Investigating the Levels of Depression, Anxiety, Stress, and Clinical Environment Stressors among Dental Students at Islamic Azad University of Shiraz in 2023

Abstract

Introduction

Common psychiatric disorders and stressors among dental students can predispose them to other psychological problems. The present study was conducted with the aim of determining the levels of depression, anxiety, stress, and stressors in dental students at Azad University of Shiraz.

Materials & Methods

The present study was descriptive-cross-sectional in design, and the study population comprised all dental students at the Islamic Azad University of Shiraz. The research sample consisted of 112 clinical-level students who were selected through census sampling; ultimately, 83 students completed the questionnaires. Data collection instruments included a demographic information questionnaire, the Depression, Anxiety and Stress Scale (DASS-42), and the Dental Environment Stressors (DES) questionnaire. Data were analyzed using SPSS software version 23, employing descriptive statistics.

Findings

The mean scores for depression, anxiety, and stress among the study samples were 84.48 ± 9.02, 11.17 ± 8.11, and 13.38 ± 9.59, respectively. These three variables demonstrated significant positive correlations with one another. Furthermore, regarding clinical environment stressors, the highest score was observed for the clinical education domain (22.01 ± 7.00), whereas the lowest score pertained to the academic factors domain (2.3 ± 0.86).

Conclusion

Based on the findings of the present study, it can be concluded that clinical-level dental students experience varying degrees of stress, anxiety, and depression, with stressors inherent to clinical education environments playing a significant role in the development of these disorders. Therefore, it is imperative for relevant authorities to conduct more precise pathological assessments of these disorders and to incorporate necessary considerations into educational policy-making.

Keywords: Anxiety; Depression; Stress; Stressors; Clinical Environment; Dental Students

Introduction

Psychological disorders represent conditions that not only increase the burden of disease and impose significant strain on society but also contribute to the impairment of individual and social functioning (1). Among these, anxiety, depression, and stress are recognized as the most prevalent mental health challenges affecting university students. Dental students, in particular, encounter these challenges more acutely as a result of the rigorous demands of clinical training, the pressure associated with clinical responsibilities, and the necessity of direct patient interaction (2). Consequently, dental education is regarded as a profoundly stressful educational process (3).

The prevalence of depression, anxiety, and stress among dental students has been reported in the literature as 52%, 57%, and 55%, respectively, with fifth-year students—those in the closest proximity to the commencement of clinical practice—exhibiting higher levels of depression compared to students in other academic years. This finding substantiates the notion that the transition from theoretical education to clinical training, accompanied by the exigencies of performing clinical procedures, direct patient contact, and the assumption of treatment responsibility, constitutes a substantial source of stress and psychological strain (4). In addition to the pressures of clinical workload and assignments, the structure of the educational/clinical environment and the psychosocial conditions of students have also been identified as important sources of stress. Accordingly, it can be asserted that the clinical environment represents one of the primary sources of stress for these students (5). The findings of a study conducted by Radeef et al. identified academic and personal factors as stress producing agents among dental students, which in turn precipitate psychological distress (6). Furthermore, stress can give rise to various physical and mental health problems (7), which in turn result in diminished learning efficacy (8). It can also exert negative effects on health, quality of life, academic achievement, and students' readiness to assume their professional roles. Consequently, attention to stress, its associated consequences, and the development of appropriate strategies for its mitigation are of paramount importance (9).

Depression is defined as "a common mental disorder" characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feeling of tiredness, and poor concentration. This condition may be "long-lasting or recurrent" and can substantially impair an individual's capacity to

function in occupational or academic settings, or to cope with daily life (10). Anxiety disorders, likewise, are considered the most prevalent mental illnesses worldwide and have significantly contributed to the global burden of mental disease (11). Given the demanding academic and clinical nature of their training, coupled with the responsibilities inherent in patient care, dental students may experience considerable anxiety (12), which can consequently exert adverse effects on clinical performance. Neglect of these disorders may culminate in diminished quality of education and clinical services, professional burnout, reduced commitment, and even dental students attrition (13).

Therefore, in light of the aforementioned points, the importance of clinical training in shaping the core skills and professional competencies of dental students, the impact of the aforementioned disorders on clinical education, the necessity of effectively coping with clinical environment stressors, and the recognition that stressors may vary across different clinical settings, the present study was conducted with the aim of determining the levels of depression, anxiety, stress, and stressors among dental students at the Islamic Azad University of Shiraz.

