

## Review Article

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## The Prevalence of Psychological Stress, Anxiety, and Depression among Medical Students During Their Study Period in Palestine

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### ABSTRACT

**Objectives:** Medical students have significant rates of psychological morbidity such as depression and anxiety, and their psychological stress levels are consistently higher than those of the general population and age-matched coworkers. This study aimed to assess the prevalence of stress, anxiety, and depression among Palestinian medical students and to assess the differences between socio-demographic characteristics in terms of stress, anxiety, and depression scores.

**Methods:** A cross-sectional study was conducted among medical students at Palestine Polytechnic University in Oct 2022 using a self-administered questionnaire distributed among medical students by simple random sampling method. The assessment of psychological mood disorders among 200 medical students was done by using Depression, Anxiety, and Stress Scale-21. Descriptive and inferential statistics were used.

**Results:** Among 200 students, half of the medical students have suffered from psychological mood disorders at moderate, severe, and extremely severe levels. Furthermore, 2nd-year medical students have higher stress and depression scores than 3rd and 4th-year students ( $p=0.017$ ) and ( $p=0.020$ ) respectively. Female medical students have significantly higher anxiety scores than male students ( $p=0.043$ ).

**Conclusions:** It is noted that stress, anxiety, and depression are common among medical students, and there is an urgent need for attention, support, and personalized counseling.

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### Introduction

According to the World Health Organization (WHO), mental health issues are one of the leading causes of disability worldwide [1]. A particular concern is medical students a group of university students who are vulnerable to psychological issues due to going through an important transitional period as they transition from puberty to adulthood, which is a challenging stage in a person's life [2]. According to research, medical students have significant rates of psychological morbidity such as depression and anxiety, and their psychological stress levels are consistently higher than those of the general population and age-matched coworkers [3,4]. According to research papers from various nationalities and educational systems, medical students have greater psychological morbidities [5,6]. A significant frequency of anxiety and depression among medical students has been observed in recent research from Egypt, the United Arab Emirates, and Saudi Arabia [7]. In addition, an assessment of the Palestinian community revealed that 83% of them had poor psychological health [4].

Medical students are more susceptible to psychological issues since they experience a variety of stresses and emotional challenges as

they develop from students into experienced doctors [8]. Academic pressure, massive course loads that must be completed quickly, abrupt changes in learning preferences, inadequate guidance, anxiety about failing exams, relationships with peers, parental expectations, and shifts in the educational environment are all potential sources of stress, anxiety, and depression for medical students [9].

The heightened prevalence of psychological mood disorders within the medical student population is predominantly attributed to the amalgamation of academic and social expectations imposed by their respective college environments [10]. A comprehensive review revealed that undergraduate students exhibited a mean prevalence of depressive disorders at 30.6%, surpassing rates reported in the general population [11]. This trend is not confined to specific regions; the Middle East exhibited the highest prevalence of depression at 31.8%, with North America at 30.3%, Asia at 30.1%, South America at 26.8%, and Europe at 20%, illustrating a global concern [12]. A recent systematic study and meta-analysis underscored the pervasive nature of this issue, projecting that 27.2% of medical students worldwide are likely to regularly experience depression or its symptoms. These findings collectively emphasize the urgent need for targeted interventions and support mechanisms within medical education systems to address the

complex interplay of factors contributing to the heightened morbidity rates among medical students [13].

In Palestine, mental disorders were associated with social, demographic, behavioral, and educational factors [14]. Medical students' performance may suffer from absenteeism and lack of confidence caused by mood problems, which can also cause bad sleep, poor life satisfaction, loss of self-esteem, lower quality of life, and mental diseases [3,5,8]. Furthermore, medical students who are in a dysfunctional emotional state require immediate attention and management; otherwise, their inability to cope successfully may have negative consequences on both personal and professional levels, such as poor academic performance, decreased patient care and safety, as well as increased stigma [15]. A notable research gap lies in the lack of detailed exploration into the specific factors contributing to these mental health challenges. While the text highlights various stressors such as academic pressure, course loads, and interpersonal relationships, there is a need for more in-depth investigations to discern the relative impact of each factor. Additionally, the literature does not thoroughly address the regional and cultural nuances that might influence the mental health of medical students in Palestine. Understanding these context-specific elements is crucial for developing targeted interventions. Moreover, there is a dearth of longitudinal studies tracking the evolution of mental health issues throughout the medical education journey, hindering a nuanced understanding of the temporal dynamics involved. Bridging these research gaps would not only enhance our comprehension of the challenges faced by medical students in Palestine but also facilitate the development of effective preventive and supportive measures tailored to their unique context. It is no surprise that the mental health of medical students in Palestine as an area of research domain has attracted the second highest attention of the faculty in medical colleges of the country after medical education, learning process, and evaluation. With this background, it is essential to assess the prevalence of psychological stress, anxiety, and depression among medical students which consequently aids the policymakers and teachers to make appropriate counseling and support groups inside the universities. In addition, to determine the differences between socio-demographic variables of medical students and stress, anxiety, and depression scores.

