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ORIGINAL STUDY

The High Burden of Depression, Anxiety, and Stress among University Students in Southern Iraq: A Cross-Sectional Study

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ABSTRACT

University students often face significant academic, social, and environmental pressures, making them particularly vulnerable to psychological distress. Despite this, there is limited evidence regarding the prevalence and associated factors of mental health problems among university students in Iraq. Therefore, this study aimed to assess the prevalence and severity of depression, anxiety, and stress in this population and to examine their associations with sociodemographic characteristics, insomnia, internet use, and physical activity. A cross-sectional study was conducted among Iraqi university students using a structured questionnaire, including the DASS-21, Insomnia Severity Index, and Internet Addiction Test. Descriptive and inferential statistics were used to analyze the data and identify associations between mental health outcomes and participant sociodemographic characteristics. A total of 690 university students were recruited in this study. The majority of participants were female, aged 21–23 years, single, and enrolled in medical-related fields. The prevalence of depression, anxiety, and stress was 69.9%, 74.1%, and 62.2%, respectively. Female students, those from private universities, and participants without health insurance reported significantly higher psychological distress. Insomnia was a strong predictor of all depression, anxiety, and stress. High-intensity physical activity and regular exercise (2–3 days per week for 30–60 minutes) were significantly associated with lower depression, anxiety, and stress levels. High internet use was significantly associated with increased stress. The findings indicate a high burden of psychological distress among Iraqi university students. Early screening and university-based mental health interventions—particularly those targeting sleep hygiene, physical activity, and stress management—are urgently needed to support student well-being.

Keywords: Anxiety, Stress, Depression, Insomnia, Physical activity, Internet use, University students, Iraq

1. Introduction

Mental health plays a vital role in overall well-being and academic success, particularly among university students. In recent years, depression, anxiety, and stress have become increasingly common in this population across both developed and developing countries, posing significant psychological and functional challenges [1]. Globally, mental health disorders are a leading cause of disability and a growing public health concern due to their chronic nature and rising prevalence [2, 3].

University students are particularly susceptible to psychological distress due to academic pressure,

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lifestyle changes, and limited access to support services [4–7].These challenges often result in poor academic performance, emotional instability, disrupted sleep, strained relationships, and diminished employment prospects [8–15]. Estimates suggest that 12% to 50% of university students globally experience at least one mental health disorder during their academic journey [16]. Early identification and targeted interventions are essential to mitigate these risks and improve student well-being [17].

In Iraq, decades of conflict, political instability, and under-resourced healthcare systems have severely affected the population's mental health [18]. Limited access to care, ongoing insecurity, and lack of mental health infrastructure have contributed to a rising burden of psychological disorders, with over 20% of Iraqis estimated to be affected [19]. Despite this, mental health remains a neglected area, particularly in university settings.

Studies from southern Iraq and the Kurdistan region report elevated mental health issues among trauma-exposed populations [20, 21]. Among university students, a study in Baghdad linked longer study hours, insufficient sleep, low academic performance, and weak social support to higher levels of depression and anxiety [22]. Another study in Erbil found male students more likely to experience depression, although no gender differences were observed for anxiety or stress [23]. Despite growing recognition of mental health needs, Iraqi universities often lack structured support systems. There is limited research investigating the mental health status of students in this region, particularly regarding modifiable factors such as sleep quality, physical activity, and internet use. This study aimed to fill this gap by assessing the prevalence of depression, anxiety, and stress among university students in Thi-Qar and identifying associated determinants.

2. Methods

2.1. Study design and study setting

A cross-sectional study was conducted over a four-month period, from October 2024 to January 2025, targeting university students from both public and private institutions in Iraq. A validated, structured questionnaire was distributed using a convenience sampling method. The study was conducted at four public and private universities in Thi-Qar Governorate, southern Iraq.

2.2. Including and excluding criteria

The study included undergraduate students currently enrolled at universities in Thi-Qar Governorate who were aged 18 years or older, willing to participate, provided informed consent, and completed the questionnaire. Students were excluded if they were under 18 years old, unwilling to participate, had chronic diseases or mental disorders, or provide incomplete questionnaires.

2.3. Study questionnaire

The questionnaire was adopted from previous study with slight changes to suit the Iraqi demographic characteristics [7]. The questionnaire was structured into five main sections (**Appendix**). The first section gathered Sociodemographic Information, including age, gender, type of university (public or private), academic level, field of study (medical or non-medical), grade point average (GPA), place of residence, marital status, household income, presence of health insurance, and smoking status. The GPA was categorized into five groups: Excellent, Very Good, Good, Average, and Poor.

The second section assessed students' mental health, specifically symptoms of depression, anxiety, and stress, using the Depression Anxiety Stress Scales (DASS-21). This instrument consists of 21 items, with 7 items allocated to each subscale: DASS-D (Depression), DASS-A (Anxiety), and DASS-S (Stress). Students rated how much each statement applied to them over the past week using a 4-point Likert scale ranging from 0 (did not apply to me at all) to 3 (applied to me very much).

