

Original Article

Status of Anxiety, Depression, and Stress among the Pre-Clinical Students of Dentistry in Jamshoro, Sindh, Pakistan

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ABSTRACT

Background: Mental health issues such as stress, anxiety, and depression are increasingly recognized as significant challenges among dental students globally. These issues can impact their academic performance and overall well-being, necessitating a deeper understanding within the context of dental education.

Objective: This study aimed to assess the prevalence of depression, anxiety, and stress among pre-clinical dental students at the Institute of Dentistry, Liaquat University of Medical and Health Sciences, Jamshoro, and to explore any potential gender differences in these mental health parameters.

Methods: A cross-sectional study was conducted using convenience sampling to recruit first and second-year BDS students, both male and female, aged 18-22 years. The Depression, Anxiety, and Stress Scale-21 (DASS-21) was employed to evaluate the participants. Data was collected through Google's online software, ensuring confidentiality of participants' information. Descriptive statistics and chi-square tests were utilized for data analysis, using SPSS version 24.

Results: The study included 186 students, with an average age of 20.73±1.24 years. The gender distribution was 41% male and 59% female. The findings revealed that 87% of students had extremely severe anxiety levels, 45% had extremely severe depression, and 31% experienced extreme levels of stress. However, there was no statistically significant relationship between gender and levels of depression (P=0.333), anxiety (P=0.786), or stress (P=0.363).

Conclusion: The study highlighted a high prevalence of mental health issues among pre-clinical dental students, with particularly severe levels of anxiety. Despite no significant gender differences, the overall elevated levels of stress, anxiety, and depression point to the need for targeted mental health interventions in dental education programs.

Keywords: Dental Students, Mental Health, Depression, Anxiety, Stress, DASS-21, Pakistan.

INTRODUCTION

Psychiatric disorders are a leading cause of disability worldwide, emphasizing the importance of mental health in overall well-being (1). The World Health Organization (WHO) defines mental health as a state of mind that enables individuals to realize their potential, cope with life's normal stresses, work productively and fruitfully, and contribute positively to their community (2). Medicine, as a profession, demands dedication, hard work, and robust physical and psychological health due to its direct impact on human life (3). Studies indicate that dental students experience higher stress levels than the general population, with dental education being a significant stressor (1,4). Research shows a progressive increase in stress levels among dentistry undergraduates with each academic year (5). Stress can be triggered by various external physical or mental factors, impacting a person's health and psychological well-being (6).

Medical students' mental health and wellness are crucial, influencing their career trajectories (3,7). Transitioning from high school or college to a professional institution represents a significant life change, which can be challenging for many students to adapt to. The initial years in dental school, particularly the first two, are found to be the most stressful due to diverse learning environments, varied teaching and learning methods, increased academic demands, fear of failure, and heavy workload (3,8). Such factors can lead to stress and other mental health issues in susceptible individuals (7). Anxiety, stress, and depression are significant factors affecting

psychological wellness, with anxiety characterized by inner turmoil often accompanied by nervousness, physical symptoms, and obsessive thoughts (9).

Stress, which was first popularized by Selye in the 1950s (10), is a psychological or physiological response to environmental interactions, shaped by individual cognitive evaluations of stimuli. Stress is a complex phenomenon, heavily dependent on an individual's temperament, experiences, circumstances, and environment (12). Stress and anxiety symptoms, which are more common than depression, vary from mild to severe among Pakistani students (13).

Depression is a common psychiatric condition globally and a key aspect in evaluating mental health (14,15). Each year, approximately 350 million people suffer from depression (16). Young adults, particularly during their identity formation transition, are susceptible to stress and depression (17). College and university students face heightened risk due to academic and social pressures in preparing for professional careers (18–20). Factors contributing to student depression include increased academic responsibilities, adapting to new environments, and social life challenges (20).

Existing literature indicates a correlation between students' background factors and their mental health status. In Pakistan, few universities consider student mental health and well-being in their policies, and most university administrations have yet to prioritize this aspect. Therefore, this study aims to evaluate the levels of depression, anxiety, and stress in pre-clinical dental students at Liaquat University of Medical & Health Sciences, Jamshoro, using the DASS-21 scale.