## Methods

### Study Design, Setting, and Population

This study employed a cross-sectional design to assess psychological stress, anxiety, and depression among undergraduate medical students at Palestine Polytechnic University. The inclusion criteria for the population were as follows: all male and female Palestinian medical students registered in the 2nd, 3rd, 4th, and 5th years of the study who agreed to participate. However, the exclusion criteria were as follows: 1st-year students and those who did not agree to participate in the study.

### Data Collection

In October 2022, researchers utilized a self-administered questionnaire delivered to university medical students during a break between courses. All participants were given a detailed explanation of the study's objectives by the researchers.

### Sampling Methods and Sample Size

A simple random sampling method was used after defining the sample frame of this study which was 600 medical students. The sample size of the study was 235 students as calculated according to the OpenEpi: open source epidemiologic statistics for public health version 3 as follows; population size: 600, Confident

Interval 95%, and design effect: 1. The ID numbers of all medical students except 1st year were obtained from the university record and the researcher chose them by using simple random numbers. Some students refused to attend, in completed questionnaires and some of the students were not available, consequently, 200 students were enrolled given a response rate of 85%.

### Instrument

The questionnaire consists of two sections as follows; The 1st section included demographic characteristics such as gender, age, year of the study, place of residence, GPA, clinical training, and history of mental disorders. The 2nd section included the Depression Anxiety Stress Scale (DASS-21) was originally developed by P. Lovibond and S. Lovibond (1995) [16]. The instrument consisting of 21 items with a 4-point Likert response scale was used to assess the three-dimensional as follows: stress (7 items), anxiety (7 items), and depression (7 items). The total sum score ranges from 0 to 42 points for each domain. Regarding stress, 0–14=normal, 15–18=mild, 19–25=moderate, 26–33=severe, and more than 33=extremely severe. Regarding anxiety, 0–7=normal, 8–9=mild, 10–14=moderate, 15–19=severe, and more than 20=extremely severe. Regarding depression, 0–9=normal, 10–13=mild, 14–20=moderate, 21–27=severe, more than 28=extremely severe. [28]

### Reliability

The researcher assessed the reliability, which was 0.870. In detail, the reliability of the stress, anxiety, and depression were .867, .838, and .893 respectively.

### Pilot Study

A pilot study aimed to assess the feasibility, applicability, and time needed to complete the instrument. 20 medical students who possessed the same inclusion criteria were enrolled. Participants understood the whole instrument; no ambiguous words were mentioned, and the typical time needed to complete the questionnaire was five minutes.

### Statistical Analysis

Data were analyzed using the SPSS version 27 (Armonk, NY: IBM Corp). Descriptive and inferential statistics were used to assess the level of stress, anxiety, and depression as well as the differences between variables. The Independent t-test and One-way ANOVA were conducted after examining the normality of the data, which shows that data is normally distributed.

### Ethical Consideration

Ethical approval was obtained from the Palestine Polytechnic University committee to conduct the study, the IRB Number is KA/41/2021. A consent form from the students was obtained before starting the questionnaire. The confidentiality and anonymity of the received data were completely secured by providing code numbers for each subject and saving them on the researcher's private computer.

### Result

A total of 235 participants took part in the study, with 85% (200 participants) successfully enrolled. The demographic characteristics of undergraduate medical students are outlined in Table 1. The majority of students, more than two-thirds, were female and aged 20 or younger, possibly influenced by the higher registration of female students in the university records. Similarly, over two-thirds of the students resided in their family homes.

Regarding mental health, 13 (6.5%) of the medical students reported a history of psychiatric disorders, while the remaining students did not. Half of the participants (50%) experienced loss within their families and friends, with the remaining participants not encountering such situations.