Depression, anxiety, and stress scores are calculated by summing the scores of the items in each separate subscale. The results are interpreted as follows: DASS-A (Anxiety): >19 = Extremely severe anxiety; 15–19 = Severe anxiety; 10–14 = Moderate anxiety; 8–9 = Mild anxiety; 0–7 = Normal/no anxiety; DASS-D (Depression): >27 = Extremely severe depression; 21–27 = Severe depression; 14–20 = Moderate depression; 10–13 = Mild depression; 0–9 = Normal/no depression; DASS-S (Stress): >33 = Extremely severe stress; 26–33 = Severe stress; 19–25 = Moderate stress; 15–18 = Mild stress; 0–14 = Normal/no stress. The Arabic version of the DASS-21 has been validated and demonstrated good internal consistency [24].

The Insomnia Severity Index (ISI) is a validated, reliable self-report tool used to assess the severity and impact of insomnia over the past two weeks. The Arabic version includes five items covering difficulty sleeping, sleep satisfaction, daily functioning, visibility of the problem to others, and distress caused. Each item is rated from 0 (no problem) to 4 (very severe), with total scores ranging from 0–28. Severity is classified as: 0–7 (no insomnia), 8–14 (subthreshold), 15–21 (moderate), and 22–28 (severe). The tool has been validated in the Arabic language [25].

The Internet Addiction Test (IAT) is a widely used, standardized self-assessment tool developed by Young [26] to measure the presence and severity of internet addiction. Table 5 presents the Arabic version of the IAT, which consists of 20 items assessing various behavioral, psychological, and functional aspects related to internet use. Each item is rated on a 6-point Likert scale ranging from 0 (does not apply) to 5 (always), covering patterns such as excessive use, neglect of duties, social withdrawal, academic or work-related impacts, mood changes, and failed attempts to reduce usage. Higher total scores indicate greater levels of internet dependency. The IAT has been validated in multiple languages and cultural contexts, including Arabic, and is widely used in both clinical and research settings. The Arabic version was specifically validated among 817 intermediate and secondary school students in Lebanon [27].

The International Physical Activity Questionnaire (IPAQ) is a validated tool used to assess physical activity over the past seven days. The Arabic version presented in Table 4 includes items on vigorous activity, moderate activity, walking, and sitting time. Physical activity levels were categorized according to the International Physical Activity Questionnaire (IPAQ) scoring protocol, which defines intensity levels as light (e.g., walking), moderate (e.g., cycling), or high (e.g., running or weightlifting), based on frequency, duration, and energy expenditure. Participants report the number of days and duration for each activity type, allowing classification of physical activity levels as low, moderate, or high. The IPAQ is widely used in public health research and has been validated in Arabic. Specifically, the Arabic version demonstrated acceptable validity and reliability for assessing physical activity among Lebanese adults [28].

2.4. Sample size calculation and sampling methods

The sample size was calculated using, the required sample size was calculated using the following formula (1) [29, 30].

$$n = \frac{Z^2\, P\, (1 - P)}{d^2} \tag{1}$$

Where: n = the minimum sample size

Z = Z-score corresponding to the desired confidence level (1.96 for 95% confidence)

p = Expected prevalence (50%)

d = Precision or margin of error (typically equal 0.05)

Given the uncertainty in response distribution, a conservative estimate of 50% was used to ensure the maximum required sample size. Based on a 95% confidence level and a 5% margin of error, the calculated sample size was 385 participants. A convenience sampling method was employed for data collection.

2.5. Ethical approval

Ethical approval was obtained from the Ethical Committee of Al-Ayen Iraqi University (Approval No.: AUIQ-/2025/626). Prior to participation, all students were informed about the study's objectives, and oral informed consent was obtained. Confidentiality was strictly maintained; all personal data were securely stored and only anonymized, aggregated data were used for analysis.

2.6. Statistical analysis

Data were imported from Microsoft Excel into IBM SPSS Statistics version 27.0 for Windows®(IBM Corp., Armonk, NY, USA) for analysis. Categorical variables—including age, gender, education level, study major, marital status, family income, and insurance status—were summarized using frequencies and percentages. Continuous variables were categorized as appropriate. DASS-21 scores were multiplied by two to match the DASS-42 scoring system and then classified into severity categories: normal, mild, moderate, severe, and extremely severe. Chi-square tests were conducted to examine associations between levels of depression, anxiety, and stress and participants' sociodemographic characteristics. A p-value of <0.05 was considered statistically significant.

3. Results

Table 1 presents the sociodemographic characteristics of the 690 participants. The majority of participants were aged 21–23 years (52.5%), with 31.2% under 20 and 16.4% over 23 years. Females constituted a larger proportion (61.6%) compared to males (38.4%). Most participants were enrolled in private universities (87.1%), with medical students representing a significant majority (72.0%). Regarding academic year, second-year (36.4%) and third-year (34.6%) students dominated, followed by fifth-year (16.1%) and fourth-year students (12.9%).

In terms of GPA, the most common categories were "Good" (37.0%) and "Average" (33.5%), with fewer participants achieving "Very Good" (20.7%) or "Excellent" (7.5%). Most participants lived with their families (88.4%), and a vast majority were single (87.7%). Regarding family income, 41.0% preferred not to disclose their income, while 25.5%

Table 1. Sociodemographic data of participants (n = 690).

