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PREVALENCE OF SLEEP DISORDERS AND PERCEIVED STRESS AND THEIR ASSOCIATION AMONG UNIVERSITY STUDENTS IN JALALABAD CITY, AFGHANISTAN: A CROSS-SECTIONAL STUDY

Irfan Ullah Stanikzai[*1], Professor Janat Mir Momand[2], Muhammad Tariq Noor[3], Iftikhar Ahmad Zegar[4]

[*1]*vice chancellor of Academic Research at Rokhan University*
[2]*Lecturer of Medical faculty at Rokhan University*
[3]*Dean of Pharmacy faculty at Rokhan University*
[4]*Medical lecture Rokhan university, Afghanistan*

[*1]irfanullah6066@gmail.com, [2]janatmirmomand13@gmail.com, [3]mtariq.noor123@gmail.com, [4]iftikharahmadzegar3@gmail.com

[*1]https://orcid.org/0009-0006-1267-1997, [2]https://orcid.org/00 09000053176809

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Corresponding Author: *
Irfan Ullah Stanikzai

Abstract

Aim: *This study aimed to determine the prevalence of poor sleep quality and perceived stress, examine their association, and identify sociodemographic, lifestyle, academic, and personal factors associated with poor sleep among university students in Jalalabad City, Afghanistan.*

Methods: *A quantitative institution-based cross-sectional study included 210 students from Medicine, Stomatology, and Pharmacy faculties, selected through stratification by faculty followed by convenience sampling. Data are collected used a self-administered questionnaire, the Pittsburgh Sleep Quality Index, and the 10-item Perceived Stress Scale. Descriptive statistics, Fisher's exact test, Spearman correlation, and binary and multivariable logistic regression are applied.*

Results: *Complete PSQI data are available for 195 students, of whom 40.0% had poor sleep quality. Among 198 students with complete stress data, 84.8% reported moderate perceived stress. Stress category is associated with sleep quality ($p = 0.011$), but PSS-10 score is not significant in the final model. Increased non-academic screen time (aOR = 2.48), academic stress (aOR = 2.14), and major personal or family problems (aOR = 4.88) independently predicted poor sleep.*

Conclusion: *Poor sleep and moderate stress are common. Sleep quality is more strongly related to screen exposure, academic pressure, and personal difficulties than to general perceived stress after adjustment.*

Recommendations: *Universities should provide sleep-health education, screen-time guidance, academic stress-management programs, confidential counselling, and psychosocial support. Larger longitudinal multicenter studies are recommended to clarify causal relationships and improve generalizability.*

INTRODUCTION

Sleep is a fundamental biological process that supports physical health, mental well-being, emotional regulation, memory, concentration, and academic performance. Adequate and good-quality sleep is particularly important for university students because they are required to learn complex information, complete academic assignments, and perform well in examinations. Poor sleep may lead to daytime fatigue, reduced attention, low motivation, mood disturbances, and impaired academic performance.

University students are at increased risk of sleep problems because of demanding academic schedules, examination pressure, irregular sleeping patterns, excessive screen time, caffeine consumption, limited physical activity, and personal or family difficulties. At the same time, university life may expose students to considerable psychological stress. Perceived stress refers to the degree to which individuals consider the situations in their lives unpredictable, difficult, or beyond their ability to manage. Persistent stress can interfere with falling asleep, reduce sleep duration, and increase nighttime awakenings. Poor sleep can also make students more emotionally vulnerable and less able to cope with stress, suggesting a possible two-way relationship between sleep and stress.

Sleep disorders and perceived stress among university students have become important public-health and educational concerns. However, limited research has examined these problems among university students in Afghanistan, particularly in Jalalabad City. Local evidence is needed because students' sleep and stress experiences may be influenced by their academic environment, socioeconomic circumstances, family responsibilities, lifestyle habits, and access to psychological support.

