

# Sleep Disorder, Its Causes, and Related Consequences of Lorestan Medical Sciences Students

Farideh Malekshahi<sup>1</sup>, Parastoo Baharvand<sup>2</sup>, Maryam Hormozi 

<sup>1</sup> Social Determinants of Health Research Center, School of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran

<sup>2</sup> Razi Herbal Medicines Research Center, School of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran

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## ABSTRACT

*Sleep disturbance profoundly impacts individuals' physical and mental well-being. Inadequate sleep is a crucial marker for numerous health conditions. This study was a descriptive, analytical, cross-sectional study. The statistical population was all students studying at Lorestan University of Medical Sciences, Iran, in 2019, who were selected through multi-stage sampling. 338 persons answered the standard Pittsburgh Sleep Quality Index questionnaire and a researcher made questionnaire to investigate the causes of sleep disorders in students. Findings showed that 204 students (59.6%) had a sleep disorder. There is no statistically significant relationship between gender and sleep disorders, but there is a statistically significant association between academic courses and sleep disorders. Most sleep disorder cases were among nursing and midwifery students, and the least were among laboratory sciences students. Sleep disorder was more common in those who did not take medicine, and a statistically significant relationship exists between having a mental illness history and sleep disorder. This study indicates that students' sleep quality could be better and should be recognized as a serious health issue. Student's academic performance and sleep quality can be enhanced by taking the proper steps to examine the reasons for their sleep difficulties and lessen the negative effects that follow from them.*

**Keywords:** Sleep Disorder; Medical Science Students; Lorestan

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## Introduction

Sleep is considered one of the most significant behaviors of humans and nearly comprises one-third of human life [1]. Studies regarding sleep indicated that sleep is a part of the life cycle for most people, which is affected by biological rhythms [2]. Among health science experts, the issue of sleep is very important due to its physical and mental dimensions [3]. Sleep disorders are common in developing or developed communities [4]. The studies' reports indicated that one-third of mature adults experience a kind of sleep disorder during their lives [5,6]. Sleep disorder has a significant effect on physical and mental health. Low-quality sleep is an important indicator of many diseases [7]. Studies indicated that night insomnia could affect life quality and probably increase the risk of depression and anxiety. Moreover, insomnia

can negatively influence cognitive performance and the level of concentration a person has when doing everyday activities [8]. Studies indicated that decreasing the total time of high-quality sleep results in fatigue and a decrease in life quality as well as failure in cell repair, failure in memory and learning [9], gastrointestinal disorders, cardiovascular diseases [10], risk of having diabetes [11], blood pressure disorder [12], obesity and weight gain, metabolic disorder, stroke, depression, anxiety, and other mood disorders, decrease in the performance of the nerve system, decreased performance of the endocrine, decreased function of body immune system and early death. This can cause problems and impose exorbitant expenses on the healthcare system [13,14].

Several factors affect sleep disorders in such a way that the researchers proposed and

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\* Corresponding author: Maryam Hormozi

Razi Herbal Medicines Research Center, School of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran E-mail: [maryamhormozi@yahoo.com](mailto:maryamhormozi@yahoo.com)

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assessed different methods to improve sleep quality in different groups. The researchers suggested that various factors influence the number of sleep disorders, including age, gender, and environmental and occupational factors [15]. Meanwhile, factors such as socioeconomic lifestyle, enuresis, stress, environmental stimuli, and so on can affect the quality and quantity of the people [16].

On the other hand, studies suggested that sleep disorders are reported more in some of the special groups like women, people working in shifts such as nurses, drivers, prisoners, and university students. Among all occupations, jobs, and people, sleep disorders are specifically important in medical science students. Medical science students are more subject to sleep disorders, given the need for night activities at some stages, high amounts of stress, and working pressure. Meanwhile, living in a dormitory decreases the quality. Students suffer from sleep disorders, including insomnia, due to confrontation with various stressful factors such as paying for the costs, problems adopting the educational system, academic pressure, a new lifestyle, disturbing sleep and waking hours, living in dormitories, exams, and doing assignments [17].

Poor sleep quality among students leads to a decrease in their performance and the level of satisfaction with academic progress. Entering university for most students is accompanied by a serious change in lifestyle. Living in a dormitory can affect the sleep of the students [18]. Inadequate sleep and deprivation of useful sleep cause academic failure, lack of concentration and absence from class, and sleepiness when participating in classes then these problems cause so much scientific, behavioral, and emotional damage to them and can lead to decreased educational efficiency [19]. The prevalence of sleep disorders in the general population is about 15-42%, and in Iran, more than 6 million people suffer from a sleep disorder [20].