Variable	Category	Count	(%)
Age (years)	< 20	215	(31.2)
	21–23	362	(52.5)
	> 23	113	(16.4)
Gender	Male	265	(38.4)
	Female	425	(61.6)
University	Public	89	(12.9)
	Private	601	(87.1)
Major	Medical	497	(72.0)
	Non-medical	193	(28.0)
Academic Year	Second Year	251	(36.4)
	Third Year	239	(34.6)
	Fourth Year	89	(12.9)
	Fifth Year	111	(16.1)
GPA	Poor	9	(1.3)
	Average	231	(33.5)
	Good	255	(37.0)
	Very Good	143	(20.7)
	Excellent	52	(7.5)
Current Living Situation	Living Alone	15	(2.2)
	Living with Friends	65	(9.4)
	Living with Family	610	(88.4)
Marital Status	Single	605	(87.7)
	Engaged	39	(5.7)
	Married	38	(5.5)
	Divorced	8	(1.2)
Family Income (USD)/Month	Less than $500	82	(11.9)
	$500–$1,000	176	(25.5)
	$1,000–$1,500	91	(13.2)
	More than $1,500	58	(8.4)
	Prefer not to answer	283	(41.0)
Health Insurance	Yes	197	(28.6)
	No	493	(71.4)
Smoking status	Yes	110	(15.9)
	No	536	(77.7)
	Former Smoker	44	(6.4)

Abbreviations: GPA, Grade Point Average; USD, United States Dollar.

reported earning $500–$1,000 monthly. Most participants did not have health insurance (71.4%) and were non-smokers (77.7%), although 15.9% identified as smokers, and 6.4% as former smokers.

3.1. Severity of depression, anxiety, and stress

Table 2 presents the severity levels of depression, anxiety, and stress among the participants based on the DASS scale. For depression, 33.1% of participants were classified as normal, while 15.9% experienced mild depression, 32.2% moderate, 16.1% severe, and 2.7% extremely severe. Anxiety levels revealed that 31.8% of participants were normal, 10.1% had mild anxiety, 34.3% moderate, 15.6% severe, and 8.2% extremely severe.

Stress severity levels showed a higher proportion of normal participants (39.7%), followed by 16.6% with mild stress, 21.5% moderate, 19.6% severe, and 2.6% extremely severe. These findings highlight

Table 2. Severity of depression, anxiety, and stress among participants.

	Count	(%)
DASS_D		
Normal	208	(33.1)
Mild	100	(15.9)
Moderate	202	(32.2)
Severe	101	(16.1)
Extremely Severe	17	(2.7)
DASS_A		
Normal	179	(31.8)
Mild	57	(10.1)
Moderate	193	(34.3)
Severe	88	(15.6)
Extremely Severe	46	(8.2)
DASS_S		
Normal	261	(39.7)
Mild	109	(16.6)
Moderate	141	(21.5)
Severe	129	(19.6)
Extremely Severe	17	(2.6)

those moderate levels of depression and anxiety were most prevalent, whereas stress severity was slightly lower, with the majority of participants reporting normal levels.

3.2. Prevalence of depression, anxiety, and stress

The results revealed a high prevalence of psychological distress among participants. Specifically, 69.9% (n = 482) of students were classified as experiencing depression, 74.1% (n = 511) reported anxiety, and 62.2% (n = 429) showed symptoms of stress. The remaining participants were categorized as normal for each condition: 30.1% (n = 208) for depression, 25.9% (n = 179) for anxiety, and 37.8% (n = 261) for stress. These findings are illustrated in Fig. 1.

3.3. Insomnia severity, internet use, and physical activity among participants

Table 3 highlight the severity of insomnia, levels of internet use, and physical activity patterns among participants. Regarding insomnia, the majority of participants (46.8%) reported subthreshold insomnia, followed by 29.6% with moderate insomnia, 17.2% with no clinically significant insomnia, and 6.4% experiencing severe insomnia.

In terms of internet use, more than half of the participants (55.7%) exhibited moderate internet use (scores 10–18), while 34.5% reported high internet use (scores 19–27), and 9.9% fell into the low internet use category (scores 0–9).

For physical activity, 63.3% of participants reported engaging in some form of physical activity, whereas 36.7% did not. Among those active,

