Prevalence and Determinants of Depression and Anxiety Among Medical Students

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Abstract

Background: Medical students are one of the most vulnerable populations to anxiety and depression owing to the daily life stress they are dealing with. The impact of these mental health challenges on academic life and performance is of great significance.

The study aims to estimate the prevalence and determinants of depression and anxiety among medical students.

Methodology: This cross-sectional study was conducted by over 375 students of the University of Basrah, College of Medicine. A structured questionnaire incorporated demographic characteristics and students' perceptions about possible risk factors. Two scales (PHQ-9 and GAD-7) were used for data collection.

Result: out of 375 students, 29.2% were males, and 70.8% were females. The prevalence of anxiety was 42.7%, and depression was 65.6%. The age, gender, academic stage and performance, workload, availability of free time, and lack of social support showed significant association with anxiety. The age, accommodation arrangement, academic stage, workload, availability of free time, and lack of social and academic support showed a significant association with depression.

Conclusion: There is a high prevalence of anxiety and depression among medical students, with widespread risk factors. Thus, it requires coordinated actions and joining forces to find a proper solution addressing these challenges.

Keywords: Medical students, depression, anxiety, Basrah.

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1.Introduction

Anxiety disorders are characterized by excessive fear and worry and related behavioral disturbances. Symptoms are severe enough to result in significant distress or significant impairment in functioning (1). On the other hand, depression is a condition characterized by symptoms of prolonged sadness, inability to take pleasure in former interests, feelings of guilt, worthlessness, significant changes in appetite and sleep patterns, loss of energy, and/or inability to concentrate, among others. Depression may show continuous progression or be recurring and, in some cases, be so severe as to lead to suicide (2).

It has been established that depression and anxiety exist in medical students at high rates, compared to teenagers in general, and both these mental health conditions exist in approximately 25-50% of medical students during their training (3).

Former studies showed a higher prevalence rate of anxiety and depression among medical students from Middle Eastern countries in comparison to other countries. Anxiety and depression prevalence were 28.7% and 31.8%,

respectively (4,5). Among the junior doctors and medical students in Iraq, the prevalence rates were 47.9% for anxiety and 45.5% for depression(6). According to the WHO, 4.5% and 3.7% of the total Iraqi population are suffering from anxiety and depression, respectively(2).

Depression or anxiety can be caused by long hours of studying, tension from the pressure to impress patients during practice, and the hard work required to excel in their studies. Many students find it challenging to manage these problems, which can sometimes leave them feeling isolated, overworked, or stressed. The worst part is that these feelings are often disregarded as a normal part of the course, based on the belief that it is typically the medical training to go through these challenges. (7).

Several studies showed that higher levels of anxiety and depression have been strongly associated with certain sociodemographic factors such as female gender, pre-clinical stage students, in-campus residency, and lower academic accomplishments. Other factors that were identified as contributors to anxiety and depression are academic pressure, workload, financial concerns, and lack of time for sleep and other social activities(8,9).

A survey carried out in Baghdad found that 37.2% of medical students exhibited moderate to severe depression, which had a significant negative correlation with grade performance. Students cited distractibility, a lack of drive, and a tendency to procrastinate as contributing factors to their average academic performance and frustration (10).

Medical learners are significantly impacted by anxiety, particularly during examinations and clinical attachments, which can interfere with their academic performance. Studies have shown that high-stakes assessments, such as objective structured clinical examinations (OSCE), can induce stress and anxiety in students, affecting their learning and memory in various ways (11).

Depression and anxiety influence one’s academic performance, but their impact is felt much longer, particularly on the professional level (12).

Although medical students tend to be more vigilant in protecting their mental health, in many cases, they do not get the help they seek. One of the primary deterrents is related to the stigma associated with mental health problems in that discipline. The apprehension of being judged by classmates, teachers, or even prospective employers makes it impossible for students to openly discuss their issues. Also, there is a basic culture of being tough, so admitting to difficulties with mental health is equivalent to showing weakness(13). In addition ،time constraints emerge as another barrier. The pace of a medical professional's daily activities is so intense that allocating time for self-care, let alone attending therapy or counseling, becomes almost impossible. Furthermore, for some students, the fear that resources are available yet non-confidential appears to impede them from pursuing help (14).

