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Research Article

Prevalence of Anxiety, Depression, and Stress Among Medical Students at the University of Benghazi

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ABSTRACT

Anxiety, depression, and stress are significant indicators of student's mental health issues, and experiencing these symptoms can have a serious impact on individuals' well-being. This study aimed to assess the prevalence of anxiety, depression, and stress among medical students at the University of Benghazi in Libya. A cross-sectional study was conducted, using a web-based DASS-21 scale for data collection. The study included a sample of 741 medical college students, with 73.1% identifying as female and 26.9% as male. The findings revealed that 58.2% of females reported extremely severe anxiety, followed by 41.3% for stress and 40.5% for depression. Among males, 17.4% reported extremely severe anxiety, 14.0% reported depression, and 12.8% reported stress. In terms of age groups, the 19–21-year-old group had the highest rates of depression at 8.4%, followed by 13.5% and 8.9% for anxiety and stress, respectively. The 22–24 years old group had the highest rates of depression at 29.7%, anxiety at 38.9%, and stress at 28.6%. The study revealed that anxiety was more prevalent than both depression and stress among students aged 25 and older. Furthermore, the study investigated the factors contributing to these psychological issues and identified academic pressure, exhaustion, and poor time management as the primary causes of mental problems among students.

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1. Introduction

Almost everyone experiences stress, anxiety, and depression to some extent, and college students are certainly no exception as they make up a considerable portion of society [(1)]. The university years are a critical stage of development, during which most lifelong mental disorders tend to emerge. [2]. Numerous studies demonstrated that attending university is associated with a higher incidence of severe mental health issues and psychological disorders such as depression, anxiety, and stress, compared to the general population [3]. Thus, recognizing the signs of depression, anxiety, and stress is critical for maintaining good mental health, and failing to identify or promptly address these symptoms can have a detrimental impact on an individual [4]. Many college students report experiencing varying degrees of these challenges throughout their time in college for a variety of reasons. This is especially true for medical college students who face various of challenges and pressures during their academic journey. These pressures include a heavy academic workload, anxieties about exams, long work hours, a shortage of leisure time, intense competition, worries about meeting parental expectations, and financial strain [5,6]. Furthermore , depressive disorders and anxiety rank among the primary contributors to the global burden of disease and disability [7]. the existing body of literature on mental health issues indicates that students are under pressure to be ready for the challenges and increased responsibilities in the academic and social aspects of their lives. The prevalence and frequency of these issues vary across the globe due to various factors. Currently, mental health problems are considered a significant public health concern, contributing to one-third of disability worldwide [8]. The American Psychological Association notes that anxiety and depression are emotional responses that result in a similar range of symptoms. These symptoms include irritability, difficulty sleeping, muscle tension, and fatigue [6,7]. The Department of Health, Social Services and Public Safety highlighted that mental health refers to the psychological and spiritual resilience that enables individuals to manage everyday stress and enjoy life [9]. It is important to prioritize the mental health and positive social and emotional well-being of college students. These are not merely important in their own right, but also crucial to their physical health and academic success. “They play a crucial role in their overall well-being, academic performance, and competence throughout their lives” [10]. Mental health status is connected to behavioral patterns at all stages of life. Therefore, maintaining good mental health can help shield adolescents from engaging in risky behaviors such as substance abuse, crime, suicide, violence, and other behavioral problems [11]. Based on the above, this study aimed to estimate the prevalence of anxiety, depression, and stress among medical college students at the University of Benghazi, and identify the main underlying factors associated with these psychological issues. Therefore the research questions are:

1. What is the overall prevalence of depression, anxiety, and stress among students of medical colleges at the University of Benghazi?
2. What are the underlying factors causing anxiety, depression, and stress?

2. Methodology

2.1. Study design:

A descriptive cross-sectional web questionnaire-based study was conducted from February to May 2024. The study involved a voluntary sample of 741 students from the faculties of medicine, dentistry, pharmacy, public health, and biomedical sciences at the University of Benghazi, representing all academic years. Among the participants, 73.1% were female and 26.9% were male. Most students were between the ages of 22 and 24, and 34.0% were in their third year of study.

2.2. Data collection tool:

The study used Google Forms as an electronic tool to collect demographic data and other related information from the participants.. A pretested demographic questionnaire was used along with an Arabic

translation of the DASS-21, an instrument developed by researchers Lovibond and Lovibond. The Depression Anxiety Stress Scale (DASS-21) is a self-administered instrument that comprises 21 questions evenly divided into three self-report scales, each containing seven items. These items are designed to measure levels of depression, anxiety, and stress. The DASS-21 is a widely used self-report questionnaire that assesses the severity of symptoms related to depression, anxiety, and stress. This instrument is brief and easy to use, making it an effective screening tool for various emotional disorders. Therefore, it is a valuable resource in scientific research.