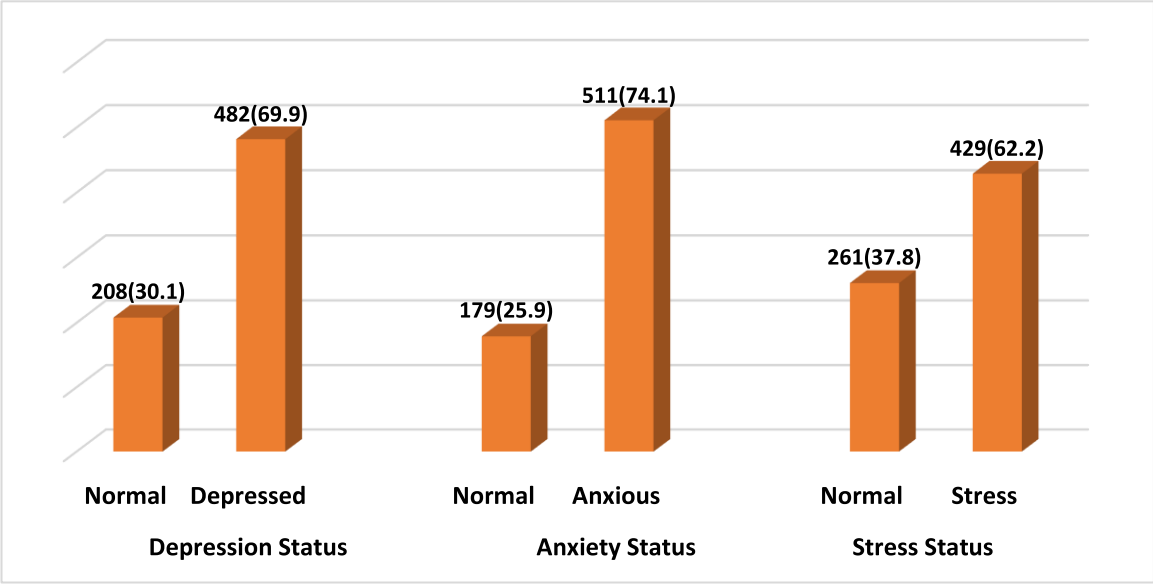

Fig. 1. Prevalence of depression, anxiety, stress.

Table 3. Insomnia severity, internet use, and physical activity characteristics among participants.

Category	Subcategory	Count	Percentage (%)
Insomnia Severity Index	No Clinically Significant Insomnia	119	(17.2)
	Subthreshold Insomnia	323	(46.8)
	Moderate Insomnia	204	(29.6)
	Severe Insomnia	44	(6.4)
Internet Use Level	Low Internet Use (0–9)	68	(9.9)
	Moderate Internet Use (10–18)	384	(55.7)
	High Internet Use (19–27)	238	(34.5)
Physical Activity	**Engagement**		
	Yes	437	(63.3)
	No	253	(36.7)
	Intensity		
	Light (e.g., Walking)	247	(35.8)
	Moderate (e.g., Cycling)	104	(15.1)
	High (e.g., Running)	127	(18.4)
	Frequency (Days per Week)		
	1 Day	90	(20.7)
	2–3 Days	196	(45.2)
	4 or More Days	148	(34.1)
	Duration per Session		
	<30 Minutes	155	(35.8)
	30–60 Minutes	195	(45.0)
	>60 Minutes	83	(19.2)

Internet use level: 0–9 (low), 10–18 (Moderate), 19–27 (High).

light-intensity activities such as walking were the most common (35.8%), followed by high-intensity activities like running (18.4%) and moderate-intensity activities like cycling (15.1%). In terms of frequency, most participants exercised 2–3 days per week (45.2%), while 34.1% exercised 4 or more days, and 20.7% exercised 1 day per week. For session duration, 45.0% exercised for 30–60 min, 35.8% for less than 30 min, and 19.2% for over 60 min.

3.4. Factors associated with depression levels among participants

Table 4 presents the association between participants' characteristics and depression status. Significant associations were observed for age, gender, university type, health insurance, smoking status, insomnia severity, high-intensity physical activity, frequency of exercise, and exercise duration. Older

Table 4. Association between participants' characteristics and depression.

	Depression Status					
	Normal		Depressed			
	N	(%)	N	(%)	Chi-square	*P-value*
Age (years)						
<20	47	(21.9)	168	(78.1)	12.654	**0.002***
21–23	116	(32.0)	246	(68.0)		
>23	45	(39.8)	68	(60.2)		
Gender						
Male	107	(40.4)	158	(59.6)	21.392	<**0.001***
Female	101	(23.8)	324	(76.2)		
University						
Public	37	(41.6)	52	(58.4)	6.337	**0.012***
Private	171	(28.5)	430	(71.5)		
Major						
Medical	146	(29.4)	351	(70.6)	0.499	0.480
Non-medical	62	(32.1)	131	(67.9)		
Academic Year						
Second Year	66	(26.3)	185	(73.7)	2.892	0.409
Third Year	77	(32.2)	162	(67.8)		
Fourth Year	30	(33.7)	59	(66.3)		
Fifth Year	35	(31.5)	76	(68.5)		
GPA						
Poor	1	(11.1)	8	(88.9)	8.557	0.073
Average	68	(29.4)	163	(70.6)		
Good	91	(35.7)	164	(64.3)		
Very Good	37	(25.9)	106	(74.1)		
Excellent	11	(21.2)	41	(78.8)		
Current Living Situation						
Living Alone	5	(33.3)	10	(66.7)	0.091	0.956
Living with Friends	20	(30.8)	45	(69.2)		
Living with Family	183	(30.0)	427	(70.0)		
Marital Status						
Single	187	(30.9)	418	(69.1)	4.175	0.243
Engaged	13	(33.3)	26	(66.7)		
Married	6	(15.8)	32	(84.2)		
Divorced	2	(25.0)	6	(75.0)		
Family Income(per month)						
Less than $500	26	(31.7)	56	(68.3)	2.772	0.597
$500–$1,000	59	(33.5)	117	(66.5)		
$1,000–$1,500	25	(27.5)	66	(72.5)		
> $1,500	20	(34.5)	38	(65.5)		
Prefer not to answer	78	(27.6)	205	(72.4)		
Health Insurance						
Yes	47	(23.9)	150	(76.1)	5.175	**0.023***
No	161	(32.7)	332	(67.3)		
Smoking Status						
Yes	44	(40.0)	66	(60.0)	6.278	**0.043***
No	153	(28.5)	383	(71.5)		
Former Smoker	11	(25.0)	33	(75.0)		
Insomnia Severity Index						
No significant insomnia	56	(47.1)	63	(52.9)	34.616	<**0.001***
Subthreshold insomnia	107	(33.1)	216	(66.9)		
Moderate insomnia	38	(18.6)	166	(81.4)		
Severe insomnia	7	(15.9)	37	(84.1)		
Internet Use Level						
Low Internet Use	24	(35.3)	44	(64.7)	3.233	0.199
Moderate Internet Use	122	(31.8)	262	(68.2)		
High Internet Use	62	(26.1)	176	(73.9)		
Do you engage in physical activity?						
Yes	141	(32.3)	296	(67.7)	2.545	0.111
No	67	(26.5)	186	(73.5)		