Therefore, this cross-sectional study aimed to determine the prevalence of poor sleep quality and perceived stress and examine their association among university students in Jalalabad City, Afghanistan. It also investigated whether selected socio-demographic, academic, lifestyle, and personal factors including screen time, academic stress, exercise, and major personal or family problems are associated with poor sleep quality. The findings may help universities and health professionals develop appropriate programs to improve students' sleep habits, stress management, psychological well-being, and academic functioning.

Research problem

Sleep problems and perceived stress are common among university students and may negatively affect academic performance, physical health, psychological well-being, and daily functioning. Students may experience academic pressure, prolonged screen time, and personal or family difficulties that can disrupt their sleep. However, limited evidence is available regarding the prevalence of poor sleep quality and perceived stress and their relationship among university students in Jalalabad City, Afghanistan. This lack of local evidence makes it difficult for universities to develop appropriate student-support interventions. Therefore, this study examined the prevalence of poor sleep quality and perceived stress, their association, and the factors related to poor sleep among university students in Jalalabad City.

Research Questions

What is the prevalence of poor sleep quality among university students in Jalalabad City, Afghanistan?

What is the level and prevalence of perceived stress among university students in Jalalabad City?

Is perceived stress associated with poor sleep quality among university students in Jalalabad City?

Are socio-demographic, lifestyle, and academic factors associated with poor sleep quality among university students in Jalalabad City?

Specific Objectives

To determine the prevalence of poor sleep quality among university students using the Pittsburgh Sleep Quality Index (PSQI).

To assess the level and distribution of perceived stress among university students using the Perceived Stress Scale (PSS-10).

To examine the association between perceived stress and poor sleep quality among university students.

To assess the association of socio-demographic, lifestyle, and academic factors including sex, age group, marital status, faculty, year of study, residence, screen time, smartphone use before sleep, caffeine consumption, exercise, academic stress, and major personal or family problems with poor sleep quality.

Literature Review

According to Hameed, M., Ali, H., Atiq, H., iseem, A., Iqbal, K., Aqeel, S. H., ... & Ahmad, I. (2024). how students deal with difficult life situations and negative thoughts. It found that positive coping methods can help reduce psychological trauma and repeated negative thinking. Social support is also found to be related to better coping among students. The study shows that students need proper knowledge and skills to handle daily problems. It also discussed how traumatic events can affect students' health and their thinking about the future. The research is conducted in Pakistan and Afghanistan, showing the need for more studies in this area.

According to Gox, F. (2024). Evaluation of anxiety, stress, and depression study has done among university students in Herat found that anxiety, depression, and stress are common mental health problems. Academic pressure and financial difficulties are important factors affecting students' mental health. Poor sleep, lack of physical activity, and unhealthy lifestyle habits also had an effect. Students in health-related fields, especially medical students, showed higher levels of these problems. The study suggests that universities should provide academic support and mental health services. It also highlights the importance of good sleep and regular physical activity for students.

Based on Neyazi, A., Mohammadi, A. Q., Razaqi, N., Satapathy, P., Mehmood, Q., & Neyazi, M. (2024). found that anxiety, sleep problems, and violence are common among Talibs in Afghanistan. Violence is linked with higher anxiety and poor sleep. The researchers suggested regular mental health screening and psychological support for vulnerable students. They also recommended reducing physical violence in mosque settings to improve their mental well-being.

Basded on Neyazi, A., Rahimi, B. A., Mohammadi, A. Q., Arsin, P., Afzali, H., Neyazi, M., ... & Amini, P. (2025). study found that poor sleep quality is common among people in Afghanistan and is linked with lower quality of life. Sleep problems are more common among older people, those with low income, and people who had recently experienced a bad event. The study suggests that sleep quality should be considered when studying quality of life. Future research should use more accurate methods to measure sleep problems.