The DASS-21 questionnaire employs a four-point Likert scale, where participants... indicate how much each statement reflects their experiences over the past week. The scale ranges from 0, which signifies that the statement is completely inapplicable, to 3, indicating that the statement is highly applicable. The responses are then totaled using the Lovibond scoring system to generate a final score that represents the participant's mental health status.. This score can range from "normal" to "extremely severe"[12].
Table 1 displays the Lovibond scoring guide.

Table 1: The Lovibond scoring guide

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

2.3. Statistical Analysis:
The Statistical Package for the Social Sciences (SPSS), specifically version 22.0, was used to analyze the collected data. Descriptive statistical methods were used to outline the participants' socio-demographic characteristics and corresponding DASS-21 responses. This included calculating frequencies (n) and percentages (%). The final values for each DASS-21 subscale were obtained by summing the scores of the relevant items and then doubling them to align with the DASS-42 scale values.

2.4. Ethical considerations:
This study was approved by the Research Ethics Committee of the Faculty of Public Health at the University of Benghazi, and the participants implicitly participated in this research as the questionnaire was distributed electronically, and all data were anonymized to maintain confidentiality. Additionally, participants were all informed about the study's objectives and importance.

3. Results

3.1. Demographic characteristics
The table (2) below provides a comprehensive summary of the demographic composition of the study's participants. The sample includes 741 individuals, with 73.1% (n = 542) being females and 26.9% (n = 199) being males. This gender imbalance indicates that most study population students are female. Additionally, 52.8% (n = 391) of the sample falls within the 22-24 age range, and 34.0% (n = 253) are third-year students. Furthermore, 41.6% (n = 308) of the participants are from the faculty of medicine.

Table 2: The Distribution of Demographical Characteristics of Participants

Variable	Count	Percent
Age		
19-21	130	%17.50
22-24	391	%52.80
25 and older	220	%29.70
Gender		
Male	199	26.90%
Female	542	%73.10
College		
Biomedical sciences	91	12.30%
Dentistry	128	%17.30
Medicine	308	%41.60
Pharmacy	86	%11.60
Public health	128	%17.30
Academic year		
First	111	14.97%
Second	138	18.62%
Third	253	34.14%
Fourth	151	20.37%
Fifth	88	11.87%

3.2.Gender and age-based variability

The data in the Table 3 shows that females scored extremely severe rates of anxiety at 79.5% (n = 431), followed by stress at 56.5% (n = 306) and depression at 55.4% (n = 300). Meanwhile, males also scored extremely severe rates of anxiety at 65.2% (n = 129), followed by depression at 52.3% (n = 104) and stress at 47.7% (n = 95).

In examining age-based variability in the DASS (Depression, Anxiety, and Stress Scale), the results for different age groups (19–21, 22–24, and 25 years and older) highlighted significant differences in the levels of depression, anxiety, and stress. For the 19–21 age group, the findings revealed that 76.9% (n = 100) experienced extremely severe anxiety, 50.8% (n = 66) reported high levels of stress, and 48.5% (n = 63) experienced high levels of depression. In contrast, the percentages were significantly higher for the age group of 22–24. Specifically, 73.8% (n = 288) exhibited extremely severe anxiety, 56.3% (n = 220) reported extremely severe depression, and 54.2% (n = 212) experienced high levels of stress.

Anxiety was significantly more prevalent than depression and stress among students aged 25 and older. In this group, 78.2% (n = 172) reported high levels of anxiety, while 55.9% (n = 123) reported high levels of stress and 55.0% (n = 121) reported high levels of depression.