Materials and Methods

The present study was a descriptive cross-sectional study conducted in 2023. The study population comprised all dental students at the Islamic Azad University of Shiraz. The study was conducted following the acquisition of an ethics code from the University Ethics Committee, obtaining informed consent from participants for their involvement in the research, explaining the research objectives to participants and the voluntary nature of participation, and assuring them of the confidentiality of their personal information and that the data would be used solely for research purposes.

Inclusion criteria comprised being enrolled in the clinical stage of dental education and providing consent to participate in the study. Exclusion criteria included unwillingness to participate in the study and incomplete completion of the questionnaires. Samples were selected from among students enrolled in the clinical stage and were included in the study. A total of 112 students were recruited using the census sampling method, of whom 83 ultimately completed the questionnaires. Data collection instruments included a demographic information questionnaire, the Depression, Anxiety and Stress Scale (DASS-42), and the Dental Environment Stressors (DES) questionnaire.

The DASS-42 is designed to measure depression, anxiety, and psychological distress, with the capacity to detect and screen for symptoms of depression, anxiety, and stress experienced over the preceding week. This scale was developed for adult populations and is scored on a 4-point Likert scale (0 = "did not apply to me at all," 1 = "applied to me to some degree, 2 = "applied to me to a considerable degree" and 3 = "applied to me very much"). The depression subscale comprises items assessing dysphoric mood, self-depreciation, hopelessness, devaluation of life, lack of interest/involvement, anhedonia, and inertia. The anxiety subscale includes items evaluating physiological hyperarousal, situational anxiety and fears. The stress subscale encompasses items related to difficulty relaxing, nervous arousal, irritability, and impatience (14).

Each of the depression, anxiety, and stress subscales comprises 14 items. The depression subscale score is obtained by summing the scores of items 3, 5, 10, 13, 16, 17, 21, 24, 26, 31, 34, 37, 38, and 42. The anxiety subscale score is obtained by summing the scores of items 2, 4, 7, 9, 15, 19, 20, 23, 25, 28, 30, 36, 40, and 41. The stress subscale score is obtained by summing the scores of items 1, 6, 8, 11, 12, 14, 18, 22, 27, 29, 32, 33, 35, and 39. The results obtained from each of the three aforementioned subscales were interpreted according to the following table:

The results of each of the three subscales were classified according to the table below:

Category	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Sever	21-27	15-19	26-33
extremely severe	28 and above	20 and above	34 and above

Samani and Joukar reported a test re-test reliability of 0.80, 0.76, and 0.77, and Cronbach's α values of 0.81, 0.74, and 0.78 for the depression, anxiety, and stress subscales, respectively (15).

The DES questionnaire was used to determine clinical environment stressors. This questionnaire consists of 32 items across 6 domains: academic efficacy (2 items), patient treatment (4 items), internal beliefs (4

items), academic factors (1 item), clinical education (11 items), and other items (4 items). It is employed to identify and classify stressors within the dental school environment. The questionnaire is scored on a 4-point Likert scale ranging from 1 to 4, where 1 = no stress, 2 = low stress, 3 = moderate stress, and 4 = severe stress. The validity and reliability of this questionnaire were estimated as 0.85 in the study by Kazemi and Bakhshi (2011) (16).

Finally, data were analyzed using SPSS software version 23, employing descriptive statistics including mean, median, absolute and relative frequencies, and so forth.

Findings

The findings of the present study revealed that the majority of participants were female (54.22%) and single (74.7%). The mean age of participants was 26.79 ± 2.93 years. most students (47%) resided with their parents. Concerning parental education and occupation, the majority of mothers (69.9%) had education beyond high school diploma, and most mothers (51.8%) were housewives. Furthermore, the majority of fathers (81.9%) had education beyond high school diploma, and most of them (33.7%) were retired. The majority of participants (54.2%) reported having good economic status and the vast majority (86.7%) reported no history of psychiatric illness. Additionally, most participants (67.5%) had no history of participation in psychotherapy sessions, and 83.1% reported no history of psychiatric hospitalization, psychotropic drug use, or alcohol consumption. The absolute and relative frequency distribution of the study participants according to demographic variables is presented in Table 1.

The mean depression score of the study samples was 11.48 ± 9.00, their mean anxiety score was 11.17 ± 8.84, and their mean stress score was 13.38 ± 9.59 (Table 2).

According to the research findings, the three variables of depression, anxiety, and stress demonstrated significant positive correlations with one another. Additional relevant information in this regard is presented in Table 3.