(Continued.)

Table 4. Continued.

	Depression Status					
	Normal		Depressed			
	N	(%)	N	(%)	Chi-square	*P-value*
Intensity is light (e.g., walking)						
No	138	(31.2)	305	(68.8)	0.595	0.440
Yes	70	(28.3)	177	(71.7)		
Intensity is moderate (e.g., brisk walking, cycling)						
No	179	(30.5)	407	(69.5)	0.297	0.586
Yes	29	(27.9)	75	(72.1)		
Intensity is high (e.g., running, weightlifting)						
No	157	(27.9)	406	(72.1)	7.410	**0.006***
Yes	51	(40.2)	76	(59.8)		
How many days per week do you exercise?						
1 day	17	(18.9)	73	(81.1)	10.645	**0.005***
2–3 days	75	(38.3)	121	(61.7)		
4 days or more	47	(31.8)	101	(68.2)		
What is the average duration of each session?						
< 30 minutes	40	(25.8)	115	(74.2)	8.257	**0.016***
30–60 minutes	76	(39.0)	119	(61.0)		
>60 minutes	22	(26.5)	61	(73.5)		

participants (>23 years) were more likely to report normal depression status (39.8%) compared to younger groups (p = 0.002). Males had a higher prevalence of normal depression status (40.4%) compared to females (23.8%, p < 0.001). Participants from public universities reported a higher proportion of normal depression status (41.6%) compared to those from private universities (28.5%, p = 0.012). Those with health insurance exhibited lower rates of depression (23.9% normal vs. 76.1% depressed, p = 0.023). Smokers were more likely to report normal depression status (40.0%) than non-smokers (28.5%, p = 0.043). Insomnia severity was inversely associated with normal depression status, with participants experiencing no significant insomnia reporting the highest normal status (47.1%, p < 0.001). High-intensity physical activity was associated with a greater prevalence of normal depression status (40.2% vs. 27.9%, p = 0.006), and those exercising 2–3 days per week were more likely to report normal depression status (38.3%, p = 0.005). Furthermore, participants exercising for 30–60 minutes per session reported the highest normal depression status (39.0%, p = 0.016).

Other variables, such as academic year, GPA, living situation, marital status, family income, internet use, and engagement in light or moderate physical activity, were not significantly associated with depression status.

3.5. Factors associated with anxiety levels among participants

Table 5 presents the association between participants' characteristics and anxiety status. Significant associations were observed for age, gender, university type, health insurance, smoking status, insomnia severity, and high-intensity physical activity. Older participants (>23 years) were more likely to report normal anxiety levels (36.3%) compared to younger groups (p = 0.023). Males exhibited a higher prevalence of normal anxiety (35.1%) than females (20.2%, p < 0.001). Participants from public universities were significantly more likely to report normal anxiety status (44.9%) compared to their counterparts from private universities (23.1%, p < 0.001). Similarly, participants with health insurance showed lower anxiety levels (19.3% normal vs. 80.7% anxious, p = 0.012). Smokers had a higher prevalence of normal anxiety status (35.5%) compared to non-smokers (24.1%, p = 0.045). Insomnia severity was inversely associated with normal anxiety status, with participants experiencing no significant insomnia reporting the highest normal status (44.5%, p < 0.001). High-intensity physical activity was also linked to reduced anxiety, with 38.6% of those engaging in such activity reporting normal anxiety status (p < 0.001).

Other variables, including major, academic year, GPA, living situation, marital status, family income, internet use, and general engagement in physical activity, were not significantly associated with anxiety status.

3.6. Factors associated with stress levels among participants

Table 6 presents the association between participants' characteristics and stress status. Significant associations were observed for gender, university type, GPA, insomnia severity, internet use, and

Table 5. Association between participants' characteristics and depression.