MATERIAL AND METHODS

The research was conducted at the Institute of Dentistry, Liaquat University of Medical and Health Sciences (LUMHS), Jamshoro. Each participant provided informed consent before participation. The study utilized a convenience sampling method to recruit first and second-year Bachelor of Dental Surgery (BDS) students, encompassing both genders, aged between 18 and 22 years. Students who did not consent were excluded from the study. Data collection was facilitated through Google's online software. Participants were assured of the confidentiality of their personal information and identities before the commencement of data collection.

The data was gathered using a two-part validated questionnaire. The first section addressed sociodemographic variables such as age, gender, year of education, and place of origin (rural vs. urban), along with family socioeconomic status. The second section employed the Depression, Anxiety, and Stress Scale-21 (DASS-21), a widely recognized tool for evaluating depression, anxiety, and stress. The DASS-21 comprises seven items each for stress, anxiety, and depression, categorizing depression into normal (0–9), mild (10–13), moderate (14–20), severe (21–27), and extremely severe (28+); anxiety into mild (8–9), moderate (10–14), severe (15–19), and extremely severe (20+); and stress into normal (0–14), mild (15–18), moderate (19–25), severe (26–33), and extremely severe (34+)(21).

Data analysis was conducted using SPSS version 24. Qualitative characteristics, such as gender, education level, socioeconomic status (SES), place of residence, and levels of anxiety, depression, and stress, were presented in frequencies and percentages. The age of the participants was reported as Mean \pm Standard Deviation (SD). Chi-square tests were applied to assess the statistical significance of the relationships between gender and levels of stress, anxiety, and depression. A probability value of less than 0.05 was considered statistically significant.

RESULTS

The mean age was 20.73 ± 1.24 . Males were 41% and females were 59%. First year students were 24% and 2nd year students were 76%. The majority of students were from rural areas 66%. Poor students were 13% and Rich were 13% (Table-1).

Table 1 Descriptive statistics of demographic characteristics

Characteristics	Frequency (n=186)	Percent (%)	Mean Age
Gender			20.73 \pm 1.24
Male	77	41.4	
Female	109	58.6	
Education level			
First year	44	23.7	
Second year	142	76.3	
Residency			
Rural	122	65.6	

Characteristics	Frequency (n=186)	Percent (%)	Mean Age
Urban	64	34.4	
Socio-economic status			
Poor	25	13.4	
Middle class	136	73.1	
Rich	25	13.4	

Table 2 Descriptive statistics of levels of depression, anxiety and stress

Characteristics	Frequency (n=186)	Percent (%)
Depression level		
Moderate	52	28.0
Severe	50	26.9
Extremely Severe	84	45.2
Anxiety level		
Moderate	4	2.2
Severe	20	10.8
Extremely Severe	162	87.1
Stress level		
Normal	11	5.9
Mild	24	12.9
Moderate	49	26.3
Severe	43	23.1
Extremely Severe	59	31.7

Table 3 Relationship of gender with depression level

Gender	Depression Level			Total	p-value
	Moderate	Severe	Extremely Severe		
Male	26	19	32	77	0.333
	33.8%	24.7%	41.6%	100.0%	
Female	26	31	52	109	
	23.9%	28.4%	47.7%	100.0%	
Total	52	50	84	186	
	28.0%	26.9%	45.2%	100.0%	

Table 4 Relationship of gender with anxiety level

Gender	Anxiety level			Total	P-value
	Moderate	Severe	Extremely Severe		
Male	2	7	68	77	0.786
	2.6%	9.1%	88.3%	100.0%	
Female	2	13	94	109	
	1.8%	11.9%	86.2%	100.0%	
Total	4	20	162	186	
	2.2%	10.8%	87.1%	100.0%	

Table 5 Relationship of gender with Stress Level

Gender	Stress Level					Total	P-value
	Normal	Mild	Moderate	Severe	Extremely Severe		
Male	4	7	20	23	23	77	0.363
	5.2%	9.1%	26.0%	29.9%	29.9%	100.0%	
Female	7	17	29	20	36	109	
	6.4%	15.6%	26.6%	18.3%	33.0%	100.0%	
Total	11	24	49	43	59	186	
	5.9%	12.9%	26.3%	23.1%	31.7%	100.0%	

The majority of students were found as extremely severe level 87% followed by severe 11% and moderate level 2% in anxiety condition. Extremely severe level as 32% followed by moderate 26% and severe level 23% in stress condition (Table-2).

According to gender depression level was observed as moderate 34%, severe 25% and extremely severe 42%. There was insignificant relationship between gender and depression level ($P=0.333$) as shown in table-3.