Regarding clinical environment stressors, the highest score was observed for the clinical education domain (22.01 ± 7.00), whereas the lowest score pertained to the academic factors domain (2.3 ± 0.86). The scores of other stressors are mentioned in Table 4.

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Table 1: Absolute and Relative Frequency Distribution of study participants in terms of other Demographic variables.

Variable		Absolute frequency	Relative frequency	Total
Residence	Independent living	35	42.2	83
	Living with parents	39	47	
	Living with spouse	9	10.8	
Mothers education	Primary education/lower secondary education	8	9.6	83
	High school/Diploma	17	20.5	
	Post secondary education	58	69.9	

Mothers occupation	Housewife	43	51.8	83
	Employed	7	8.4	
	Retired	25	30.1	
	other	8	9.6	
Fathers education	Primary education/lower secondary education	6	7.2	83
	High school/Diploma	9	10.8	
	Post secondary education	68	81.9	
Fathers occupation	Self-employed	27	32.5	83
	Employed	17	20.5	
	Retired	28	33.7	
	Other	11	13.3	
Economic status	Disadvantaged	13	15.7	83
	Moderate	25	30.1	
	Advantaged	45	54.2	
History of mental illness	Yes	11	13.3	83
	No	72	86.7	
History of psychotherapy attendance	Yes	27	32.5	83
	No	56	67.5	
History of psychiatric hospitalization and substance/alcohol use	Yes	14	16.9	83
	No	69	83.1	

Table 2: Absolute and Relative Frequency Distribution of Study Participants in terms of Severity of Depression, Anxiety, and Stress.

Variable	Severity	Number	Percent	Mean	Total number
Depression	Normal	40	48.2	11.48 ± 9.00	83
	Mild	11	13.3		
	Moderate	19	22.7		
	Sever	6	7.2		
	Very severe	7	8.4		
Anxiety	Normal	35	42.2	11.17 ± 8.84	83
	Mild	8	9.6		
	Moderate	16	19.2		
	Sever	5	6		
	Very severe	19	22.9		
Stress	Normal	52	62.7	13.38 ± 9.59	83
	Mild	9	10.8		
	Moderate	14	16.9		
	Sever	5	6		
	extremely severe	3	3.6		

According to the results presented in the above table, the mean depression, anxiety and stress score of the study samples was 11.48 ± 9.00, 11.17 ± 8.84, and 13.38 ± 9.59 respectively.

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Table 3: Correlation of Depression, Anxiety, and Stress among Study Participants.

Variable		Depression	Anxiety	Stress
Depression	**r**	1	0.9 **	0.67 **
	p- value	-	0.001	0.001
Anxiety	**r**	-	1	0.66 **
	p- value	-	-	0.001
Stress	**r**	-	-	1
	p- value	-	-	-

** Correlation is significant at the 0.01 level (99% confidence)

The results of the above table indicate that depression, anxiety, and stress among students demonstrate significant positive correlations with one another.

Table 4: Mean and Standard Deviation of Perceived Stressor Scores.

Perceived stressor factor	Mean ± SD	**Median**	**Minimum**	**Maximum**	**Number**
Academic efficacy	**16.35±3.6**	**17**	**4**	**25**	**83**
Patient treatment	**8.1±2.6**	**8**	**4**	**13**	**83**
Internal beliefs	**8.16±3.3**	**21**	**4**	**16**	**83**
Academic factors	**2.3±0.86**	**2**	**1**	**4**	**83**
Clinical education	**22.01±7**	**21**	**11**	**37**	**83**
Other items	**7.96±2.8**	**8**	**4**	**14**	**83**
Total score	**64.59±17.4**	**62**	**39**	**92**	**83**

According to the above table, the highest mean stress score pertains to the clinical education domain (22.01 ± 7.00), while the lowest pertains to the academic factors domain (2.3 ± 0.86).

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Discussion

Dental students represent a population that, by virtue of the nature of their discipline, are exposed to a range of psychological disorders, including depression, anxiety, and stress. Aside from the educational environment stresses arising from the occupational nature of dentistry, they are also exposed to stressors related to the clinical environment. Therefore, the present study was conducted with the aim of determining the levels of depression, anxiety, stress, and clinical environment stressors among dental students at the Islamic Azad University of Shiraz.

The results of the present study showed that some clinical-level students experienced varying degrees of depression, ranging from mild to extremely severe. Shadman et al. (2019) conducted a study in southeastern Iran and demonstrated that 40% of dental students suffered from depression (17). Farouq et al. (2021) conducted a study in Bangladesh and similarly indicated that 27.4% of the dental students studied suffered from moderate to severe depression (18). These findings are consistent with the results of the present study. Depression has numerous physical and psychological consequences and can lead to physical illnesses, mood disorders, fatigue, and … that can affect individuals' performance and consequently result in impaired learning and poor clinical performance among students.

