



## Prevalence of Insomnia and its Relationship with Depression, Anxiety and Stress Among Graduate-Level Students at Hadhramout University

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### Abstract

**Background:** Insomnia is the most common sleep disorder characterized by complaints of insufficient or poor quality of sleep.

**Aim:** To define the prevalence of insomnia and determine its relationship with depression, anxiety, and stress among graduate-level students at Hadhramout university.

**Methods:** We used a cross-sectional study on a sample size of 265 students. The relationship between insomnia and stress was assessed for university students, and a pre-tested questionnaire was used to collect data by interview after informed consent was obtained. Statistical analysis was performed using SPSS version 23.

**Results:** The overall prevalence of insomnia in the study was 20.4%. Symptoms of mental health problem of depression, anxiety, and stress were significant risk factors for insomnia (p-value = 0.000, 0.000, 0.000). nap, regular exercise and problem coping with academic demands appeared to be a significantly related to insomnia (p-value = .020, .018, .015).

**Conclusion:** Insomnia is prevalence among graduate-level students at Hadhramout University. Anxiety, stress, and depression together with a nap, regular exercise, and academic demand are important association.

**Keywords:** Insomnia; Depression; Stress; Hadramout University Students

### Introduction

Insomnia is the most common sleep disorder characterized by complaints of insufficient or poor quality sleep because of one or more of the following conditions: difficulty in falling asleep, frequent waking up during the night with difficulty for returning to sleep, waking up too early in the morning or unrefreshing sleep [1].

Insomnia is linked to Numerous factors. including Demographic factors such as age, gender and social factors, psychiatric health problems [2].

Poor sleep patterns, caffeine consumption, and medicine [3]. Sleepiness throughout the day, fatigue, and issues with attention or memory are some signs of insomnia [4]. In a study it was

discovered that 30% of adults worldwide experienced symptoms of insomnia [5].

Insomnia can be a primary lack of sleep that is not attributed to a medical, psychological, or environmental reason [6]. In addition, insomnia can be secondary is linked with another medical condition. For example mental health problem such as depression, anxiety, panic disorder, and personality disorders [7].

The management of insomnia can involve pharmacological, non pharmacological, cognitive behavior treatment, or combined approaches including both medications and psychotherapy, which is proven to be more effective than single approaches [8].

Many recent studies have found that insomnia is a common psychiatric problem among young adults and university students Insomnia is an increasingly serious issue for students [9]. According to recent studies, the prevalence of insomnia among students range from 9.5 to 27% [10].

Graduate year students are one subgroup of the general population who appear to be especially vulnerable to poor sleep [11]. Studies have also shown that graduate report higher levels of stress when compared with both undergraduate students [12]. Probably due to academic pressure of higher education [13] and future worries [14]. Major mental health problems including stress, anxiety and depression are mostly prevalent in university students [15].

Worldwide research on various student populations has revealed a moderate to high prevalence of depression, anxiety, and stress in this population [16]. According to estimates, insomnia was present in 24-36% of people with anxiety disorders [17].

The American Psychological Association claims that stress and anxiety are both emotional reactions that produce a number of symptoms that are similar, such as sleeplessness, fatigue, tense muscles, and irritability [18]. While students with depression suffer of constantly cry, skip classes, or isolate themselves [19] and difficulties in getting to sleep [20].

Impact of insomnia on students highly correlated with poor academic performance and reduced learning ability to perform basic activities [21]. The other detrimental impact of insomnia includes reduced memory and reduced cognitive ability [22].

Many studies have shown that insomnia is a common problem among university students in worldwide but There is a paucity of knowledge about Yemeni students therefore, aim of this study measure the prevalence of insomnia and determine relationship with depression, anxiety and stress among graduate levels at Hadhramaut University Mukalla, yemen.

**Methodology**

**Study design**

A cross-sectional descriptive study design was carried out by the 4th level students, nursing college, Hadhramout University during (26/5/2022-20/7/2023) to define the prevalence of insomnia and its relationship with depression, anxiety, and stress among graduate-level students at Hadhramaut University/Yemen.

**Study setting**

The study was carried out in six colleges of Hadhramaut University (Nursing, Medicine, Engineering, Women, Literature and Administrative Sciences) in Mukalla.

**Study population**

The study population involves students who study in Hadhramout University.

**Sample size**

The estimated students sample size was 264 students selected from the graduate-level in six colleges of Hadhramout University as following.

College Name	Number of sample
Nursing college	10
Medicine college	45
Engineering college	73
women college	26
Literature college	33
Administrative Sciences college	77
Total	264

**Table a**

**Data process and collection**

**Type of data**

The study was include quantitative and qualitative data for data collection.

