



# Stress, Anxiety, and Depression and Their Related Factors Among Dental Students: A Cross-Sectional Study from Southeast of Iran

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## Abstract

**Background:** Dental students are exposed to various stressors that are related to treatment procedures, training, and administrative challenges in the college.

**Objectives:** The aim of this study was to assess the stress, anxiety, and depression levels of dental students and their relationships with demographic factors.

**Methods:** This was a descriptive-analytical cross-sectional study on 297 dental students enrolled at the Kerman University of Medical Science in 2015 - 2016. The stress, anxiety, and depression levels were measured using the depression anxiety stress scale-21 (DASS-21). Data on demographic characteristics were also obtained. The statistical analysis was carried out by SPSS (version 11.0) using the chi-squared test.  $P < 0.05$  was set as the level of significance.

**Results:** The mean age of the participants was  $23.80 \pm 1.2$  years; 58.9% were female, 88.9% were married, and 33.7% were dormitory students. Free education was provided for 64% of the students while the others were charged a tuition fee. The prevalence rates of moderate to extremely severe levels of stress, anxiety, and depression were 39.7%, 39.4%, and 35.7%, respectively. Stress, anxiety, and depression were not significantly associated with the year of academic study, gender, marital status, and place of residence ( $P > 0.05$ ). The students with higher scores in the entrance exam who were free of charge presented significantly higher levels of severe-to-extremely severe stress and depression ( $P = 0.003$  and  $P = 0.033$ , respectively) than students who were charged tuition fees.

**Conclusions:** Based on the findings of the present study, the high prevalence of depression, anxiety, and stress among dental students in Kerman is alarming. This emphasizes the need for interventions, with the development of appropriate support services for this group. However, further studies should be conducted to find major sources of depression, anxiety, and stress.

**Keywords:** Depression, Anxiety, Stress, Dental students

## 1. Background

Stress occurs when the pressure and demands of the environment (both real and unreal) exceed the individual ability (1, 2). Favorable levels of stress increase a student's learning ability, while high levels lead to adverse consequences (3).

Communication problems that likely lead the individual to feel isolated, lonely, confused, and anger, play a significant role in inducing stress. Therefore, education of communication methods and coping with loneliness can help relieve stress. Stress can lead to depression, anxiety, misbehavior, an excessive number of absences, reduced productivity/output per working hour, and job burnout (2,

4). The most adverse effect of long-term stress is executive function deficit and hampering the ability to think and learn (5). It has been reported that dental students show higher levels of stress-related mental problems and mood disorders compared to other clinical groups (6, 7). According to Garbee et al. dental students are required to learn a great deal of information in different fields in a limited time. It may cause the person to feel that he/she is unable to cope with the situation and hence, stress is induced (6). The alarming prevalence of mental, depressive, and mood disorders, as well as occupational burnout, has been observed among dental students in Europe (1, 2). In addition, the high level of stress can lead to reduced students' per-

formance (8, 9). In a study by Koh et al. high levels of IL-2 were found in students who experienced high levels of stress. The result showed the effect of stress on the function of the immune system (10).

Various studies have identified stress sources among dental students. Time and schedule pressure, examinations, assigned workload, clinical issues, and educational costs are some of the mentioned stressors (11-14). In a study by Polychronopoulou and Divaris, performance pressure, workload, and self-efficacy beliefs were the most significant concerns among dental students from different countries (15). Personality variations, emotional intelligence, and social support (16) are the other factors that affect and modify stress response. Socio-cultural and gender factors may make a difference in response to stress (15). Factors such as class size, tuition payment, and education program (curriculum/the method of teaching/learning, and evaluation of students) are also related to stress responses (15, 17).

Eremsoy et al. observed that anxiety and depression are significantly linked to each other (18). Considering the association of stress and anxiety with performance and the health of dental students, the recognition of stress sources and providing specific measures to reduce the stress levels are of utmost importance.

## 2. Objectives

The aim of this study was to assess the relationship of stress, anxiety, and depression with demographic factors among dental students in Kerman University of Medical Sciences.

## 3. Methods

This descriptive-analytical cross-sectional study was conducted on 297 dental students attending the School of Dentistry, Kerman University of Medical Sciences in 2015 - 2016. The selection of the students was based on a census. The list of the students was provided by the educational affairs office. Before the questionnaires were distributed to the participants, the objectives of the study had been explained to the students and they had been well informed that the results of the study would have no impact on their education and the information provided by them would remain strictly confidential. The inclusion criteria were the satisfaction of the students with participation in the study. The qualifying students did not enter the study.