Table 3: Gender and age-based variability

Level	Gender		Age		
	Male	**Female**	**19-21**	**22-24**	**25+**
	Anxiety				
Normal	24 12.1 %	15 2.8%	10 7.7%	19 4.9%	**10 4.5%**
Mild	6 3.0%	13 2.4%	4 3.1%	9 2.3%	**6 2.7%**
Moderate	24 12.1 %	36 6.6%	10 7.7%	37 9.5%	**13 5.9%**
Severe	15 7.6%	27 8.7%	6 4.6%	37 9.5%	**19 8.6%**
Extremely severe	129 65.2 %	431 79.5%	100 76.9 %	288 73.8 %	**172 78.2 %**
Total	198 100%	542 100%	130 100%	390 100%	**220 100%**
Level	**Depression**				
Normal	5 2.5%	3 .6%	2 1.5%	5 1.3%	**1 .5%**
Mild	8 4.0%	17 3.1%	4 3.1%	13 3.3%	**8 3.6%**
Moderate	40 20.1 %	106 19.6	25 19.2 %	85 21.7 %	**36 16.4 %**
Severe	42 21.1 %	116 21.4%	36 27.7 %	68 17.4 %	**54 24.5 %**
Extremely severe	104 52.3 %	300 55.4%	63 48.5 %	220 56.3 %	**121 55.0 %**
Total	199 100%	542 100%	130 100%	391 100%	**220 100%**
Level	**Stress**				
Normal	18 9.0%	7 1.3%	6 4.6%	11 2.8%	**8 3.6%**
Mild	11 5.5%	20 3.7%	4 3.1%	20 5.1%	**7 3.2%**
Moderate	24 12.1 %	57 10.5%	16 12.3 %	43 11.0 %	**22 10.0 %**
Severe	51 25.6 %	152 28.0%	38 29.2 %	105 26.9 %	**60 27.3 %**
Extremely severe	95 47.7 %	306 56.5%	66 50.8 %	212 54.2 %	**123 55.9 %**
Total	199 100%	542 100%	130 100%	391 100%	**220 100%**

3.3. The prevalence across colleges.

The study comparing the mental health of students across medical colleges at the University of Benghazi reveals alarming levels of anxiety, depression, and stress. Notably, the faculty of medicine recorded the highest rates, with 32.7% for anxiety, 25.6% for depression, and 23.8% for stress. meanwhile, colleges such as dentistry, public health, biomedical sciences, and pharmacy reported that the prevalence of severe anxiety among their students was 12.4%, 11.6%,10.5%, and 8.4% of the total, respectively. Additionally, the prevalence of depression and stress among these colleges was approximately similar. These findings demonstrate the pressing need for proactive measures to address mental health issues among students. The data summarized in Table 4, which display severity stratified by colleges

3.4. The prevalence across academic years.

The data in Table 5 highlights the levels of depression, anxiety, and stress among students across various academic years. Researchers' analysis revealed that anxiety was the most common issue among students in all academic years, with the highest prevalence of 26.2% (n = 194) among third-year students. Additionally, stress levels were higher than depression among first- and third-year students, with 19.7% stress and 19.2% depression among third-year students, and 8.0% stress and 7.7% depression among first-year students.

3.5. Overall DASS prevalence

The study found that the overall rate of anxiety was 75.6% (n = 741), which was the highest among all respondents. The levels of stress and depression were quite similar, with stress at 54.1% and depression at 54.5%, both categorized as extremely severe. Table 6 and Figure 1 present statistical data on the overall prevalence of depression, anxiety, and stress.

Table 4: DASS severity stratified by colleges (n = 741)

Variable		Biomedical sciences	Dentistry	Medicine	Pharmacy	Public health
Depression						
	Normal	0 (0.0%)	1 (0.1%)	1 (0.1%)	2 (0.3%)	**4 (0.5%)**
	Mild	1(0.1%)	7 (0.9%)	6 (0.8%)	5 (0.7%)	**6 (0.8%)**
	Moderate	18 (2.4%)	23 (3.1%)	51 (6.9%)	23 (3.1%)	**31 (4.2%)**
	Severe	15 (2.0%)	32 (4.3%)	60 (8.1%)	19 (2.6%)	**32 (4.3%)**
	Extremely severe	57 (7.7%)	65 (8.8%)	190 (25.6%)	37 (5.0%)	**55 (7.4%)**
Anxiety						
	Normal	4 (0.5%)	6 (0.8%)	15 (2.0%)	5 (0.7%)	**9 (1.2%)**
	Mild	1 (0.1%)	5 (0.7%)	6 (0.8%)	4 (0.5%)	**3 (0.4%)**
	Moderate	3 (0.4%)	12 (1.6%)	23 (3.1%)	9 (1.2%)	**13 (1.8%)**
	Severe	5 (0.7%)	13 (1.8%)	22 (3.0%)	6 (0.8%)	**16 (2.2%)**
	Extremely severe	78 (10.5%)	92 (12.4%)	242 (32.7%)	62 (8.4%)	**86 (11.6%)**
Stress						
	Normal	2 (0.3%)	5 (0.7%)	9 (1.2%)	4 (0.5%)	**5 (0.7%)**
	Mild	3 (0.4%)	3 (0.4%)	14 (1.9%)	3 (0.4%)	**8 (1.1%)**
	Moderate	6 (0.8%)	15 (2.0%)	26 (3.5%)	8 (1.1%)	**26 (3.5%)**
	Severe	23 (3.1%)	40 (5.4%)	83 (11.2%)	26 (3.5%)	**31 (4.2%)**
	Extremely severe	57 (7.7%)	65 (8.8%)	176 (23.8%)	45 (6.1%)	**58 (7.8%)**