Such barriers lead to a sentiment where students feel unsupported despite the resources being available. It is essential to address these stigma barriers and provide confidential mental health support to all students to change the current medical and sociocultural environment(13)

Aim of the study: to estimate the prevalence and determinants of depression and anxiety among medical students.

2.Tools and methods

This study employs a cross-sectional design and was conducted in Iraq, Basrah, University of Basrah, College of Medicine, targeting 375 medical students (which represents the sum of 10% of each stage).

The study includes all students of Basrah Medical College regardless of their age or academic stage; students who have chronic medical illnesses and those who were already diagnosed with psychological illness were excluded from the study.

The data collection was performed by direct interviews where a structured questionnaire incorporates demographic characteristics (age, sex, marital status, accommodation arrangements, academic stage, and performance), the potential risk factors (sleeping and study hours, perceived severity of the academic workload by the students, physical activity, family expectations, lack of free time, caffeine consumption, and lack of mental support) and two validated scales were adopted to evaluate the severity of the mentioned mental health problem. The validated Arabic version of Patient Health Questionnaire-9 (PHQ-9) for depression diagnosis and General Anxiety Disorder-7 (GAD-7) for anxiety diagnosis were used. (15,16)

The Arabic-translated versions of the scales are used to ensure clarity and overcome misinterpretation issues. The interpretation of the results followed the scales' standard guidelines: a PHQ-9 score ≥10 had a sensitivity of 88% and a specificity of 88% for major depression (17), and for GAD-7, a cutoff point of 10 was identified that optimized sensitivity (89%) and specificity (82%). (18)

For statistical analysis, the SPSS software program version 26 was used. Ethical approval for the study was obtained from the ethical committee at the College of Medicine, University of Basrah. The confidentiality and anonymity of the participants were strictly maintained, and informed consent was obtained before data collection.

Result

*Note: All tables mentioned in this section are provided at the end of the article.

The data was collected from 375 students of Basrah Medical College. According to demographic and medical education-related factors, the mean age was 20.87 years, 70.8% of participants were females, and 89.1% of the participants were residents of urban areas with their families. The sample distribution on the academic stage shows nearly identical percentages, ranging from 14% to 18%. Students' achievements in the last academic year were good among 29.3%. The mean study hours are 4.67 ± 2.77, and sleeping hours are 7.06 ± 1.89. Among the 375 participants, 160 (42.7%) were identified as experiencing anxiety based on a cutoff score of 10. At the same time, 246 participants (65.6%) were found to have depression using a cutoff score of 10 on PHQ-9.

Anxiety and depression were more prevalent among younger participants, with a statistically significant difference in mean age (p = 0.002 for anxiety, p = 0.009 for depression). Regarding gender, anxiety was more common in females than males (45.9% vs. 34.6%, p = 0.045). However, depression did not show a significant gender difference (p = 0.442). Urban vs. Rural residency did not significantly affect rates of anxiety (p = 0.617) or depression (p = 0.971).

On the other hand, depression showed a significant association with accommodation type (p = 0.037), with higher rates among participants living off-campus. Anxiety, however, did not vary significantly (p = 0.228). As shown in Table 1.

Table 2 shows the academic factors and their association with anxiety and depression. Anxiety and depression were significantly associated with the academic stage (p = 0.001 for both). Higher anxiety and depression rates were observed in pre-clinical stages (e.g., first and second stages). Clinical stages, particularly the sixth stage, showed lower rates of anxiety and depression, indicating potential adaptation or reduced academic stress. Anxiety and depression were statistically significant associations with academic achievement (P-value = 0.026 for anxiety, P-value = 0.006 for depression). Anxiety is more common among those with excellent and accepted grades, while

depression is more common among those with lower academic grades. Neither anxiety nor depression showed any significant association with study hours (p = 0.877 and 0.763, respectively) or sleep hours (p = 0.316 and 0.778, respectively).

Table 3 shows the risk factors for anxiety and depression. Regarding workload, a significant association was observed for both anxiety and depression (p = 0.001). Participants with severe workloads were more likely to experience anxiety (62.4%) and depression (84.4%). Limited free time was significantly associated with both anxiety (p = 0.011) and depression (p = 0.001). Those without regular free time showed the highest rates of mental health issues. Furthermore, in academic and social support, feeling a lack of support was significantly associated with both anxiety (p = 0.016) and depression (p = 0.001).

