

# Evaluation of Dental Anxiety Levels of Students from Different Departments

## Farklı Fakültelerdeki Öğrencilerdeki Dental Anksiyetenin Değerlendirilmesi

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### Keywords

Dental anksiyete, anxiety, dental fear, dentistry, education

### Anahtar Kelimeler

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### Abstract

**Objective:** This study aimed to evaluate and compare the anxiety levels among dentistry students and students from other departments and to assess the effects of classes at pre-clinic labs or dentistry clinics on the dental fear of dentistry students. **Materials and Methods:** A total of 993 students, including 744 (75%) women and 249 (25%) men, were asked to answer the Modified Dental Anxiety scale (MDAS) and Dental Fear scale. Four groups were created according to the departments: Dentistry (group 1), medicine (group 2), health-related (group 3) and others (group 4). The participants scored their anxiety levels from 1 (no anxiety) to 5 (high anxiety). Statistical analysis was performed and values of  $p < 0.05$  were considered statistically significant.

**Results:** The dentistry students scored lower than the other three groups in the MDAS ( $p < 0.001$ ). For the education process of dentistry, no significant difference was observed in other questions regarding pre-clinic dentistry and dentistry clinic periods ( $p > 0.05$ ).

**Conclusion:** Results of this study showed that the dental anxiety levels of dentistry students were lower than those of students from other departments and that pre-clinic or dentistry clinic classes did not affect dental anxiety.

### Öz

**Amaç:** Bu çalışmada diş hekimliği fakültesinde ve diğer fakültelerde öğrenim gören öğrencilerin kaygı düzeylerinin karşılaştırılması ile sadece klinik öncesi laboratuvar eğitimi almış diş hekimliği öğrencileri ve klinik eğitimine başlamış ve devam eden diş hekimliği öğrencilerinin dental korkularının değerlendirilmesi amaçlanmıştır.

**Gereç ve Yöntemler:** Bu çalışmada 744 kadın (%75) ve 249 erkek (%25) olmak üzere 993 üniversite öğrencisinden Modifiye Dental Anksiyete ölçeği (MDAS) ve Dental Korku ölçeğini (DFS) tamamen cevaplamaları istenmiştir. Anketi cevaplayan öğrenciler öğrenim gördükleri fakültelere göre dört gruba ayrılmıştır. Bu gruplar grup 1: Diş hekimliği fakültesi, grup 2: Tıp fakültesi, grup 3: Sağlıkla ilgili diğer fakülteler ve grup 4: Diğer fakülteler şeklindedir. Katılımcılar, anksiyete düzeylerini 1 (anksiyete yok) ile 5 (yüksek anksiyete) şeklinde puanlandırmışlardır. Veriler istatistiksel olarak karşılaştırılmış olup  $p < 0,05$  değeri anlamlı kabul edilmiştir.

**Bulgular:** Diş hekimliği öğrencileri MDAS'yi diğer üç gruptan daha düşük puanlamışlardır ( $p < 0,001$ ). Bununla birlikte sadece klinik öncesi laboratuvar eğitimi almış diş hekimliği öğrencileri ve klinik eğitimine başlamış ve devam eden diş hekimliği öğrencilerinin arasında anlamlı bir fark gözlenmemiştir ( $p > 0,05$ ).

**Sonuç:** Diş hekimliği öğrencilerinin dental kaygısının bu eğitimi almamış diğer fakülte öğrencilerinden daha az olduğu ve diş hekimliğinde klinik eğitimin öğrencilerin kaygı düzeyini etkilemediği gözlenmiştir.

## Introduction

Fear is generally described as a response to a really dangerous or threatening event to protect one's life (1). In many countries, dental anxiety is a very common dental health problem and the prevalence of dental anxiety has taken place in many studies (2,3). Some researchers showed that the prevalence of dental anxiety is 5-20% in populations and females are more anxious than males (4,5). In the Turkish population, approximately 21%-24% of individuals experienced dental anxiety (6-8).

The etiology of dental anxiety is a multidimensional real or imaginative stimulus that leads to development of fear (9). Managing dental anxiety is considered as a crucial issue in dental practice, and therefore different scales have been developed to evaluate dental anxiety. However, surveys and their interpretation should not take the dentist's extra time for clinical practice purposes. For this reason, a short scale of clinical dental anxiety was needed. Corah Dental Anxiety scale has proven to be efficient in dentistry (10). It is bare, easy to score, brief, valid, reliable test for anxiety associated with dental visits (10-13). Moreover, Humphris et al. (14,15) developed a modified scale from the original Corah Dental Anxiety scale as a simpler version, which was named as the Modified Dental Anxiety scale (MDAS). MDAS is a short, 5 item questionnaire with a continuous response scheme for each item from not anxious to extremely anxious.