Table 1: Socio-Demographic Characteristics of the Student (n=200)

Socio-demographic characteristics		n	%
Gender	Male	53	26.5
	Female	147	73.5
Age group	≤ 20 years old	151	75.5
	>20 years old	49	24.5
Year of the study	2 <sup>nd</sup> year	48	24.0
	3 <sup>rd</sup> year	110	55.0
	4 <sup>th</sup> year	42	21.0
Place of residence	University Campus	57	28.5
	Family Home	143	71.5
GPA	<2	0	0
	2-2.99	167	83.5
	>2.99	33	16.5
Are you in clinical training	Yes	41	20.5
	No	159	79.5
History of Psychiatric Disorders	Yes	13	6.5
	No	187	93.5
Have you experienced a loss from your family, friends, and relatives?	Yes	100	50.0
	No	100	50.0

suffered from psychological mood disorders at moderate, severe, and extremely severe levels. In detail, 30.5% of students have been shown to have severe and extremely severe stress, 38.5% showed severe and extremely severe anxiety, and 30% showed severe and extremely severe depression.

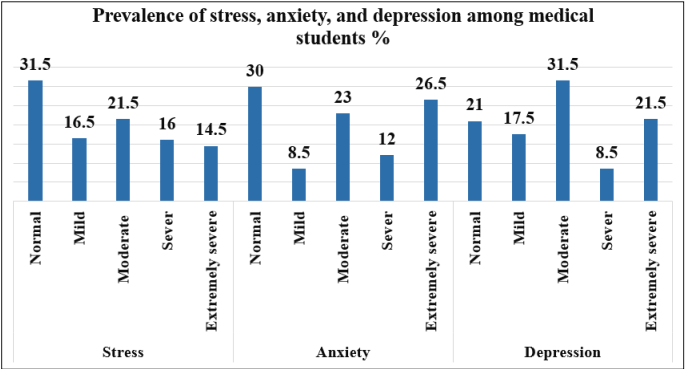


Figure 1: Prevalence of stress, anxiety, and depression among medical students (n=200) The Independent t-test, One-Way ANOVA, and Tukey post-hoc tests indicate that 2nd-year medical students have a higher stress score (M=23.91±11.29) than 3rd-year (M=19.87±9.32) and 4th-year (M=18.38±8.91) students (p=0.017). Additionally, 2nd-year medical students exhibit a higher depression score (M=21.58±12.10) compared to 3rd-year (M=16.52±9.56) and 4th-year (M=17.04±10.97) students (p=0.020).

In terms of gender, the Independent t-test reveals that female medical students have a significantly higher anxiety score (M=14.8±10.16) than male students (M=11.6±9.14) (p=0.043). Concerning the history of psychiatric disorders, medical students with a history of psychiatric disorders show significantly higher stress, anxiety, and depression scores compared to students without such a history (p=0.029, p=0.004, and p=0.018, respectively).

Figure 1 shows the prevalence of stress, anxiety, and depression among medical students. Half of the medical students have

Table 2: Differences between Socio-demographic Characteristics in Terms of Stress, Anxiety, and Depression (n=200)

Socio-demographic characteristics		n	Stress Mean ±	p-value	Anxiety Mean±	p-value	Depression Mean±	p-value
Gender	Male	53	18.3 ±9.60	.056	11.6 ±9.14	.043*	16.1 ±9.64	.187
	Female	147	21.3 ±9.92		14.8 ±10.16		18.4 ±10.99	
Age group	≤ 20 years old	151	21.00 ±10.19	.233	14.99 ±10.33	.006*	17.82 ±10.88	.959
	>20 years old	49	19.06 ±8.89		10.93 ±8.15		17.91 ±10.09	
Year of the study	2nd year	48	23.91 ±11.29	.017*	17.62 ±11.99	.002*	21.58 ±12.10	.020*
	3rd year	110	19.87 ±9.32		13.81 ±9.41		16.52 ±9.56	
	4th year	42	18.38 ±8.91		10.33 ±7.33		17.04 ±10.97	
Place of residence	University Campus	57	19.82 ±10.26	.526	13.68 ±10.06	.778	16.59 ±10.35	.296
	Family Home	143	20.81 ±9.77		14.12 ±9.98		18.34 ±10.79	
GPA	<2	-	-	.962	-	.732	-	.558
	2-2.99	33	20.60 ±10.50		14.54 ±9.82		18.84 ±10.61	
	>2.99	167	20.51 ±9.81		13.89 ±10.03		17.65 ±10.70	
Are you in clinical training	Yes	41	18.39 ±9.02	.121	10.29 ±7.42	Disorders	17.31 ±10.96	.360
	No	159	21.08 ±10.07		14.95 ±10.34		17.98 ±10.62	

History of Psychiatric Disorders	Yes	13	26.30 ±8.11	.029*	21.69 ±9.12	.004*	24.61 ±11.47	.018*
	No	187	20.12 ±9.91		13.46 ±9.84		17.37 ±10.48	
Experienced a loss	Yes	100	21.24 ±10.91	.312	16.10 ±10.14	.003*	19.24 ±11.40	.065
	No	100	19.82 ±8.77		11.90 ±9.40		16.46 ±9.75	