Lastly, the students were asked about contributing factors they recognized; the academic workload (33.8%) was the most perceived factor, followed by a lack of free time (16.0%). Financial concerns (9.4%) were the least perceived factors, alongside other concerns such as fear of the future and new things, inability to cope with college life, obsessions, boredom, and fear of failure.

Discussion

The evaluation of anxiety and depression in medical students is crucial as they may affect their mental well-being and consequently influence healthcare services after their graduation, which compromises the health system (1). This study revealed that 42.7% of participants had anxiety, and 65.6% showed signs of depression. Higher prevalence was recorded among females, and the mental health conditions showed a statistical association with younger age groups.

The risk factors that showed significant association with anxiety are age, gender, stage, academic achievement, exhaustive workload, lack of free time, and lack of social support. However, age, accommodation arrangement, stage, academic achievement, workload, lack of free time,

and lack of academic support showed specific associations with depression.

A study conducted in Baghdad, Iraq, found that depression prevalence was 16.7% among student participants from the University of Nahrain College of Medicine. It showed a significant association between anxiety and depression with gender (females), family and colleague support, hours of study and sleep, academic achievements, and chronic diseases (7). This difference in prevalence rate is primarily due to different educational systems and the use of various scoring systems for anxiety and depression evaluation.

Another study conducted in São Paulo, Brazil, found that the prevalence of depression was 34.6% (8.8% severe) and anxiety was 37.2% (12.2% severe). This study also found a specific relationship between gender (female) and depression (19). This difference is due to the selection of samples from different regions, which have varying educational systems, habits, lifestyles, and beliefs—moreover, the use of other scoring systems for evaluation.

Another multicenter Brazilian study roughly resulted in the same previously mentioned prevalence and agreed on the existence of a significant association of anxiety and depression with lack of academic support as they assessed the responses on the statement, "There is a good support system for students who get stressed" thus showed positive responses are associated with decreased depression and anxiety levels (20). In addition to the previous possible reasons for the differences, this study suggests a multicenter approach.

A study in Saudi Arabia asked about the risk factors of anxiety and depression perceived by the students; responses that agreed with our results were exhaustion, social issues, bad schedule, and lack of counselor or support (21), which were also recognized by our sample students, who specifically highlighted exhaustive workload, lack of free time, availability and lack of social and academic support. However, some differences were noted as they were conducted in another country, using different tools for the assessment of anxiety and depression and approaches to college exams.

A systematic review showed the related risk factors for depression were changes in lifestyle, financial stressors, family relationship changes, academic worries with post-graduation life, female gender, younger age, lower-class years, substance abuse, living alone in a rented room, and rural residency. For anxiety, the female gender, university campus residents, pre-clinical years students, and students with lower academic accomplishment, long working and study hours, academic performance, pressure to succeed, competition, and inadequate time for non-academic activities (4).

Many of these factors were mentioned and assessed in this study to be found as having a significant relation with anxiety and depression, especially for the female gender, younger age groups, stage, academic achievements, workload, and lack of free time. All these studies agreed on one single finding, which is the significant prevalence of anxiety and depression among medical students despite different factors and numbers. As mentioned, this is a systematic review comparing countries and regions; thus, it resulted in differences within the risk factors, which is expected, as such a study collects samples from different studies conducted in various countries. (4)

The limitation of this study was that it was implemented in one medical college in Iraq out of other medical colleges, which couldn't give the definitive mental status of medical students in Iraq but an idea about what it might be like, as Basrah Medical College was chosen as an example of the Iraqi medical colleges.

Conclusion

Anxiety and depression are highly prevalent among medical students, driven by both modifiable (e.g., workload, support) and non-modifiable (e.g., age, gender) risk factors. Despite the awareness of these contributors, poor coping mechanisms persist, underscoring the need for targeted interventions.

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Table 1: demographic factors and their association with anxiety and depression.