Various studies have been conducted to study the frequency of sleep disorders, factors, and their consequences on university students, and different results have been reported. A

study by Bahrami et al. aims to assess the quality of sleep and its causes and associated consequences from the viewpoint of the university students residing in the dormitory of the health department of Semnan Medical Sciences University. This study concluded that the sleep quality of the students residing in the dormitory could be improved, and sleep disorders resulting from sleep should be considered an important health issue among students.

Adopting appropriate measures to investigate the causes of the students' sleep disorders and decreasing their negative consequences can improve their sleep quality and academic performance. In a study by Atadokht et al., students' sleep quality at the Mohaghegh Ardabil University and its related factors were investigated. The results obtained from this study indicated no difference between the sleep quality index of the boys and the girls and native and non-native students. However, students who lived in the dormitory had lower sleep quality.

A study conducted by Asl Mousavi et al. aims to assess the prevalence of sleep disorders among Yasouj Medical Sciences University students. This study concluded that most university students need better sleep quality.

Considering that a high percentage of students suffer from sleep disorders, we hope that compiled programs are conducted to study and identify the causes of sleep disorders [22]. Although several studies have been conducted on different populations to investigate sleep disorder frequency, given that university students are under great pressure due to residence at the dormitory, missing family, cultural diversity, academic courses, and so on, this can significantly affect the quality and quantity of their sleep. Considering no study has been done so far with this purpose on the students of the Lorestan University of Medical Science then, this study is designed to study sleep disorder, its causes, and associated consequences on the students of the Lorestan University of Medical Sciences.

## Materials and Methods

This study is a descriptive, analytical, cross-sectional study, and its statistical population was all students studying at Lorestan Medical Sciences University in 2019. Sampling was conducted at multi-stages, i.e., randomly classified by the number of students in each category and educational course. In such a way, every school was considered a category, and every educational course at each school was considered a sub-category and then given to the number of students at each course. According to the list of students, school sampling was conducted using a systematic random method.

The sample size was estimated 338 subjects given the students' sleep disorder prevalence 20% [23],  $d=.06$ , and design effect=2.

The study's inclusion criteria were studying at Lorestan Medical Sciences University in 2019 and tending to participate in the study. Meanwhile, the exclusion criteria include a lack of tendency to fully complete the research tools.

After design confirmation at the university's ethical committee, researchers referred the students to take their consent and conduct questionnaires individually and face-to-face. This process continues until the study units were completed.

### Instruments

1. Pittsburgh Sleep Quality Index (PSQI): This questionnaire investigates the attitudes of the persons regarding sleep quality during the last four weeks. PSQI was designed by Buysse et al., with 6.89 sensitivity and ( $r=0.88$ ) validity in 1989 [24], and it was assessed at Iran's nursing and midwifery university in the study conducted by Malekzadegan et al. in 2005 [25] through content validity. Meanwhile, it was assessed by Abadi Hossein et al. [26] with 90% sensitivity and 87% specificity. Pittsburgh Sleep Quality Index (PSQI) includes ten items. The given questionnaire consists of 7 domains, including the first domain (the quality of the mental sleep or general description of the person from sleep quality), the second domain

(latent sleep or delayed sleep), the third domain (time of sleeping), fourth domain (sleep adequacy, which is calculated based on the ratio of useful sleep time to the total spend time in the bedroom), fifth domain (waking up at night), sixth domain (taking sleeping drugs), seventh domain (failure at everyday performance as an experienced problem resulting from sleeplessness of the person). After the conclusion, gaining a score of 5 or more on the whole questionnaire is specified as a sleep disorder with bad quality sleep. In this questionnaire, the general score of the person is 0 to 21. In front of each item, scores 0 to 3 are available, so higher scores are devoted to more adverse sleep situations. Scores of 0, 1, 2, and 3 on each scale indicated a normal situation, having mild, moderate, and strong problems.

2. Questionnaire to investigate the causes of sleep disorders in students: This questionnaire was developed in a study by Bahrami et al. in 2018 to study similar texts and studies and the opinions of some students living in a dormitory and by providing some new questions by the researcher align with study's objectives. This questionnaire's qualitative and quantitative content validity was confirmed by the opinions of eight professors (CVR = 0.91 and CVI = 0.89). Meanwhile, Cronbach's alpha was 0.82, which was acceptable [22]. This questionnaire includes seven closed and one open question regarding the causes of sleep disorders. The open question is included in the questionnaire because the students can also state their other reasons.