Furthermore, the Dental Fear scale (DFS) was introduced by Kleinknecht et al. (16,17) in 1973 and examined the level of fear against various practices in dentistry. One of the most important advantages of measuring fear in patients is that the dentist realizes fearful situations for the patient before the treatments, eliminates them as much as possible or prevents the patient from facing the same situation (18). DFS includes 20 questions to determine the level of fear/tension related to dental practices, and answers to the questions are scored between 1 and 5 as a Likert-type scale (19). The reliability and consistency of DFS were evaluated in the light of the data of participants consisting of four different demographic groups, and it was reported to have cross validity and consistency (16). Firat et al. (6) was reported in their study, that DFS was valid to evaluate dental fear levels in Turkey.

This study aimed to evaluate and compare the

anxiety levels of dentistry faculty students and students from other health faculties. At the same time, this study compares the dental fears of students of the faculty of dentistry based on their knowledge.

## Materials and Methods

### Ethical Statement

Ethical Approval was given by Bezmialem Vakıf University Non-Interventional Research Ethics Committee (decision no: 10/114, date: 05.11.2019).

### Study Design

#### Data Collection

Both scales were prepared for the students who were continuing their education at dentistry and other faculties. Informed consent forms were collected from the each participant. Therefore, four groups were created according to the faculties as group1: Dentistry faculty, group 2: Medicine faculty, group 3: Other health-related faculties and group 4: Other faculties. Before the surveys were started, each participant was given detailed information, and the students who agreed quickly filled in these questionnaires. In the meantime, the inclusion criterion was determined as receiving undergraduate continuing education at any university in Turkey. The exclusion criteria in this study were determined as not fully answering the tests and simultaneous enrollment at a dentistry faculty and another faculty. Seventeen forms of these questionnaires, which were completed by 1010 people in total, were excluded from the study because they were not fully answered. Eventually, the data were collected from 993 students.

### Questionnaires

The first part of the questionnaire included basic questions that provided demographic data and the frequency of visiting the dentist. In the second part, the MDAS and the DFS were included, and the participants were asked to answer all questions completely. DFS included statements such as "I feel fear and tension while sitting in the waiting room", "I feel fear and tension when I see the dentist inside" and "When I hear the sound of the aerator (rotating instruments), I feel fear and tension." The participants chose the answers from 5 Likert-type options ("Almost none" to "Too much"). MDAS included questions such as "How do you feel if you are going to the dentist tomorrow?", "If you were about to have a tooth

drilled, how would you feel?” and “If you were about to have a local anesthetic injection in your gum, above an upper back tooth, how would you feel?” The participants chose answers from 5 options (“Worry-free” to “Too worried”) as a Likert-type scale. In a study by Tunc et al. (7), the questions of MDAS were categorized in 5 groups which were next-day visit, scale and polish, drill, waiting room and injection, which helped us categorize DFS in 5 groups as a fear of tools, clinic, doctor, procedure and general fear.

### Statistical Analysis

According to the questions, the participants scored their anxiety levels from 1 (no anxiety) to 5 (high anxiety) levels. For the evaluation of the results obtained, Kruskal-Wallis tests were used for comparisons between groups, and Mann-Whitney U tests were used for binary comparisons. The maximum acceptable level of possible error by Fisher, a famous statistician, was proposed and accepted as 0.05. Therefore,  $p < 0.05$  value was considered statistically significant.

### Results

All questionnaires were answered by 993 students, including 744 women (75%) and 249 men (25%) (Table 1). Participants were classified as dentistry ( $n=389$ ), medicine ( $n=372$ ), other health-related departments ( $n=179$ ) and students in other faculties that are completely unrelated to health ( $n=52$ ) (Table 2).

Not only in MDAS ( $p < 0.001$ ), but also in DFS questionnaire, dentistry students scored significantly lower than all the other three groups for most of the questions ( $p < 0.001$ ) (Tables 3, 4). Only in two questions of DFS the anxiety value of dentists was not significantly different from all other groups (Q1:  $p=0.13$ ; Q2:  $p=0.74$ ) No questions were non-significant in MDAS questionnaire in terms of comparing the scores of the dentists to other groups.

Besides, dentistry students were grouped in terms of the dentistry education of pre-clinical and dental clinical students and the results showed that there was no significant difference in most of the questions ( $p > 0.05$ ) except for questions (general fear-related

**Table 1. Gender of the students who completed the both questionnaires**

Gender	Total number (n=993)
Female	n=744 (75%)
Male	n=249 (25%)

**Table 2. Faculty of the students who completed the both questionnaires**

Faculties	Total number (n=993)
Dentistry	389 (39%)
Medicine	372 (37%)
Other health-related	179 (19%)
Other	52 (5%)

**Table 3. Statistical analysis of some questions in Modified Dental Anxiety scale questionnaire**

	Dentistry	Medicine	Other health-related	Other	p
	Mean-SD	Mean-SD	Mean-SD	Mean-SD	
Question 1	1.85-0.9	2.15-1	2.18-1	2.44-1	<0.001
Question 3	1.99-1	2.33-1	2.48-1.1	2.42-0.9	<0.001
Question 5	2.5-1.1	2.93-1.1	2.93-1.2	3.11-1.1	<0.001