Table 5: DASS severity stratified by academic year (n 741)

Variable	First year	Second year	Third year	Fourth year	Fifth year
Depression					
Normal	1 (0.1%)	1 (0.1%)	3 (0.4%)	2 (0.3%)	**1 (0.1%)**
Mild	3 (0.4%)	12 (1.6%)	2 (0.3%)	5 (0.7%)	**4 (0.5%)**
Moderate	23 (3.1%)	30 (4.0%)	54 (7.3%)	26 (3.5%)	**13 (1.8%)**
Severe	26 (3.5%)	29 (3.9%)	51 (6.9%)	36 (4.9%)	**16 (2.2%)**
Extremely severe	57 (7.7%)	66 (8.9%)	142 (19.2%)	82 (11.1%)	**56 (7.6%)**
Anxiety					
Normal	6 (0.8%)	9 (1.2%)	12 (1.6%)	3 (0.4%)	**8 (1.1%)**
Mild	4 (0.5%)	2 (0.3%)	7 (0.9%)	4 (0.5%)	**2 (0.3%)**
Moderate	12 (1.6%)	13 (1.8%)	24 (3.2%)	8 (1.1%)	**3 (0.4%)**
Severe	7 (0.9%)	14 (1.9%)	14 (1.9%)	16 (2.2%)	**10 (1.4%)**
Extremely severe	81 (10.9%)	100 (13.5%)	194 (26.2%)	120 (16.2%)	**64 (8.6%)**
Stress					
Normal	4 (0.5%)	3 (0.4%)	11 (1.5%)	2 (0.3%)	**4 (0.5%)**
Mild	4 (0.5%)	9 (1.2%)	6 (0.8%)	7 (0.9%)	**5 (0.7%)**
Moderate	15(2.0%)	16 (2.2%)	28 (3.8%)	11 (1.5%)	**10 (1.4%)**
Severe	28 (3.8%)	43 (5.8%)	61 (8.2%)	50 (6.7%)	**21 (2.8%)**
Extremely severe	59 (8.0%)	67 (9.0%)	146 (19.7%)	81 (10.9%)	**47 (6.3%)**

Table 6: Overall DASS severity (n = 741)

Anxiety	%	Depression	%	Stress	%
Normal	1.1%	Normal	5.3%	Normal	3.4%
Mild	3.4%	Mild	2.6%	Mild	4.2%
Moderate	19.7 %	Moderate	8.1%	Moderate	10.9 %
Severe	21.3 %	Severe	8.5%	Severe	27.4 %
Extremely severe	75.6 %	Extremely severe	54.5 %	Extremely severe	54.1 %

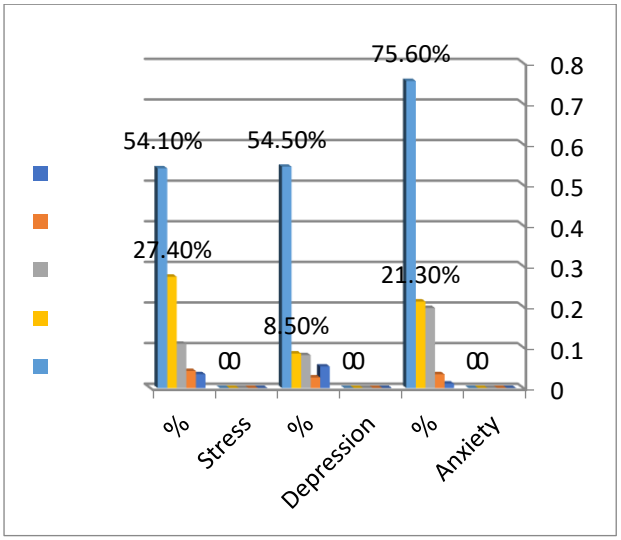

Figure 1. overall DASS severity

3.6. Possible causes of depression, anxiety, and stress:

The results from the students' responses, illustrated in Table 7, highlight potential reasons for depression, anxiety, and stress. The data shows that academic pressure was identified as the primary cause of their mental health issues, with 31.5% (n = 543) of respondents attributing it to this reason. Additionally, 21.1% (n = 364) and 14.3% (n = 247) of respondents reported exhaustion and poor time management as the most likely factors contributing to their mental health problems, respectively. However, only 1.2% (n = 20) of respondents cited personal reasons as the cause. The detailed reasons and their frequencies are provided in Table (7) and Figure (2).

