularly in universities and schools. In addition, students from aforementioned countries are more familiar with dental clinics, they visit their dentists regularly, and they maintain continuous routine dental checkup.

There is evidence showed by this study for the internal consistency, validity, and significant correlations between DAS and FDS. Therefore, they could be confidently used for the measurement of dental anxiety and fear [21].

## **5. CONCLUSION**

It was concluded that dental students had the lowest anxiety and fear scores compared to medical and pharmacy students. Females showed higher fear scores than males. Seeing the anesthetic needles and feeling the anesthetic solutions injection were the main sources of dental fear. The overall fear of dental treatment was high which necessitates more prevention protocols and dental health educational programs to be employed in Palestinian universities.

Dental Anxiety Scale and Dental Fear Survey are internally consistent and valid in measuring dental anxiety and fear.

## **CONSENT**

Not applicable.

## **ETHICAL APPROVAL**

Not applicable.

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## **COMPETING INTERESTS**

The authors declare that they have no competing interests.

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## APPENDIX

### (1) Dental Fear Survey

Has fear of dental work ever caused you to put off making an appointment?

1. Never
2. Once or twice
3. A few times
4. Often
5. Nearly every time

Has fear of dental work ever caused you to cancel or not appear for an appointment?

1. Never
2. Once or twice
3. A few times
4. Often
5. Nearly every time

When having dental work done, my muscles become tense

1. Never
2. Once or twice
3. A few times
4. Often
5. Nearly every time

When having dental work done, my breathing rate increases

1. Never
2. Once or twice
3. A few times
4. Often
5. Nearly every time

When having dental work done, I perspire

1. Never
2. Once or twice
3. A few times
4. Often
5. Nearly every time

When having dental work done, I feel nauseated and sick to my stomach

1. Never
2. Once or twice
3. A few times
4. Often
5. Nearly every time

When having dental work done, my heart beats faster

1. Never
2. Once or twice

3. A few times
4. Often
5. Nearly every time

Please rate how much fear each of the following causes you?

	None at all (1)	A little (2)	Some what (3)	Much (4)	Very much (5)
Making an appointment for dentistry					
Approaching the dentist's office					
Sitting in the waiting room					
Being seated in the dental chair					
The smell of the dentist's office					
Seeing the dentist walk in					
Seeing the anesthetic needle					
Feeling the needle injected					
Seeing the drill					
Hearing the drill					
Feeling the vibrations of the drill					
Having your teeth cleaned					
How feel are you of having dental work done					

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