According to gender anxiety level was observed as moderate 3%, severe 10% and extremely severe 88%. There was insignificant relationship between gender and anxiety level ($P=0.786$) as shown in table-4

According to gender stress level was observed as normal 5%, mild 9%, moderate 26%, severe 30% and extremely severe 30%. There was insignificant relationship between gender and stress level ($P=0.363$) as shown in table-5

DISCUSSION

In Pakistan, the undergraduate curriculum for dentistry spans four years, with the initial two years serving as general preparatory years common across all health colleges, focusing on basic, medical, and dental science subjects. Students transition directly from high school into dental programs, entering a highly competitive admissions process that selects only the top candidates based on performance indicators and grades (22). Throughout their dental education, students face ongoing competition, with a high emphasis on achieving above-average grades. This competitive environment, coupled with the need to assimilate a substantial volume of new information and technical skills, contributes to heightened stress levels. Indeed, dental education has been reported to be more stressful than medical education (22).

Dentistry students have been found to exhibit higher levels of stress, anxiety, and depression compared to their counterparts in other disciplines (23). Stress, arising from specific physical and psychological factors, is linked to the development of various disorders, including depression and anxiety (23, 24). Depression, characterized by persistent sadness and a loss of interest or pleasure, significantly impairs daily functioning in work and education. Anxiety manifests as tension, troubling thoughts, and physical changes.

This study revealed that a significant proportion of dentistry students experienced high rates of stress, anxiety, and depression, with over half presenting with abnormally elevated levels of these conditions. These findings parallel those observed in samples of dentistry and medical students in other studies (25), and are consistent with research on stress among Saudi Arabian dentistry students (25-27) as well as multiple studies focusing on depression (28, 29) and anxiety (29, 30) in dental students. Compared to students in other fields and the general population, dental students report higher levels of interpersonal sensitivity, anxiety, depression, and obsessive-compulsive disorders (31, 32). This elevated stress level could be attributed to the highly competitive nature of dental education, which demands exceptional performance both at admission and throughout the academic journey.

The intense academic and clinical demands, examinations, and grading criteria in dental education likely contribute to the high levels of stress, anxiety, and depression observed among these students (33). Rosal et al. (2019) noted that while depression levels among medical students are comparable to the general population upon enrollment, they significantly increase over the course of the program. Notably, dentistry students report psychological issues more frequently than medical students (29), with depression levels sometimes tripling the baseline (28).

Consistent with previous studies, this research found that female students reported higher levels of stress, anxiety, and depression, although there are exceptions (37, 38). Generally, female students often report higher levels of stress and anxiety (16, 26, 35), possibly due to inherent psychological differences, with females more prone to expressing their concerns and emotions.

The study's results indicated that 45%, 87%, and 31% of respondents experienced extreme levels of stress, anxiety, and depression, respectively. These figures align with Hossain MM's findings (39), which showed over 44% of students having extremely severe levels

of anxiety. Additionally, while the majority of students experienced mild depression, about 22% and 7% of students suffered from severe and extremely severe depression, respectively.

This study's strengths include its focus on a critical yet often overlooked aspect of dental education, providing valuable insights into the mental health challenges faced by dental students. The use of the DASS-21 scale, a well-established and reliable tool for assessing stress, anxiety, and depression, adds to the robustness of the findings. However, limitations include the use of convenience sampling and the restriction to a single educational institution, which may limit the generalizability of the results. The cross-sectional nature of the study also precludes establishing causality between the observed stress, anxiety, and depression, and the dental education environment. Implications of this research are significant, highlighting the need for mental health support systems within dental education institutions. It underscores the importance of implementing strategies to reduce stress and improve the well-being of dental students, which could have long-term benefits for their professional development and the quality of care they provide in their future careers.

CONCLUSION

The study conducted at the Institute of Dentistry, Liaquat University of Medical and Health Sciences, highlights a significant concern regarding the mental health of dental students. The findings revealed high levels of stress, anxiety, and depression among the participants, with a notable percentage experiencing extreme levels of these mental health issues. These results underscore the pressing need for comprehensive mental health support and interventions within dental education programs. Addressing these mental health challenges is not only crucial for the well-being of the students but is also essential for ensuring the quality of future dental professionals. The study calls for a systemic approach to create a more supportive educational environment that can mitigate the mental health burdens faced by dental students, thereby enhancing their academic experience and professional preparedness.

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