According to Sherzad, A. G., Zafarzai, K., Nabizada, M. Q., Hussaini, A. S., Jabarkhil, A. N., Mawlavyzada, H., ... & Saidy, S. (2025). Excessive Facebook use is shown to cause several health problems among students. Many students reported eye pain, headaches, sleep problems, and feelings of loneliness. Those who used Facebook more often are also more likely to become dependent on it. The researchers pointed out that students should understand the health effects of social media and use it in a safer way.

According to Alemi, Q., Panter-Brick, C., Oriya, S., Ahmady, M., Alimi, A. Q., Faiz, H., ... & Ventevogel, P. (2023). researchers suggested several ways to improve mental health care and make it more accessible. They emphasized that services should respect local culture and provide support within communities. Psychological interventions based on evidence are also considered important. Better coordination between different health services can help create a more sustainable system of care.

According to Haidarzada, A. S., Neyazi, A., Padhi, B. K., Razaqi, N., Afzali, H., Tabib, R. M., ... & Griffiths, M. D. (2024). Factors associated with sleep quality among Afghan healthcare workers. *Health Science Reports*, 7(9), e70018. Poor sleep quality is reported among healthcare workers in Afghanistan. Several factors are linked with sleep problems, including night shifts, economic status, family situation, and recent traumatic experiences. The study suggests that health employers should reduce excessive working hours and provide proper rest during long shifts. A healthier work environment may also support better patient care.

According to Mohammadi, E. M., Khawrin, M. K., & Qani, A. R. (2025). study at Bamyan University, many students are experiencing anxiety, depression, and sleep problems. The research also showed a clear relationship between physical and psychological health. Because of these issues, the study suggested providing counseling and mental health services on campus. Physical activities, healthy nutrition, and awareness programs are also recommended to support students' well-being.

According to Noormal, A. S., Winkler, V., Bhusari, S. B., Horstick, O., Louis, V. R., Deckert, A., ... & Dambach, P. (2024). NCD risk factors are common across Afghanistan, even though reliable data about their prevalence is limited. Overweight, high blood pressure, unhealthy diet, and lack of physical activity are reported as major concerns. The review suggests improving healthcare services, especially in rural areas, and promoting healthier lifestyles. More national research is also needed to better understand these diseases and plan suitable interventions.

According to Azizurrahman, A., Abdulillah, K., Momina, S. H., Zekria, H. S., & Arifullah, A. Evaluation of Depression Among Students of Curative Medicine at Kabul: Depressive symptoms are found to be common among medical students in Kabul. A considerable number of students are affected by depression, showing that it is an important issue among this group. The study suggested that regular screening and assessment could help identify students who may need support.

According to Sulthana, H., Jan, A., Verma, A., Sah, R., Mehta, R., Ullah, A., ... & Ullah, A. (2025). The study showed a relationship between e-cigarette use and sleep problems. Although e-cigarettes are often seen as an alternative to regular cigarettes, they may still affect health. Poor sleep can also influence a person's daily and overall well-being. The researchers suggested stronger public health measures to reduce e-cigarette use.

According to Carpi, M., Cianfarani, C., & Vestri, A. (2022). Poor sleep quality and insomnia are common among university students in Italy. The study also found a significant link between sleep quality and both physical and mental health. These findings show that sleep may have an important role in students' overall well-being. Further research is suggested to understand this relationship more clearly.

According to Lemma, S., Gelaye, B., Berhane, Y., Worku, A., & Williams, M. A. (2012). Poor sleep quality is common among university students in Ethiopia and is linked with mental health problems. The study suggests that sleep problems may also affect students' daily activities and academic performance. It emphasized the need to increase students' awareness about healthy sleep habits. Better sleep may support both mental health and academic life.

According to Abu Khashan, M., Aldarak, S., Zahdeh, M., Alawneh, A., Abo Dyak, N., Qazae, S., ... & Zrineh, A. (2026, April). study among female medical and nursing students in Palestine showed high levels of PMS symptoms, poor sleep, and stress. Poor sleep and higher stress are associated with more severe PMS symptoms. Stress appeared to have a stronger connection with the severity of these symptoms. The researchers suggested programs that support stress management, healthy sleep, and menstrual health.