	Anxiety Status					
	Normal		Anxious			
	n	(%)	n	(%)	Chi-square	*P-value*
Age (years)						
<20	51	(23.7)	164	(76.3)	7.529	**0.023***
21–23	87	(24.0)	275	(76.0)		
>23	41	(36.3)	72	(63.7)		
Gender						
Male	93	(35.1)	172	(64.9)	18.758	**<0.001***
Female	86	(20.2)	339	(79.8)		
University						
Public	40	(44.9)	49	(55.1)	19.203	**<0.001***
Private	139	(23.1)	462	(76.9)		
Major						
Medical	135	(27.2)	362	(72.8)	1.379	0.240
Non-medical	44	(22.8)	149	(77.2)		
Academic Year						
Second Year	60	(23.9)	191	(76.1)	5.492	0.139
Third Year	66	(27.6)	173	(72.4)		
Fourth Year	17	(19.1)	72	(80.9)		
Fifth Year	36	(32.4)	75	(67.6)		
GPA						
Poor	0	(.0)	9	(100.0)	6.294	0.178
Average	54	(23.4)	177	(76.6)		
Good	75	(29.4)	180	(70.6)		
Very Good	39	(27.3)	104	(72.7)		
Excellent	11	(21.2)	41	(78.8)		
Current Living Situation						
Living Alone	2	(13.3)	13	(86.7)	1.639	0.441
Living with Friends	15	(23.1)	50	(76.9)		
Living with Family	162	(26.6)	448	(73.4)		
Marital Status						
Single	157	(26.0)	448	(74.0)	3.085	0.379
Engaged	11	(28.2)	28	(71.8)		
Married	11	(28.9)	27	(71.1)		
Divorced	0	(.0)	8	(100.0)		
Family Income(per month)						
Less than $500	17	(20.7)	65	(79.3)	7.695	0.103
$500–$1,000	55	(31.3)	121	(68.8)		
$1,000–$1,500	19	(20.9)	72	(79.1)		
More than $1,500	20	(34.5)	38	(65.5)		
Prefer not to answer	68	(24.0)	215	(76.0)		
Health Insurance						
Yes	38	(19.3)	159	(80.7)	6.352	**0.012***
No	141	(28.6)	352	(71.4)		
Smoking Status						
Yes	39	(35.5)	71	(64.5)	6.182	**0.045***
No	129	(24.1)	407	(75.9)		
Former Smoker	11	(25.0)	33	(75.0)		
Insomnia Severity Index						
No significant insomnia	53	(44.5)	66	(55.5)	27.892	**<0.001***
Subthreshold insomnia	78	(24.1)	245	(75.9)		
Moderate insomnia	41	(20.1)	163	(79.9)		
Severe insomnia	7	(15.9)	37	(84.1)		
Internet Use Level						
Low Internet Use	13	(19.1)	55	(80.9)	2.267	0.322
Moderate Internet Use	106	(27.6)	278	(72.4)		
High Internet Use	60	(25.2)	178	(74.8)		
Do you engage in physical activity?						
Yes	119	(27.2)	318	(72.8)	1.031	0.310
No	60	(23.7)	193	(76.3)		

(Continued.)

Table 5. Continued.

	Anxiety Status					
	Normal		Anxious			
	n	(%)	n	(%)	Chi-square	*P-value*
Intensity is light (e.g., walking)						
No	123	(27.8)	320	(72.2)	2.141	0.143
Yes	56	(22.7)	191	(77.3)		
Intensity is moderate (e.g., brisk walking, cycling)						
No	151	(25.8)	435	(74.2)	0.061	0.804
Yes	28	(26.9)	76	(73.1)		
Intensity is high (e.g., running, weightlifting)						
No	130	(23.1)	433	(76.9)	12.945	$<$**0.001***
Yes	49	(38.6)	78	(61.4)		
How many days per week do you exercise?						
1 day	23	(25.6)	67	(74.4)	3.759	0.289
2–3 days	48	(24.5)	148	(75.5)		
4–5 days	38	(33.3)	76	(66.7)		
6–7 days	7	(20.6)	27	(79.4)		
How many days per week do you exercise?						
1 day	23	(25.6)	67	(74.4)	1.587	0.452
2–3 days	48	(24.5)	148	(75.5)		
4 days or more	45	(30.4)	103	(69.6)		

high-intensity physical activity. Males were significantly more likely to report normal stress levels (50.2%) compared to females (30.1%, $p < 0.001$). Participants from public universities had a higher prevalence of normal stress status (56.2%) compared to those from private universities (35.1%, $p < 0.001$). GPA also showed a significant association, with participants scoring "Good" GPA levels reporting higher normal stress (39.6%) compared to those with "Excellent" GPAs (26.9%, $p = 0.044$). Insomnia severity was inversely related to normal stress levels, with participants experiencing no significant insomnia reporting the highest prevalence of normal stress (61.3%, $p < 0.001$). Internet use was significantly associated with stress, with low internet users reporting the highest percentage of normal stress (50.0%, $p = 0.030$). High-intensity physical activity was also significantly associated, with those engaging in such activities reporting a higher prevalence of normal stress (48.8% vs. 35.3%, $p = 0.005$).