3. Questionnaire to investigate the consequences of sleep disorders in students: This questionnaire was developed in a study by Bahrami et al. in 2018 to study similar texts and studies and the opinions of some students living in a dormitory and by providing some new questions by the researcher align with study's objectives. This questionnaire's qualitative and quantitative content validity was confirmed by the opinions of eight professors (CVR = 0.91 and CVI = 0.89). Meanwhile, Cronbach's alpha was 0.82, which was acceptable [22]. This questionnaire includes six closed and one open question regarding the

consequences of sleep disorders. The open question is included in the questionnaire because the students can also state their other reasons.

After data collection, data were entered into SPSS 18 software and analyzed. For descriptive analysis, descriptive statistics (mean, standard deviation, and frequencies) and analytical statistics (chi-square) were applied. The significance level was considered lower than 0.05.

**Ethical Consideration**

Our study was approved by the ethics committee of Lorestan University of Medical Sciences, Khorramabad, Iran, with the ethics number of IR.LUMS.REC. 2019. 206.

**Results**

This study involved 342 students. The average age of the participants was 24.15±4.90, with a minimum age of 18 and a maximum age of 52. Of the total, 204 students (59.6%) had a sleep disorder.

According to Table 1, the most common causes of insomnia ticked by the students in the questionnaire were mental and intellectual preoccupation (65.8%), watching movies, and

listening to music late at night (59.5%). The lowest cause was mentioned as physical and mental illness, with 26.8 percent.

According to Table 2, most cases that are reported as the consequences of insomnia were feeling sleepy (64.3%), tiredness and lack of vitality during the day (63.4%), and lack of concentration in class (60.4%).

According to Table 3, 85 students 22 years old and less (57%) and 119 students 22 years old (61.7%) suffered from a sleep disorder. Given a p-value of .226, no statistically significant association exists between age and sleep disorder. Meanwhile, according to the above Table, 108 men (64.3%) and 96 women (55.2%) have a sleep disorder (Chi2=2.633, p=0.908).

According to Table 4, 13 students consumed alcoholic beverages (54.3%), three students smoked (17.6%), 24 had a history of smoking Hooka (47%), and 164 did not. P value = .001, there is a statistically significant association between a history of drug misuse and sleep disorder. Meanwhile, according to the bottom of the Table, 120 students (52.6%) consumed tea and coffee, and 73.7% did not. P value = .001, there is a statistically significant association between tea and coffee consumption and sleep disorder.

Table 1: Table 1. frequency distribution related to insomnia among the studied students

#Variables		Frequency	Percentage	The cumulative percentage
Inappropriate physical condition	Yes	108	35.5	35.5
	No	196	64.5	100
Doing assignment midnight	Yes	115	37.6	37.6
	No	191	62.4	100
Watching movies and listening to music late at night	Yes	185	59.5	59.5
	No	126	40.5	100
Improper nutrition at dinner	Yes	112	36.1	36.1
	No	198	63.9	100.0
Lack of coordination among roommates	Yes	103	33.6	33.6
	No	204	66.4	100.0
Mental and intellectual preoccupation	Yes	208	65.8	65.8
	No	108	34.2	100.0
Mental and physical illness	Yes	83	26.8	26.8
	No	227	73.2	100.0

Table 2. The frequency distribution of sleep disorders related to insomnia among the students

Variables		Frequency	Percentage	Cumulative percentage
Feeling sleepy and lack of vitality during the day	Yes	196	63.4	63.4
	No	113	36.6	100
Feeling tiredness in the class	Yes	200	64.3	64.3
	No	111	35.7	100.0
Arriving late to class	Yes	104	33.9	33.9
	No	203	66.1	100.0
Absence from class	Yes	86	28.3	28.3
	No	218	71.7	100.0
Lack of concentration in the class	Yes	186	60.4	60.4
	No	122	39.6	100.0
Dissatisfaction with academic progress	Yes	158	51.3	51.3
	No	150	48.7	100.0

Table 3. The frequency distribution of sleep disorders based on age groups and gender among the students

Variables		Sleep disorder				Total	Chi <sup>2</sup>	P Value
		Positive		Negative				
		Number	Percentage	Number	Percentage			
Gender	Male	108	64.3	60	35.7	168	3.555	0.908
	Female	96	55.2	78	44.8			
Age (years)	≤22	85	57	64	43	149	1.435	0.226
	>22	119	61.7	74	38.3			

Table 4. Frequency distribution of sleep disorder based on the history of drug misuse, tea and coffee consumption among the students

Variables		Sleep disorder				Total	Chi <sup>2</sup>	P Value
		Positive		Negative				
		Number	Percentage	Number	Percentage			
History of Alcohol, Cigarette and Hooka	Alcohol	13	54.3	11	45.7	24	14.741	0.001
	Cigarette	3	17.6	14	82.4			
	Hooka	24	47	26	53			
Tea and coffee consumption	Non	164	65.3	87	34.7	251	7.466	0.001
	Yes	120	52.6	108	47.4			
	No	84	73.7	30	26.3	193		

## Discussion

This study was conducted to investigate sleep disorders, their causes, and related consequences among students of Lorestan University of Medical Sciences in 2018. Of the total, 204 students, 59.6% had a sleep disorder. The most reported causes of sleep disorder by the students were mental and intellectual preoccupation, watching movies, and listening to music at late hours of the night, and the least reported causes were physical and mental illnesses. Regarding determining sleep disorder causes from students' viewpoint, the study's results indicated various causes.