**Methods and tools of data collection**

A questionnaire interview was prepared containing many questions, and variables. The questionnaire had four sections: the first section consisted of demographic questions about students include: age, gender, college name, marital status, place of residence, living standard and academic achievement.

The second section was for the Insomnia Severity Index (ISI) to evaluate the presence of insomnia among graduate-level students. The third section was for the Depression Anxiety Stress Scale-21 (DASS-21) to determine the presence of any psychological risk factors associated with insomnia. The fourth section consisted of a set of questions to evaluate the factors may lead to insomnia, such as smoking, Qat chewing, caffeine consumption, napping, environmental noise, daily exercise, use mobile after 8pm, hours of study, fear of future failing and academic demands. The interview was also conducted with students to obtain the required information, and completing the data about the prevalence of insomnia and relationship with depression, anxiety and stress among graduate level students at Hadhramaut University in Mukalla, Yemen.

**Insomnia severity index ISI**

The Insomnia Severity Index (ISI) is a seven-item screening tool designed to assessing the nature, severity, and impact of insomnia. The last month is the usual recall period, and the dimensions evaluated: severity of sleep onset, sleep maintenance, early morning awakening problems, sleep dissatisfaction, noticeability of sleep problems by others, distress caused by the sleep difficulties and interference of sleep difficulties with daytime functioning. Each item is rated on a 0-4 scale, and the total score ranges from 0 to 28. Scores are typically classified as (0-7 = no insomnia), (8-14 = sub-threshold insomnia), (15-21 = clinical moderate insomnia), (22-28 = clinical severe insomnia). Parcipants were further categorized into a no insomnia group (i.e., ISI ≤ 14 [no and sub-threshold insomnia]) and an insomnia group (i.e., ISI ≥ 15 [clinical insomnia-moderate and several]) based on a diagnostic utility study (Morin, et al. 2011).

**Depression, anxiety, stress scale DASS-21**

The Depression, Anxiety and Stress Scale-21 (DASS-21). It consists of 21 items, 7 items divided into subscales with similar content. DASS-D (depression), DASS-A (anxiety) and DASS-S (stress). Each item includes a statement and four brief response options to indicate severity, ranging from 0 (“Did not apply to me at all”) to 3 (“Applied to me very much or most of time). The final score for each sub-scale is multiplied by two; because the DASS-21 is a short-form version of the DASS (42 items), and evaluated according to its severity rating index. Depression, anxiety and stress scores are calculated by adding up the scores of the items in each separate subscale. The results are explained as follows: (DASS-D [9-0 = normal, 10-13 = mild depression, 14-20 = moderate depression, 21-27 = severe depression, 28+ = extremely severe depression]), (DASSA [0-7 = normal, 8-9 = mild anxiety, 10-14 = moderate anxiety, 15-19 = severe anxiety, 20+ = extremely severe anxiety]), (DASS-S [0-14 = normal, 15-18 = mild stress, 19-25 = moderate stress, 26-33 = severe stress, 34+ = extremely severe stress]).

**Data analysis**

Collected data were entered and analyzed using the statistical Package for Social Sciences (SPSS) version 23.0 software. Chi-square test used to test associations between independent and dependent variable. A p-value <0.05 was used to show a statistically significant association.

Data obtained was analyzed using the descriptive statistical tables “frequencies - average” This data was also displayed in tables and graphs using the computer application (Microsoft ward).

Also was analyzed by using the frequency distribution, Mean, and Standard deviation for quantitative data.

**Result**

Variable	Frequency	
(N = 240)		
Age	Minimum	21
	Maximum	39
	Mean	23.99
	Standarddeviation	1.725

**Table 1:** Sample distribution according to (Age) variable.

Table 1 shown in table age ranged from 21 to 39 with mean 23.99 year's, The participants were from different colleges.

Variable		Frequency	Percentage
Gender	Male	112	46.7%
	Female	128	53.3%
	Total	240	100%
Collages	Nursingcollages	7	2.9%%
	Medicine collages	45	18.8%
	Engineering collages	68	28.3%
	Administrative collages	86	35.8%
	Literature collages	15	6.3%
	Womencollages	19	7.9%
	Total	240	100%
Maritalstatus	Single	210	87.5%
	Married	27	11.3%
	Divorce	3	1.3%
	Total	240	100%
Place of resident	Rural	39	16.3%
	Urban	201	83.8%
	Total	240	100%
Living	Low	6	2.5%
	Moderate	224	93.3%
	High	10	4.2%
	Total	240	100%
Academic achievement	Excellent	54	22.5%
	Very good	122	50.8%
	Good	61	25.4%
	Acceptable	3	1.3%
	Total	240	100%

**Table 2:** Demographic characteristics of students.

Table 2 total of 240 graduate students (112 male and 128 female) took part in this investigation; was the biggest sample of Administrative college (35.8%), The category of singles from the marital status is most (87.5%), We found that the urban residents

place is more than Rual percentage (83.8%), The moderate living standred is most (93.3%), The main academic achievement is very good (50.8%).