SD: Standard deviation

**Table 4. Question examples and statistical analysis of Dental Fear scale questionnaire**

	Dentistry	Medicine	Other health-related	Other	p
	Mean-SD	Mean-SD	Mean-SD	Mean-SD	
Question 10	1.67-0.9	1.94-1.06	2.03-1.09	2.05-1.05	<0.001
Question 13	1.5-0.8	1.78-1	1.82-1	1.9-1	<0.001
Question 17	1.86-1	2.69-1.2	2.71-1.2	2.9-1.4	<0.001

SD: Standard deviation

questions) 3<sup>rd</sup> ( $p=0.009$ ), 4<sup>th</sup> ( $p=0.03$ ), 16<sup>th</sup> ( $p=0.01$ ) of DFS and 1<sup>st</sup> ( $p=0.004$ ) of MDAS which did not affect the general outcomes of the questionnaires (Table 5).

## Discussion

The presence of anxiety and fear for dentistry continues to exist despite the advances in clinical practice and pain can be controlled more effectively and has a negative impact on the quality of life (20,21). Dental fear is a major factor in postponing and canceling a dental appointment (22). It has been reported that individuals with high dental anxiety were more likely to have more missing teeth, more caries, and worse oral hygiene in comparison to non-anxious individuals (23,24). On the other hand, most of the patients tend to associate dental fears with a painful experience in childhood and negative staff behavior (25-28).

In this study, the MDAS and the DFS, which are among the most frequently used scales in determining the level of dental anxiety and fear in adults, were used (19,29). The dental anxiety levels of the students from different faculties were measured and compared, and it was concluded that the dental anxiety scores of the dentistry students were generally lower than the other three groups medicine, health-related other and other. Similarly, Al-Omari and Al-Omiri (30) evaluated the relationship between university students' fields of education and dental anxiety on 535 participants, and it was reported that medical and engineering faculty students had higher dental anxiety values than dentistry faculty students.

On the other hand, another study conducted in Turkey reported that students of other faculties and dentistry faculties had no statistically significant difference between their levels of dental anxiety (31). However, even though the study was performed with

751 participants, it did not include dentistry students in their first and second years, and this might have affected the final outcomes of their study. Besides, in this study, 993 students were included, whereas other studies generally did not include adequate numbers of participants to have statistically significant results.

While comparing the levels of anxiety between the dentistry students and other students, the effect of dentistry education on the pre-clinical students' and dental clinical students' evaluation of dental anxiety was evaluated, and it was revealed that there was no significant difference in anxiety between the two groups ( $p>0.05$ ). However, statistically significant outcomes were observed only in general fear-related questions ( $p<0.05$ ). In contrast to this result of this study, some studies concluded that dental anxiety decreased with increasing levels of dentistry education (32-35). On the other hand, there is a study which revealed that dental anxiety increased as the level of education increased (34). In the literature, it was stated that education coped with anxiety and reduced the level of anxiety of adolescents (36-39). However, in dentistry, pre-clinical education has become very similar to clinical dentistry education due to phantom or virtual laboratories reflecting the real clinical conditions. Moreover, pre-clinical students have a higher chance to visit the dentistry clinics at their faculties, and this phenomenon might also have affected the final outcome.

## Conclusion

In this study, two of the most frequently preferred questionnaires on the topic were included, and the results were promising. According to the statistical analyses of the results, the dental anxiety levels of the dentistry students were significantly lower than those of the students of other departments. Moreover,

**Table 5. Significant differences were observed in a few questions between pre-clinic dental students and dental clinic students**

Questions	Pre-clinic dental students	Dental clinic students	p
	Mean-SD	Mean-SD	
Question 1 in MDAS	1.77-0.9	2-1.1	0.004
Question 3 in DFS	2.01-0.9	2.1-1	0.009
Question 4 in DFS	1.66-0.8	1.85-0.8	0.03
Question 16 in DFS	1.89-1.1	1.64-0.9	0.01

MDAS: Modified Dental Anxiety scale, DFS: Dental Fear scale, SD: Standard deviation

as opposed to the general case in the literature, we report that the dentistry students did not reveal significantly different scores based on whether they were in the pre-clinical education period or dental clinic period.

### Ethics

**Ethics Committee Approval:** Ethical Approval was given by Bezmialem Vakıf University Non-Interventional Research Ethics Committee (decision no: 10/114, date: 05.11.2019).

**Informed Consent:** Informed consent forms were collected from the each participant.

**Peer-review:** Externally and internally peer-reviewed.

### Authorship Contributions

Concept: T.Y., R.B., Design: T.Y., R.B., Supervision: T.Y., Fundings: T.Y., E.D.Ş., R.B., Materials: R.B., Data Collection or Processing: T.Y., R.B., Analysis or Interpretation: E.D.Ş., Literature Search: T.Y., R.B., Critical Review: T.Y., E.D.Ş., R.B., Writing: T.Y., E.D.Ş., R.B.

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