According to Innab, A., Alenezi, A., Khaled, A., Dewan, M., & Mostafa, M. (2025, November). study PMDD can have a strong effect on the

mood and daily life of female students. The study suggests that better awareness and psychological support may help students manage their symptoms and stress. Sleep problems are also considered an important issue for students with PMDD. More long-term research is needed to understand the relationship between stress, sleep, and PMDD.

According to Alrashed, F. A., Alsubiheen, A. M., Alshammari, H., Mazi, S. I., Al-Saud, S. A., Alayoubi, S., ... & Dhiman, G. (2022). Sleep problems, anxiety, stress, and depression are common among pre-clinical medical students. Students with unhealthy lifestyles and difficult social backgrounds had a higher risk of psychological distress. Poor sleep is also related to anxiety and problems with academic goals. The study suggested regular screening and healthy lifestyle programs to support students' mental health and academic life.

According to Dakanalis, A., Papadimitriou, K., Alexatou, O., Deligiannidou, G. E., Pappa, M., Papadopoulou, S. K., ... & Giaginis, C. (2025). Following a healthy diet such as the Mediterranean diet is linked with lower stress and better sleep among university students. Students with healthier eating habits may also have better quality of life and academic performance. The study suggests nutrition education and healthy eating programs for students. Further research is needed to understand this relationship more clearly.

According to Manzar, M. D., Salahuddin, M., Pandi-Perumal, S. R., & Bahammam, A. S. (2021). Higher stress is linked with more anxiety among students, especially those who also had insomnia. The study suggested that insomnia may play a role between stress and anxiety. However, more long-term research is needed to confirm this relationship.

According to Omopo, O. E. (2025). Among tertiary students in Ibadan, higher stress is associated with sleep problems and substance use. Sleep quality also played a role in the link between stress and substance use. Sexual minority students showed greater vulnerability to these problems. The study highlights the need for health promotion and support programs for different student groups.

Research Methodology

A quantitative, institution-based cross-sectional study is conducted to determine the prevalence of poor sleep quality and perceived stress and to examine their association among university students in Jalalabad City, Afghanistan.

Study Population

The study population consisted of undergraduate students enrolled in the MD, Stomatology (STO), and Pharmacy (PHA) faculties of the selected university in Jalalabad City during the study period. Students from different years of study, age groups, marital-status categories, and residential arrangements are eligible to participate. Students who did not provide consent or submitted substantially incomplete questionnaires are excluded from the relevant analyses.

Sample Size

A total of 210 university students participated in the study. Complete Pittsburgh Sleep Quality Index (PSQI) data are available for 195 students, while complete Perceived Stress Scale–10 (PSS-10) data are available for 198 students. The analysis examining the association between stress category and sleep quality included 183 students with complete data for both variables. The final multivariable logistic regression model included 165 complete observations.

Sampling Technique

A stratified sampling approach is used to obtain participants from the three faculties: Medicine (MD), Stomatology (STO), and Pharmacy (PHA). Within each faculty, eligible students are recruited according to their availability during the data-collection period until the intended sample is reached. Therefore, the final participant selection involved stratification by faculty followed by convenience sampling within each stratum.

Data Collection and Study Instruments

Data collected through a structured, self-administered questionnaire. The questionnaire collected information about socio-demographic characteristics, including age, sex, marital status, faculty, year of study, and residence. It also assessed selected lifestyle, academic, and personal factors, such as non-academic screen time, smartphone use before sleep, caffeine consumption, exercise frequency, academic stress, and major personal or family problems. Sleep quality during the previous month is measured using the Pittsburgh Sleep Quality Index. Its seven components are combined to calculate a global PSQI score. A global score of ≤5 indicated good sleep quality, while a score of >5 indicated poor sleep quality. Perceived stress is assessed using the 10-item Perceived Stress Scale. The total PSS-10 score ranged from 0 to 40 and is classified as low (0–13), moderate (14–26), or high (27–40) perceived stress.