Variable No Insomnia		Insomnia 1.20 ± 0.404		P value
		Insomnia		
Gender	Male	37.1%	9.6%	0.966
	Female	42.5%	10.8%	
Collages	Nursing collages	2.5%	0.4%	0.634
	Medicine collages	15%	3.8%	
	Engineering collages	21.7%	6.7%	
	Administrative collages	29.2%	6.7%	
	Literature collages	4.2%	2.1%	
	Womencollages	7.1%	0.8%	
Marital status	Single	68.3%	19.2%	0.287
	Married	10.0%	1.3%	
	Divorce	1.3%	0.0%	
Place ofresident	Rural	13.3%	2.9%	0.676
	Urban	66.3%	17.5%	
Living	Low	1.7%	0.8%	0.532
	Moderate	75.0%	18.3%	
	High	2.9%	1.3%	
Academic achievement	Excellent	18.8%	3.8%	.097
	Very good	42.1%	8.8%	
	Good	17.5%	7.9%	
	Acceptable	1.3%	0.0%	

**Table 3:** Association between insomnia and Demographic characteristic.

Table 3 there was no significant difference in the prevalence of insomnia between males and females, as insomnia increasing among females by (10.8%) compared to insomnia among males (9.6%) as shown in table (2) (p-value = .0966).

Participants from administrative colleges and engineering colleges. The prevalence of insomnia is equal but higher than other colleges by (6.7%) as shown in table (2) and No significant related to insomnia (p-value = .0634).

The analysis showed that insomnia is widespread in the singles students by (19.2%) as shown in table (2) and No significant related to insomnia (p-value = .0287).

We found that the ratio of Urban was affected by insomnia (17.5%) more rural as shown in table (2) and No significant related to insomnia (p-value = .0676).

The prevalence of insomnia at the moderate standard of living is most compared to high and low living standard (18.3%) as shown in table (2) and No significant related to insomnia (p-value = .0532).

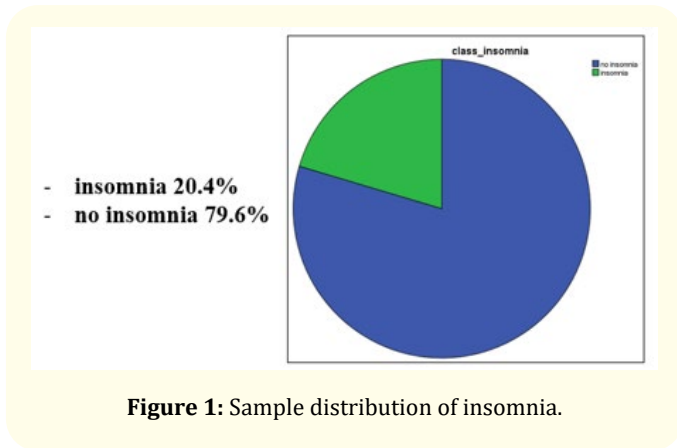
The prevalence of insomnia has a simple effect on academic achievement for most of the students from 240 students to a very good estimate (8.8%) as shown in table (2) No significant related to insomnia (p-value = .079).

Figure 1 Graphic shows the prevalence of insomnia according to the Insomnia Severity Index (ISI) score, The overall prevalence of insomnia in the study was 20.4%.

Correlation	P-value
Insomnia, Stress	0.000
Insomnia, Anxiety	0.000
Insomnia, Depression	0.000

**Table 4:** Association between insomnia and (Stress, Anxiety, Depression).

Table 4 shown in table were found to be significantly associated between insomnia and Stress, Anxiety, Depression (P-value = 0.000).