Other variables, including age, major, academic year, marital status, family income, health insurance, smoking status, and general physical activity, did not show significant associations with stress status. While these factors may still influence stress levels, their lack of statistical significance in this study suggests that their impact may be less direct or context-dependent.

4. Discussion

To our knowledge, few studies have comprehensively assessed depression, anxiety, and stress among university students in Thi-Qar, Iraq, using validated instruments such as the DASS-21. Although the DASS-21 questionnaire is not a diagnostic tool for psychological disorders, it is useful for identifying the prevalence of anxiety, depression, and stress symptoms.

Our findings revealed a high prevalence of mental health symptoms: 69.9% reported depression, 74.1% anxiety, and 62.2% stress. These rates exceed global averages and may reflect Iraq's prolonged exposure to political instability, under-resourced mental health systems, and socioeconomic hardship. Similar high prevalence was reported in Malaysia [31], whereas lower rates were observed in Spain [7], and in Saudi Arabia [32]. Variations in prevalence may reflect differences in population characteristics, cultural perceptions, timing of data collection, and measurement tools. Notably, a study in the Kurdistan Region of Iraq reported comparable distress levels [21], whereas an earlier studies in Erbil and Baghdad found slightly lower prevalence rates for all three conditions [22, 23]. The Baghdad study further highlighted that longer study hours, shorter sleep duration, poorer academic performance, and reduced family or peer support during exams were significantly linked to higher depression and anxiety scores [22].

Several sociodemographic and behavioral factors were significantly associated with mental health outcomes. Female students reported higher levels of depression, anxiety, and stress, consistent with global patterns linking female gender to higher vulnerability to internalizing disorders due to sociocultural and biological factors [33–36]. Additionally, students enrolled in private universities exhibited higher distress levels than their public university counterparts, possibly due to increased

Table 6. Association between participants' characteristics and stress.

	Stress Status					
	Normal		Stress			
	n	(%)	n	(%)	Chi-square	*P-value*
Age (years)						
<20	76	(35.3)	139	(64.7)	1.256	0.534
21–23	138	(38.1)	224	(61.9)		
>23	47	(41.6)	66	(58.4)		
Gender						
Male	133	(50.2)	132	(49.8)	27.959	<**0.001**[*]
Female	128	(30.1)	297	(69.9)		
University						
Public	50	(56.2)	39	(43.8)	14.636	<**0.001**[*]
Private	211	(35.1)	390	(64.9)		
Major						
Medical	191	(38.4)	306	(61.6)	0.276	0.599
Non-medical	70	(36.3)	123	(63.7)		
Academic Year						
Second Year	92	(36.7)	159	(63.3)	1.917	0.590
Third Year	96	(40.2)	143	(59.8)		
Fourth Year	36	(40.4)	53	(59.6)		
Fifth Year	37	(33.3)	74	(66.7)		
GPA						
Poor	0	(.0)	9	(100.0)	9.802	**0.044**[*]
Average	95	(41.1)	136	(58.9)		
Good	101	(39.6)	154	(60.4)		
Very Good	51	(35.7)	92	(64.3)		
Excellent	14	(26.9)	38	(73.1)		
Current Living Situation						
Living Alone	2	(13.3)	13	(86.7)	4.589	0.101
Living with Friends	28	(43.1)	37	(56.9)		
Living with Family	231	(37.9)	379	(62.1)		
Marital Status						
Single	236	(39.0)	369	(61.0)	7.374	0.061[b]
Engaged	15	(38.5)	24	(61.5)		
Married	10	(26.3)	28	(73.7)		
Divorced	0	(.0)	8	(100.0)		
Family Income(per month)						
Less than $500	33	(40.2)	49	(59.8)	1.788	0.775
$500–$1,000	69	(39.2)	107	(60.8)		
$1,000–$1,500	34	(37.4)	57	(62.6)		
More than $1,500	25	(43.1)	33	(56.9)		
Prefer not to answer	100	(35.3)	183	(64.7)		
Health Insurance						
Yes	69	(35.0)	128	(65.0)	0.920	0.338
No	192	(38.9)	301	(61.1)		
Smoking Status						
Yes	51	(46.4)	59	(53.6)	4.503	0.105
No	192	(35.8)	344	(64.2)		
Former Smoker	18	(40.9)	26	(59.1)		
Insomnia Severity Index						
No significant insomnia	73	(61.3)	46	(38.7)	58.936	<**0.001**[*]
Subthreshold insomnia	135	(41.8)	188	(58.2)		
Moderate insomnia	45	(22.1)	159	(77.9)		
Severe insomnia	8	(18.2)	36	(81.8)		
Internet Use Level						
Low Internet Use	34	(50.0)	34	(50.0)	7.025	**0.030**[*]
Moderate Internet Use	149	(38.8)	235	(61.2)		
High Internet Use	78	(32.8)	160	(67.2)		
Do you engage in physical activity?						
Yes	171	(39.1)	266	(60.9)	0.862	0.353
No	90	(35.6)	163	(64.4)		

(Continued.)