Variables		Anxiety		P-value	Depression		P-value
		No anxiety (n=215)	Anxiety (n=160)		No depression (n=129)	Depression (n=246)	
Age	Mean ± sd	21.14 ±2.09	20.46 ±1.93	0.002	21.23 ± 2.25	20.65 ± 1.92	0.009
Gender	Male	70 (65.4)	37 (34.6)	0.045	40 (37.4)	67 (62.6)	0.442
	Female	145 (54.1)	123 (45.9)		89 (33.2)	179 (66.8)	
Residency	Urban	190 (56.9)	144 (43.1)	0.617	115 (34.4)	219 (65.6)	0.971
	Rural	25 (61.0)	16 (39.0)		14 (34.1)	27 (65.9)	
Accommodation arrangements	With family	166 (55.5)	133 (44.5)	0.228	111 (37.1)	188 (62.9)	0.037
	In campus	33 (68.8)	15 (31.3)		14 (29.2)	34 (70.8)	
	Out campus	16 (57.1)	12 (42.9)		4 (14.3)	24 (85.7)	

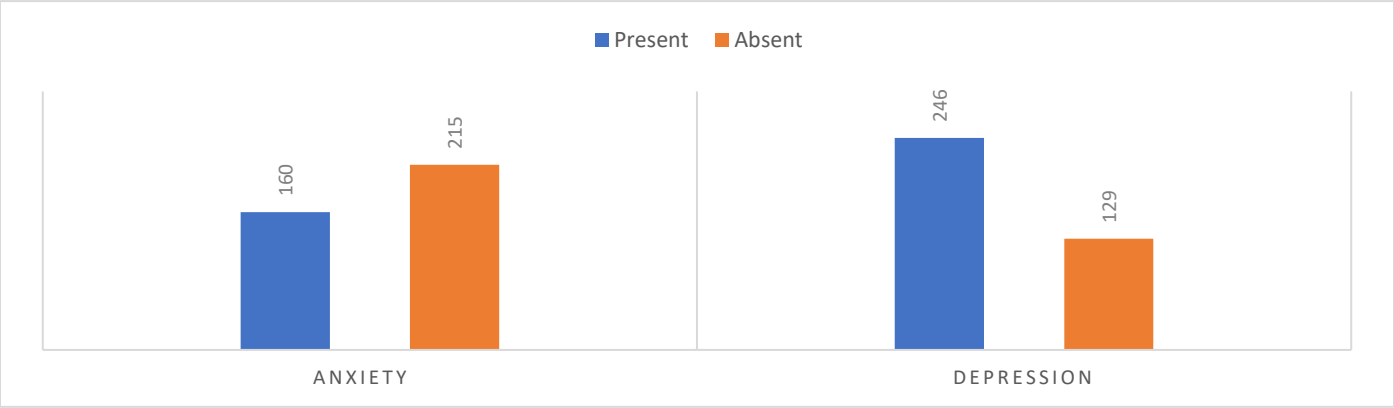

Figure 1: Distribution of anxiety according to the General Anxiety Disorder-7 (GAD-7) and depression according to the Patient Health Questionnaire-9 (PHQ-9).

Table 2: Medical education-related variables and their association with anxiety and depression

Variables		Anxiety		P-value	Depression		P-value
		No anxiety (n=215)	Anxiety (n=160)		No depression (n=129)	Depression (n=246)	
Stage	First stage	31 (44.9)	38 (55.1)	0.001	18 (26.1)	51 (73.9)	0.001
	Second stage	33 (47.8)	36 (52.2)		19 (27.5)	50 (72.5)	
	Third stage	30 (53.6)	26 (46.4)		17 (30.4)	39 (69.6)	
	Fourth stage	29 (51.8)	27 (48.2)		12 (21.4)	44 (78.6)	
	Fifth stage	33 (60.0)	22 (40.0)		16 (29.1)	39 (70.9)	
	Sixth stage	59 (84.3)	11 (15.7)		47 (67.1)	23 (32.9)	
Academic achievement in the last year	Excellent	17 (43.6)	22 (56.4)	0.026	12 (30.8)	27 (69.2)	0.006
	Very good	33 (60.0)	22 (40.0)		19 (34.5)	36 (65.5)	
	Good	69 (62.7)	41 (37.3)		47 (42.7)	63 (57.3)	
	Medium	65 (64.4)	36 (35.6)		40 (39.6)	61 (60.4)	
	Accepted	27 (42.2)	37 (57.8)		11 (17.2)	53 (82.8)	
	Fail	4 (66.7)	2 (33.3)		0 (0.0)	6 (100.0)	
Study hours	Mean ± Sd	4.65 ± 2.78	4.69 ± 2.85	0.877	4.61 ± 2.4	4.70 ±2.9	0.763
Sleep hours	Mean ± Sd	6.98± 1.59	7.18 ± 2.23	0.316	7.02 ± 1.48	7.08 ± 2.08	0.778