The data collection tool was a two-part questionnaire including demographic data (age, academic year, gender, marital status, residence place, and tuition fee status) and

the Persian version of depression anxiety stress scale-21 (DASS-21). This questionnaire contains 21 questions. Each item is scored on a 4-point Likert scale from zero (does not apply to me at all) to 3 (applies to me very much). For each questionnaire, an overall score was calculated separately for stress, anxiety, and depression. The categorization of the scores obtained by the questionnaire is presented in Table 1 (19).

The validity of DASS-21 for the Iranian population was confirmed by Sahebi et al. (20). Different studies in Iran also proved the validity and reliability of this questionnaire (21-23). The internal consistency of the scale was calculated by Cronbach's alpha as 0.83 for stress, 0.74 for anxiety, and 0.84 for depression domains. The questionnaires were distributed by a well-trained student in a session and collected after 20 minutes.

The relationships between the level of stress, anxiety, and depression and variables such as the academic year, gender, marital status, the place of residence, and tuition fee status were evaluated using chi-square test. The obtained data were statistically analyzed by SPSS version 11. In the initial analysis of the data, we focused on obtaining basic descriptive statistics as the measures of central tendency and dispersion. The ethical code IR.KMU.REC.1393.235 was assigned to this study.

## 4. Results

In this study, 297 questionnaires were completed and returned (response rate of 100%). The mean age of the participants was  $23.80 \pm 1.2$  years. Overall, 58.9% of the participants were female, 88.9% were married, and 33.7% were dormitory students (Table 2). Free education was offered for 64% of the students while the others were charged a tuition fee. The levels of anxiety, stress, and depression in the participants are summarized in Table 3. The severe and extremely severe levels of anxiety, stress, and depression were seen in 25.3%, 17.5%, and 12.8% of the students, respectively.

As shown in Table 3, the students with higher scores in the entrance exam, who were free of charge, presented significantly higher levels of severe-to-extremely severe stress and depression ( $P = 0.003$  and  $P = 0.033$ , respectively) compared to students who were charged tuition fees (Table 4). No significant relationship was found between the levels of anxiety, stress, and depression and demographic variables such as the year of academic study, gender, marital status, and place of residence ( $P > 0.05$ ).

**Table 1.** The Categorization of Scores Obtained by the DASS-21 Questionnaire

Variable	Normal	Mild	Moderate	Severe	Extremely Severe
Stress	0 - 14	15 - 18	19 - 25	26 - 33	34+
Anxiety	0 - 7	8 - 9	10 - 14	15 - 19	20+
Depression	0 - 9	10 - 13	14 - 20	21 - 27	28+

**Table 2.** The Demographic Characteristics of the Participants

Variable	No.	Percentage
<b>Academic year</b>		
One	54	18.2
Two	41	13.8
Three	61	20.5
Four	34	11.4
Five	37	12.5
Six	64	21.5
No answer	6	2
<b>Gender</b>		
Male	113	38
Female	175	58.9
No answer	9	3
<b>Marital status</b>		
Single	32	10.8
Married	264	88.9
No answer	1	0.3
<b>Residency</b>		
Dormitory	100	33.7
Non-dormitory	192	64.6
No answer	5	1.7
<b>University fees</b>		
Free charge	190	64
With tuition fee	106	35.7
No answer	1	0.3

## 5. Discussion

High-level stress is a common and potentially widespread concern. It is estimated that stress is the trigger of 75% of physical diseases. It plays a significant role in dissatisfaction, restlessness, and frustration. On the other hand, increases in cardiovascular diseases, malignancies, and drug addiction are inextricably linked to a progressive increase in the frequency and intensity of stress and tension (24).

Researchers have stated that the dental profession is

one of the most stressful jobs (25). To become a responsible dental professional, students have to reach high levels of academic knowledge in various fields in a relatively short period and deal effectively and quickly with patients' concerns (26). The competitive nature of the dental school is also stressful (7). An inverse relationship has been observed between stress and academic performance (9). The results of the previous studies have shown that health professions students including dentistry and medicine students are susceptible to stress and similar psychological disturbances (27-30).

In addition, pressure can also contribute to placing students at a higher risk of psychological problems (31). According to Galen et al. study, a significant association was found between burnout and depression, and suicide prevalence in dental students (32).

Based on the results of the present study, the rate of students presenting severe and extremely severe levels of stress was higher than the results reported by Amini et al. (14), Shahravan et al. (33), and Shahbazi Mogadam et al. (34). However, in the study of Bolhari et al. on 400 medical students of Iran and Tehran Universities of Medical Sciences, 24.8% had high levels of stress, which was higher than our findings (24). The differences may be due to the sample size, the method of data collection, the used questionnaire, changes in curricula, and different teaching methods and facilities among various colleges.