Factor No Insomnia		Insomnia 1.20 ± 0.404		P value
		Insomnia		
Smoking	Yes	5	6	0.064
	Sometime	0	6	
	NO	44	179	
Qat chewing	Yes	2	7	0.886
	Sometime	12	41	
	NO	35	143	
Caffeine	Yes	21	52	0.091
	Sometime	10	58	
	NO	18	81	
Nap	Yes	24	108	0.020
	Sometime	12	21	
	NO	13	62	

Noise	Yes	14	63	0.606
	Sometime	14	42	
	NO	21	86	
Regular Exercise	Yes	2	20	0.018
	Sometime	14	85	
	NO	33	86	
Mobile use after 8 pm	Yes	47	170	0.332
	Sometime	1	13	
	NO	1	8	
Studying hours	<2 hr/day	15	67	0.630
	2-4 hr/day	10	45	
	>4 hr/day	24	79	
Fear of failure in future	Yes	24	61	0.060
	Sometime	14	60	
	NO	11	70	
Problem coping with academic demands	Yes	32	83	0.015
	Sometime	8	67	
	NO	9	41	

**Table 5:** Social factors that leading to insomnia.

Table 5 shown in table A nap, regular exercise and problem coping with academic demands appeared to be a significantly related to insomnia (p-value = .020, .018, .015).

Substance use including smoking, qat chewing and caffeine drink, appeared not significantly related to insomnia (p-value = .064, .886, .091).

Moreover, noise, mobile use after 8 pm, studying hours and fear of failure in future appeared not significantly related to insomnia (p-value = .606, .332, .630, .060).

## Discussion

Adults with insomnia have trouble falling asleep or staying asleep and wake up early in the morning or have nonrestorative sleep, according to the American Psychiatric Association.

The purpose of the current study was to define the prevalence of insomnia and relationship with depression, anxiety, and stress among graduate-level students at Hadhramaut university.

Our study was conducted among a sample of 264 students; the age of the participants was between 21 and 39 years old; 46.7% of

participants were male and 53.3% female, and revealed that the prevalence of insomnia according to the ISI score, was 20.4%.

To our knowledge, this study was unique in Mukalla city and in Arab countries, three studies from Saudi Arabia, Egypt, and Jordan. The Egypt 27.7% (Barakat, *et al.* 2016) [23] and Jordan 26% (Alqudah *et al.* 2019) [24] respectively reported high prevalence of insomnia, but a Saudi study similar to ours reported 19.3% (Albasheer, *et al.* 2020) [25].

Studies from around the world have reported that the prevalence rate of insomnia is low in Italy (Choueiry, *et al.* 2016) [26] but reported a high prevalence in Poland (Magdalena, *et al.* 2021) [27].

The discrepancy could be explained by variation in sociodemographic traits.

Such as the college students were enrolled in and the case definition scoring method.

In contrast to our study, prior studies reported a significant association.

Between insomnia and gender (Alhadi and Alhuwaydi, 2022) [28] and marital status (Haile, *et al.* 2017) [29]. The variation in sample size and study population may be the reason for this dissimilarity.

The field of study was found to be a significant risk for insomnia. nap, physical Exercise and academic demand were found to be important correlates of insomnia.

Similar result reported (Alsaggaf, *et al.* 2016) (48) (Jiang, *et al.* 2015) [30] (İlkben and Saime 2020) [31]. Napping late in the day can interfere with the natural rhythm, making it more difficult to fall asleep at night; academic demand contributes to insomnia.

Because these students performed late-night computer work, which can disrupt the regulation of biological sleep and wake rhythms. regular physical exercise impact positively on sleep, and those who did not do regular physical exercise had more insomnia.

Some research has discovered a connection between university students mental health issues and insomnia. Specifically, insomnia has been linked to an increase in anxiety, depression, and stress-related symptoms (Carrión-Pantoja *et al.*, 2022) [32] (Albasheer, *et al.* 2020) [33].

As many as 19% to 74.4% of individuals with insomnia symptoms are said to experience mental health issues (Taylor, *et al.* Citation 2013) [34].

Similar In this study, there was a significant association between the prevalence of insomnia and the presence of mental health symptoms such as depression, anxiety, and stress. assessed by the DASS-21. However, it's unclear if insomnia causes problems with mental health or whether those problems cause insomnia.

Students who suffer from sleep problems have more depression, stress, and anxiety, which are suggested by problematic Internet use behavior, smoking, and low self-esteem, and academic pressure.

## Conclusion

insomnia is prevalence among graduate-level students at Hadhramout University, anxiety, stress, and depression together with a nap, regular exercise, and academic demand are important association.

## Recommendations

To researchers:

- Do the same study, but with a large sample, and this sample should be inclusive of all student in university Hadramout.

To Deanship of Hadramout University:

- Distributing a suitable schedule for them, taking care of time and taking a coordinated break in their schedules
- Establishment of social service units at the university to provide support and guidance to deal with conditions and pressures leading stress and insomnia.
- To students:
- Change the habits that harm students and affect the increase in insomnia and their academic performance, such as caffeine and other effects.

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