Table 3: Possible risk factors and their association with anxiety and depression

Risk factors		Anxiety		P-value	Depression		P-value
		No anxiety (n=215)	Anxiety (n=160)		No depression (n=129)	Depression (n=246)	
Workload	Not exhaustive	30 (73.2)	11 (26.8)	0.001	24 (58.5)	17 (41.5)	0.001
	Mildly exhaustive	35 (76.1)	11 (23.9)		23 (50.0)	23 (50.0)	
	Moderately exhaustive	109 (60.9)	70 (39.1)		65 (36.3)	114 (63.7)	
	Severely exhaustive	41 (37.6)	68 (62.4)		17 (15.6)	92 (84.4)	
Physical activity	Never	94 (55.6)	75 (44.4)	0.261	54 (32.0)	115 (68.0)	0.537
	Rare	75 (54.3)	63 (45.7)		47 (34.1)	91 (65.9)	
	Weekly	30 (65.2)	16 (34.8)		20 (43.5)	26 (56.5)	
	Daily	16 (72.7)	6 (27.3)		8 (36.4)	14 (63.6)	
Caffeine consumption	Never	24 (48.0)	26 (52.0)	0.389	13(26.0)	37 (74.0_	0.524
	Rare	44 (60.3)	29 (39.7)		26 (35.6)	47 (64.4)	
	Weekly	33 (53.2)	29 (46.8)		20 (32.3)	42 (67.7)	
	Daily	114 (60.0)	76 (40.0)		70 (36.8)	120 (63.2)	
Free time availability	Never	6 (30.0)	14 (70.0)	0.011	2 (10.0)	18 (90.0)	0.001
	Rare	63 (51.2)	60 (48.8)		26 (21.1)	97 (78.9)	
	Weekly	81 (64.3)	45 (35.7)		54 (42.9)	72 (57.1)	
	Daily	65 (61.3)	41 (38.7)		47 (44.3)	59 55.7)	
Feeling a lack of academic and social support	No	79 (66.4)	40 (33.6)	0.016	70(58.8)	49 (41.2)	0.001
	Yes	136 (53.1)	120 (46.9)		59 (23.0)	197 (77.7)	

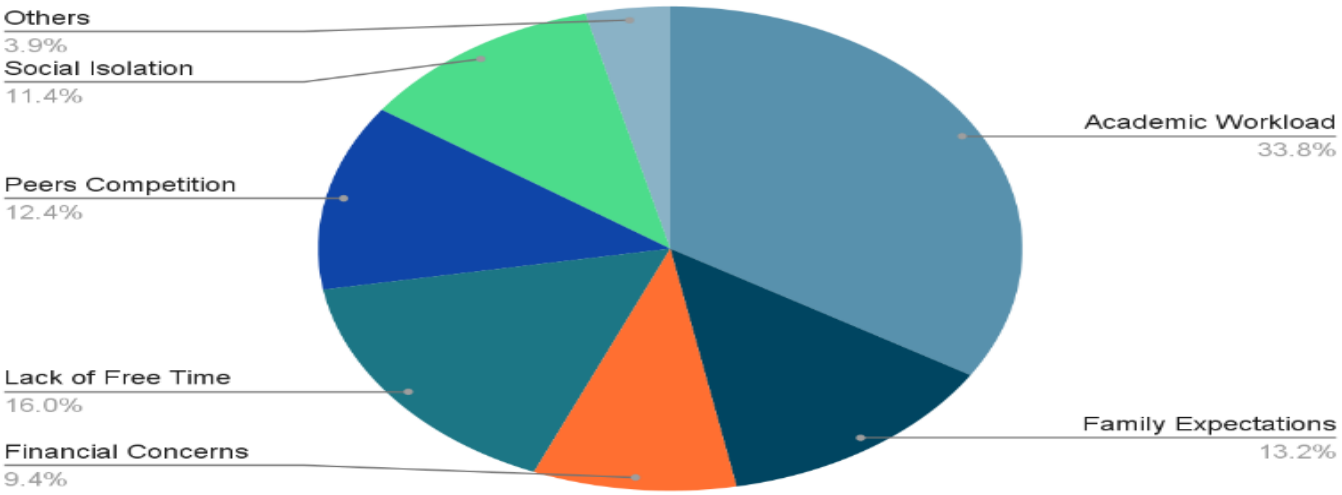

Figure 2: the student perception about contributing factors to anxiety and depression.