Table 6. Continued.

	Stress Status					
	Normal		Stress			
	n	(%)	n	(%)	Chi-square	*P-value*
Intensity is light (e.g., walking)						
No	174	(39.3)	269	(60.7)	1.109	0.292
Yes	87	(35.2)	160	(64.8)		
Intensity is moderate (e.g., brisk walking, cycling)						
No	228	(38.9)	358	(61.1)	1.935	0.164
Yes	33	(31.7)	71	(68.3)		
Intensity is high (e.g., running, weightlifting)						
No	199	(35.3)	364	(64.7)	7.998	**0.005***
Yes	62	(48.8)	65	(51.2)		
How many days per week do you exercise?						
1 day	28	(31.1)	62	(68.9)	3.882	0.275
2–3 days	82	(41.8)	114	(58.2)		
4–5 days	47	(41.2)	67	(58.8)		
6–7 days	11	(32.4)	23	(67.6)		
How many days per week do you exercise?						
1 day	28	(31.1)	62	(68.9)	3.012	0.222
2–3 days	82	(41.8)	114	(58.2)		
4 days or more	58	(39.2)	90	(60.8)		

financial and academic pressures. This finding aligns with Malaysian data [37],but contrasts with studies from Indonesia that reported greater distress among public university students [38].

Insomnia was a strong and consistent predictor of depression, anxiety, and stress in our sample. This aligns with previous studies showing that sleep disturbances not only co-occur with psychological disorders but also contribute to their onset and persistence [39–41]. Physical activity, particularly high-intensity exercise and regular weekly routines, was associated with lower levels of mental distress, reinforcing its role as a protective factor. This is supported by meta-analyses that suggest a causal link between inactivity and the development of mood disorders [42].

Although no significant association was found between internet use and depression or anxiety, high internet use was linked to elevated stress levels. This may be due to disruptions in sleep, increased procrastination, or exposure to distressing content—particularly on social media. Other studies have found stronger associations between excessive internet use and mental health issues, suggesting that context, content type, and usage patterns may play a role [43].

The findings of this study have important implications for mental health promotion in Iraqi universities. Implementing routine mental health screening programs is essential to identify students at risk—particularly those without health insurance, experiencing sleep disturbances, or not participating in regular physical activity. Early detection is critical, as mental health problems can be effectively addressed when identified early. Preventive strategies such as counseling services, sleep hygiene education, and physical activity promotion should be integrated into university support systems to enhance student well-being and academic performance.

In recent years, innovative interventions such as mobile applications offering cognitive behavioral therapy (CBT), online mindfulness programs, and digital well-being platforms have gained attention for reducing psychological distress among university students. Universities could adopt or integrate these low-cost, scalable tools to improve mental health outcomes. Evidence suggests that such technologies are feasible and effective, especially in low-resource settings [44–46].

5. Study strengths and limitations

This study is the first of its kind to assess the prevalence and associated factors of mental health problems among university students in Iraq, helping to address a significant gap in the literature. A key strength is the large and diverse sample, which includes students from both public and private universities across various academic levels. However, the study has some limitations. The use of self-reported measures may introduce response and recall bias. Additionally, the cross-sectional design limits the ability to establish causal relationships between the associated factors and mental health outcomes. Moreover. age overlap across academic years may limit the strength of comparisons, and future studies may use academic year as a more specific indicator.

6. Conclusion

The high prevalence of depression, anxiety, and stress among Iraqi university students highlights an urgent need for targeted mental health interventions. Key factors such as insomnia, gender, physical activity, and type of university should be taken into account when designing preventive and supportive strategies. Screening programs should be implemented to identify at-risk students—particularly those without health insurance, experiencing insomnia, or not engaging in physical activity. Enhancing campus-based mental health services will be essential to supporting student well-being and academic performance. Future longitudinal and interventional studies are warranted to examine causal pathways and evaluate the effectiveness of proposed interventions.

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Conflict of interest

The authors declare that there is no conflict of interest.

Ethical approval

Ethical approval was obtained from the Ethical Committee of Al-Ayen Iraqi University (Approval No.: AUIQ-/2025/626). Prior to participation, all students were informed about the study's objectives, and oral informed consent was obtained. Confidentiality was strictly maintained; all personal data were securely stored and only anonymized, aggregated data were used for analysis. The study was conducted according to the guidelines of the Declaration of Helsinki.

Data availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Author contributions

Hassan Al-Karagoly contributed to conceptualization, supervision, validation, methodology, and review. Zahraa Al-Attar, Hjar Al-Asadi, Sajad Al-Lahibi, Russul Al-Fartousi, Teeba Al-Jadry, Menatallah Bali, Baneen Al-Hesnawi, Hanan Al-Aboudi, Zainab Al-Fadliu, Ali Al-Mosawi, Zahraa Al-Aboudi, Qassim Al-Rubaie, and Mohsin Al-Samawi contributed to conceptualization, methodology, data collection, and writing original draft. Abdulsalam Halboup contributed to methodology, validation, and writing review and editing. All authors reviewed and approved the final manuscript for publication.

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