These results were consistent with some findings of similar studies. For example, Bahrami et al. stated that the most reported causes were related to mental and intellectual preoccupation among the students, which had a significant association with the total score of sleep disorder [21]. Aligning with these findings, in the Alimirzaei et al. study, more than 72% of students reported having mental and intellectual preoccupation, which had a direct statistical association with a total number of students' sleep disorders [2]. Considering that mental preoccupation has been among the factors that are effective in generating poor-quality sleep among students, more

comprehensive and precise studies are needed to identify the underlying causes of mental preoccupation in students so that appropriate measures can be taken. The most proposed consequences of insomnia were feeling sleepiness in class, tiredness, lack of alacrity during the day, and lack of concentration in class. Various studies have been conducted to study the frequency of sleep disorders, their causes, and their consequences in the students of different universities who reported different results. For example, the results of the Bahrami et al. study indicated that the sleep quality of the most studied students was below optimal [2]. This figure is high compared to the study by Ranjbaran et al. who reported the prevalence of sleep disorders in the general population as (15-24%) [20].

In the study by Bahrami et al. the average total score of sleep quality was calculated based on the PSQI scale of studied samples as  $86 \pm 3.34$ , which is relatively high [21]. One of the reasons for the higher prevalence of poor sleep quality among students in the study by Bahrami et al. [21] compared to other studies conducted on the student populations was that all of the studied population lived in the dormitory. In contrast, in other studies, the sleep condition of the students was measured as a whole regardless of where they lived.

The lack of significant difference between male and female students from the perspective of total sleep quality was consistent with the results of a study by Alimirzaei et al. [2] and Moudi et al. [12]. However, it was not consistent with the results of some other studies such as Mansouri et al. [27] that there is a significant difference between the sleep quality of the girls and boys. One reason for this lack of difference was the closeness of the subjects' ages and similarities in the students living in a dormitory. We observe in the study that male students have more sleep disorders than female students. These results were consistent with the results of some other studies, such as the results of a study by Giri et al. on Indian students, indicating a better sleep quality for female university students than male students [28]. These results were different from the results of some studies. For example,

according to a study by Bahrami et al. the total quality of boys was reported to be more favorable than that of girls [21].

There was no statistically significant association between the history of substance use and sleep disorder. Sleep disorder was most respectively in those who did not have any substance use history or had alcoholic beverage drinking history, but a statistically significant relationship exists between consuming tea and coffee. It means that for those who did not consume tea and coffee, more sleep disorders were experienced. These results were different from similar studies. For example, in the study by Bahrami et al., no significant difference was seen between caffeine consumption and the total quality of sleep of the studied students [21], which was similar to the results of a study by Alimirzaei et al. [2]. But the study of Ghoeshi et al. had similar results with the current study [18]. Among the reasons for the difference in the results of various studies, we can point to the statistical population of the studied people. The different results reported by different studies are not far from expected as additional factors such as different sample sizes, the intensity of significant association in different studies, different questionnaires for assessing sleep disorders, as well as different studied races in various communities, can lead to such differences in the results.

### **Recommendations and Limitations**

The quality of students' sleep may be improved by raising their understanding of proper sleep hygiene and the negative impacts of poor sleep quality and offering counseling and free services. Moreover, proper educational and welfare settings may be an effective step to enhance pupils' sleep quality.

One of the study's drawbacks was that the questionnaire's questions were self-reported, with the potential for biased responses. Future studies should re-examine these relationships to use the findings more forcefully in planning. Despite the compatibility of the results with those of other studies, significant results were not found regarding the relationship of many variables with students' sleep quality.

## Conclusion

The findings of this study demonstrate the significant incidence of poor sleep quality among the students who were the subject of the study. Additionally, it has been suggested that excessive drowsiness in class is a major effect of sleep problems from students' perspectives and that mental and intellectual preoccupations play a significant role in their development. To lessen the negative effects of these disorders that directly impact students' academic development and learning, university authorities must take appropriate measures by implementing the necessary reforms and highlighting the causes of these disorders.

## Conflict of Interests

Authors declare that they do not have any conflict interests.

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