Furthermore, according to the findings of the present study, more than half of the participating students suffered anxiety of varying severity. The research findings of Morales Montoya et al. (2022) in Lima also demonstrated that dental students experience high levels of anxiety (19). The results of Farouq et al. (2021) showed that 18.2% of dental students in Bangladesh suffered from anxiety (18). These findings were found to be consistent with the results of the present study.

Regarding the stress levels of the participating students, the results of the present study indicated that nearly half of the students experienced stress at various levels ranging from mild to extremely severe. The study by Shehada et al. (2023), conducted under the title "Major Stress Sources Among Dental Students at Damascus University," showed moderate stress levels among students (20). The results of Madhavan et al. (2022) in India also confirm that dental students in internship endure greater stress (21). Therefore, according to these findings, it can be stated that the causes of stress and anxiety in dental students are primarily related to educational and clinical factors. Furthermore, clinical requirements and patient interaction during clinical training years, the need for sophisticated technical skills, and fear of making mistakes during treatment significantly contribute to psychological stress, as this phase of education is directly connected to patient health and satisfaction and can induce psychological pressures. Therefore, these findings highlight the necessity of employing psychological support programs within the educational settings.

On the other hand, the findings regarding clinical environment stressors indicated that the highest mean stressor score pertained to the clinical education domain. This finding is consistent with the results of Jokar et al. (2020), which was conducted under the title "Psychological Stress and Stressors among Clinical Dental Students at Shiraz School of Dentistry" and demonstrated that among clinical environment stressors, the clinical education factor accounted for the highest percentage (22). Hashemipour et al. (2022) in a qualitative study reported factors such as reprimand and lack of time as the most common causes of clinical stress (23), which are subcategories of the clinical education domain in the questionnaire used. In the present study, among the stressors within the clinical education domain, the item pertaining to "the atmosphere created by faculty in the clinic" emerged as the most significant stressor, accounting for 18.3% of responses in this domain. This finding underscores the pivotal role of faculty behavior in occurrence of student stress.

In the present study, the academic efficacy factor was the second most significant clinical environment stressor. This finding is also consistent with the results of other studies, including the research by Mahdizadeh et al. (2014) in Babol, Maria et al. (2012) in France, and Akbari et al. (2011) in Mashhad (24-

26). The results of the study by Rabiei and Safarpour (2017) titled "Assessment of Dental Environment Stress and Related Factors in Dental Students" conducted at Guilan University of Medical Sciences showed that among all clinical environment stressors, the highest mean stress score was related to full fear of examinations and grades (27), which falls within this same domain.

Furthermore, according to the findings of the present study, internal beliefs and patient treatment were ranked almost equally, representing the most important stressors after academic efficacy among the study samples. Among factors related to internal beliefs, the item "self-depreciation about becoming a successful dentist in the future" was the most significant stressor. Among clinical environment stressors in the present study, the academic factor was ranked last, and this domain was found to be least significant in creating stress among dental students.

In general, it can be stated that having a low level of stress can help students perform more appropriately, but severe stress can elevate an individual's anxiety to a point that causes impairment in learning and performance (28). Therefore, it is necessary to conduct a more precise pathological assessment of the aforementioned disorders, as analysis of these factors and the true nature of pressures can pave the way for designing preventive and supportive strategies such as revising the educational structure, reducing unnecessary workload, providing psychological support, and raising awareness.

Among the limitations of the present study was the limited number of samples, and it is necessary for future research to be conducted on a broader population with a larger sample size.

Conclusion

According to the findings of the present study, clinical-level dental students at the Islamic Azad University of Shiraz experience various levels of stress, anxiety, and depression, with stressors from clinical education environments contributing to the development of these disorders. Therefore, it is necessary to conduct a more precise pathological assessment of the aforementioned disorders, and efforts to ameliorate these contributing factors warrant the attention of authorities. In light of the results obtained from this investigation and corroborating evidence from similar studies, clinical-level dental students require enhanced support from authorities, faculty members, and educational personnel. Moreover, the implementation of educational workshops focusing on interpersonal communication skills and associated challenges seems to be an important step in this regard. Conducting entry screening of students to identify vulnerable students provides an opportunity to develop initial screening programs for students and monitor vulnerable groups identified based on screening results.

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