In a study conducted on the students of four Universities of Medical Sciences in Tehran, the prevalence of stress was 40.7% (35). Due to the high prevalence of stress among dental students in Kerman and serious adverse effects of these tensions, exploring stress sources and coping strategies seems essential.

Because of the increasing number of dentists, a lack of job security is conceived due to a drop in demand for dentists' technical skills. According to the study of Tangade et al. one of the main causes of senior students' stress is finding a suitable job position after graduation (36). Moreover, different studies showed that third-year students had higher levels of academic stress than any other year-groups because of limited clinical experience in clinics (28, 37, 38). However, in the present study, there was no significant difference between students' academic year

**Table 3.** The Frequency of Anxiety, Stress, and Depression in Dental Students at KMUS<sup>a</sup>

Variable	Severity				
	Normal	Mild	Moderate	Severe	Extremely Severe
Anxiety	128 (43.1)	52 (17.5)	42 (14.1)	26 (8.8)	49 (16.5)
Stress	128(43.1)	51 (17.2)	66 (22.2)	40 (13.5)	12 (4.0)
Depression	148(49.8)	43 (14.5)	68 (22.9)	23 (7.7)	15 (5.1)

<sup>a</sup>Values are expressed as No. (%).

**Table 4.** The Comparison of Anxiety, Stress, and Depression Frequency Among Dental Students According to Their Educational Status<sup>a</sup>

Variable	Severity					Total	P Value <sup>b</sup>
	Normal	Mild	Moderate	Severe	Extremely Severe		
<b>Anxiety</b>							0.24
Charge -	79 (41.6)	33 (17.4)	31 (16.3)	20 (10.5)	27 (17.4)	190 (100)	
Charge +	48 (45.3)	19 (17.9)	11 (10.4)	6 (5.7)	22 (20.8)	106 (100)	
Total	127 (42.9)	52 (17.6)	42 (14.2)	26 (8.8)	49 (16.6)	296 (100)	
<b>Stress</b>							0.033
Charge -	81 (42.6)	38 (20.0)	43 (22.6)	25 (13.2)	3 (1.6)	190 (100)	
Charge +	46 (43.4)	13 (12.3)	23 (21.7)	15 (14.2)	9 (8.5)	106 (100)	
Total	127 (42.9)	51 (17.2)	66 (22.3)	40 (13.5)	12 (4.1)	296 (100)	
<b>Depression</b>							0.003
Charge -	89 (46.8)	33 (17.4)	52 (27.4)	10 (5.3)	6 (3.2)	190 (100)	
Charge +	58 (54.7)	10 (9.4)	16 (15.1)	13 (12.3)	9 (8.5)	106 (100)	
Total	147 (49.7)	43 (14.5)	68 (23.0)	23 (7.8)	15 (5.1)	296 (100)	

<sup>a</sup>Values are expressed as No. (%).

<sup>b</sup>Chi-square test result.

and the levels of stress, anxiety, and depression. The result is consistent with the study by Shahravan et al. on dental students in Kerman (33) and other similar studies (26, 37).

In the present study, consistent with some other studies, men and women showed no difference in stress levels (4, 11-13). However, in this context, the results are controversial (16, 36).

In line with various similar studies, we found no significant difference in stress, anxiety, and depression between single and married students (33, 39). However, there are some inconsistent results in this matter (4, 40). The reason for this discrepancy may be related to major cultural differences among nations and cities.

According to some studies, students regain their psychological stability while living at home with their parents (38). However, in the present study, similar to the study by Shahravan et al. living in dormitories had no significant effect on students' stress, anxiety, and depression (33). In addition, in the study by Sedky, students who lived away from the security of their families had higher levels of stress (38).

The students with better grades in the entrance exam, who were studying free of charge, presented significantly higher levels of severe-to-extremely severe stress and depression compared to the students who were charged tuition fees. It seems that competitive pressure to achieve good grades and being worried about grades may lead to high stress. It is beneficial for the students to know how to cope with stress and help themselves to have a better quality of life. Authorities should consider effective support services such as counseling and stress management courses in this regard.

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#### Footnotes

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Mahsa Mahdian; analysis and interpretation of data: Niloofer Shadman, Maryam Raof, Sara Amanpour; drafting of the manuscript: Niloofer Shadman, Maryam Raof, Sara Amanpour; critical revision of the manuscript for important intellectual content: Niloofer Shadman, Maryam Raof, Jahangir Haghani; study supervision: Jahangir Haghani, Molouk Torabi Parizi.

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