Independent t-test and One Way ANOVA

\*Significant at  $p < 0.05$

## Discussion

This descriptive study using the DASS-21 scale was suggestive of the high prevalence of depression (30%), anxiety (38.5%), and stress (30.5%) among medical students enrolled in Palestine Polytechnic University of Hebron City, West Bank, Palestine. This study also reported a significant associated factor that affects stress levels such as the year of the study. Furthermore, a significantly associated factor that affects anxiety levels such as gender, age, year of the study, history of psychiatric disorders, and experienced loss. As well as a significant associated factor that affects depression levels such as the year of the study and history of Psychiatric disorders.

## Prevalence of Stress

In this study, the vast majority of medical students 68.5% had stress ranging from mild to extremely severe. Among them, 30.5% were reported severe to extremely severe stress. Similarly, there are many studies revealed medical students have high levels of stress. A study conducted in India showed that 43.8% of medical students have stress [17]. A study conducted in Pakistan illustrated 60% of medical students suffer from stress (18) [18]. Furthermore, a study conducted among medical students in Thailand presented 61% have stress [19]. Furthermore, the United States reported that 57% of medical students have the highest level of stress [20]. The reasons for higher stress among medical students could be the long study duration and greater pressure on academic institutions and staff. On the other hand, a Lower rate was reported by a study done in Saudi Arabia to assess the stress among medical students. The Prevalence of stress was 41% [21].

## Prevalence of Anxiety and Depression

In this study, 38.5% of participants experienced severe and extremely severe anxiety, whereas 30% experienced severe and extremely severe depression. A prior study supported our findings, which revealed a lower rate of depression and anxiety among medical students in Saudi Arabia, where the prevalence of depression and anxiety was 43% and 63%, respectively [21]. On the other hand, a 2020 research questioned 400 college students in Bangladesh to investigate the prevalence of depression and anxiety and any related variables, and they discovered that the prevalence rates of depression and anxiety were 69.5% and 61%, respectively [22]. Another study was done in Bangladesh on medical college students, which concluded a lower prevalence of depression (54.3%) while the prevalence of anxiety was higher 64.8% [23].

## Association Between Variables

This study shows that female medical students have significantly higher anxiety than male students ( $p=0.034$ ). A study conducted in Egypt was in harmony with our findings, which revealed that female medical students have more stress and anxiety than males [10]. The reason could be that men use coping strategies more than females, and females are more emotional than men [24].

This study shows that female medical students have significantly higher anxiety than male students ( $p=0.034$ ). A study conducted

in Egypt was in harmony with our findings, which revealed that female medical students have more stress and anxiety than males [10]. The reason that 2nd-year students are more stressed than 4th years could be because of overthinking in the training settings. Medical students are more susceptible to anxiety, stress, and depression in their clinical years because of training-related mistreatment and abuse by clinical supervisors [24].

The current study shows that 2nd-year students have more stress ( $p=0.017$ ), anxiety ( $p=0.002$ ), and depression scores ( $p=0.020$ ) than 4th-year students. A study in contrast with our findings showed that medical students in clinical years had a slightly greater prevalence of anxiety at 26.4% than those in pre-clinical years [23]. The reason that 2nd-year students are stressed more than 4th years could be because of the overthinking of the training settings and Medical students are more susceptible to anxiety, stress, and depression in their clinical years because of training-related mistreatment and abuse by clinical supervisors [24].

## Conclusion

In conclusion, the data reveals a concerning dimension to the prevalence of stress, anxiety, and depression among medical students. Half of these students are grappling with psychological mood disorders at moderate, severe, and extremely severe levels. Specifically, 30.5% of students are experiencing severe and extremely severe stress, 38.5% are exhibiting severe and extremely severe anxiety, and 30% are manifesting severe and extremely severe depression. This emphasizes the urgency for effective interventions and heightened awareness regarding mental health challenges within the medical student community, the high prevalence of stress, anxiety, and depression among medical students is a significant concern. Medical schools, healthcare institutions, and policymakers need to prioritize the mental health needs of these students and implement comprehensive support systems to mitigate the negative impact on their well-being and future medical practice.

## Limitations and Recommendations

Like any other study, our study also has limitations. Our sample size was small which doesn't allow the generalization of the study results on the whole medical students in Palestine as well as the sample selection. Therefore, more longitudinal studies with a large sample size are necessary to overcome such limitations of our study. We would recommend authors who are researching the topic of depression and anxiety, look for other risk factors related to depression, such as university marks, marital status, and having a doctor in the family.

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