Table 7: underlying reasons for depression, anxiety, and stress.

Causes of mental morbidities	Count	Percent
Poor time management	247	14.3%
High expectations from family	187	10.9%
Lack of sleep and rest	223	12.9%
Academic pressure	543	31.5%
Exhaustion	364	21.1%
Unknown causes	63	3.7%
Personal causes	20	1.2%

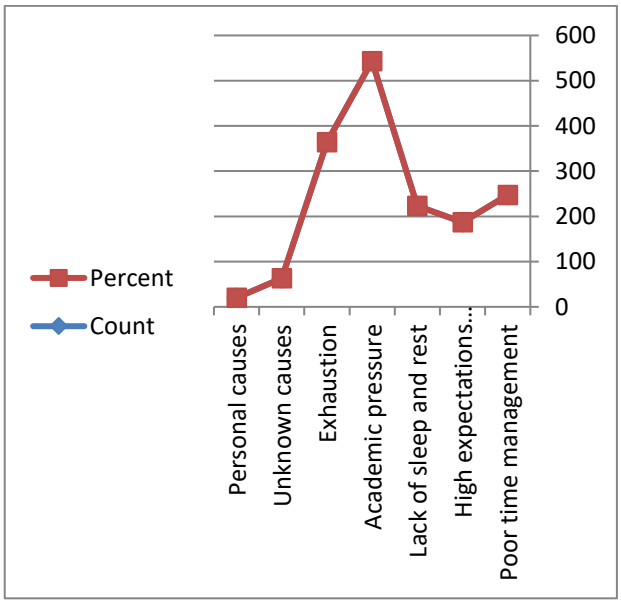

Figure 2. Possible causes of depression, anxiety, and stress

Discussion

The current study reveals that anxiety is the most prevalent mental health issue among medical college students, affecting 75.6% of them. This is followed by depression, which impacts 54.5%, and stress, affecting 54.1%. These findings align with studies conducted in Pakistan [13], Egypt [14], Jordan [15], Iraq [16], and

Saudi Arabia[17,18,19]. This suggests that the factors contributing to these psychological issues among students in these countries may be similar to those affecting medical students at the University of Benghazi. Additionally, the findings show that higher levels of anxiety, depression, and stress are more prevalent among females compared to males. However, the higher rates observed in females may be partly attributed to their greater representation in the sample. Moreover, this disparity might also stem from familial responsibilities, such as caring for children or elderly family members, which may burden them more. Furthermore, first- and third-year students are experiencing higher levels of depression, anxiety, and stress compared to their peers. This may be due to these students transitioning into more challenging stages of their education.

The authors suggested that the competitive environment and the tendency to compare oneself with peers could contribute to this issue. They also speculated that the fear of failure might lead to increased anxiety, as it was identified as the most significant concern among the ages of 22-24 group. The participants reported that academic pressure, exhaustion, and poor time management are the primary factors contributing to stress, anxiety, and depression. Furthermore, insufficient sleep and high family expectations also contributed to this issue. Moreover, a small percentage of participants thought that some of their symptoms were caused by unidentified factors, highlighting the lack of knowledge about mental health issues and their causes among college students in medical schools.

4. Conclusions

In summary, this study sheds light on the mental health challenges (stress, anxiety, and depression) experienced by medical college students at the University of Benghazi in Libya. It emphasizes the seriousness of these challenges based on variables such as gender, age, academic year, and college. The research revealed that anxiety is the most common issue among students, especially among female students, those in the faculty of medicine, third-year students, and students aged 22 to 24. Therefore, this research is valuable for developing health programs and offering resources and services through mental health support services and health educators. These initiatives can help create a positive learning environment, ultimately improving academic performance.

Recommendations

It is essential to recognize that significant measures need to be taken to enhance the mental well-being of university students as many students are unaware of mental health issues, their symptoms, and the contributing factors. Therefore, the authors suggest the following:

1. Increase awareness among students in medical colleges about mental health issues.
2. Provide workshops on time management and effective planning.
3. Focus on mental health to reduce stigma and improve overall mental well-being.
4. Conduct future studies similar to or complementary to the current study to highlight students' mental health issues.

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Conflict of interest:

The researchers did not reveal any conflicts of interest.

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