Data Analysis

Data are checked, coded, cleaned, and analyzed using appropriate statistical software. Categorical variables are summarized using frequencies and percentages. Continuous variables, including the PSQI and PSS-10 scores, are described using means, standard deviations, medians, ranges, and 95% confidence intervals where appropriate.

The prevalence of poor sleep quality is calculated by dividing the number of students with a PSQI score above 5 by the total number with complete PSQI data. The prevalence of low, moderate, and high perceived stress is calculated among students with complete PSS-10 data. Fisher's exact test is used to examine associations between categorical variables and sleep quality, particularly because some categories contained small numbers of observations. Spearman's rank correlation is used to assess the relationship between continuous PSQI and PSS-10 scores. Binary logistic regression is performed to estimate the association between perceived stress and poor sleep quality. Crude odds ratios and adjusted odds ratios with 95% confidence intervals are reported. The initial adjusted analysis controlled for age group and sex. A multivariable logistic regression model is then fitted to identify independent predictors of poor sleep quality, including PSS-10 score, non-academic screen time, academic stress, major personal or family problems, age group, and gender. A sensitivity analysis restricted to first-occurrence or non-duplicate response patterns is conducted to examine the robustness of the findings. Statistical significance is determined at a two-sided p-value of less than 0.05. Because the study is cross-sectional, the observed associations are not interpreted as causal relationships.

Results

Table 1. Socio-demographic characteristics of university students

Characteristic	Category	n	%
Age group	20–25 years	135	64.3
	26–30 years	6	2.9
	30–40 years	39	18.6
	>40 years	9	4.3
	Missing	21	10.0
Sex	Male	165	78.6
	Female	45	21.4
Marital status	Single	168	80.0
	Married	33	15.7
	Other	6	2.9
	Missing	3	1.4
Faculty	MD	105	50.0

	STO	60	28.6
	PHA	45	21.4
Residence	With family	177	84.3
	University hostel/dormitory	27	12.9
	Rented accommodation	3	1.4
	Other	3	1.4
Year of study	1st year	148	70.5
	2nd year	14	6.7
	3rd year	34	16.2
	4th year	6	2.9
	Missing	8	3.8

The above table show that A total of 210 university students are included in the study. Most participants are male (78.6%), single (80.0%), and living with their families (84.3%). The largest age group is 20–25 years (64.3%), and 70.5% of participants are first-year students. Half of the participants are enrolled in the MD faculty.

Table 2. Sleep quality and PSQI characteristics among university students

Sleep-related measure	Result
Participants with complete PSQI data	195
Mean PSQI global score	5.43 ± 3.11
Median PSQI score	5
PSQI score range	1–17
Mean PSQI, 95% CI	5.43 (4.99–5.87)
Good sleep quality, PSQI ≤5	117 (60.0%)
Poor sleep quality, PSQI >5	78 (40.0%)
95% CI for poor sleep prevalence	33.3%–47.1%

PSQI component scores

PSQI component	n	Mean ± SD
Subjective sleep quality	210	0.56 ± 0.84
Sleep latency	210	1.09 ± 0.77
Sleep duration	210	0.73 ± 0.72
Habitual sleep efficiency	210	0.59 ± 1.14
Sleep disturbances	195	1.38 ± 0.63
Use of sleep medication	210	0.39 ± 0.82
Daytime dysfunction	210	0.79 ± 0.79

the above table show that Among the 195 students with complete PSQI data, 78 had poor sleep quality, giving a prevalence of 40.0% (95% CI: 33.3%–47.1%). The mean PSQI global score is 5.43 ± 3.11. Among the seven PSQI components, sleep disturbances had the highest mean score (1.38 ± 0.63), followed by sleep latency (1.09 ± 0.77), suggesting that sleep disturbances and

difficulty initiating sleep are prominent sleep-related problems in the study population.

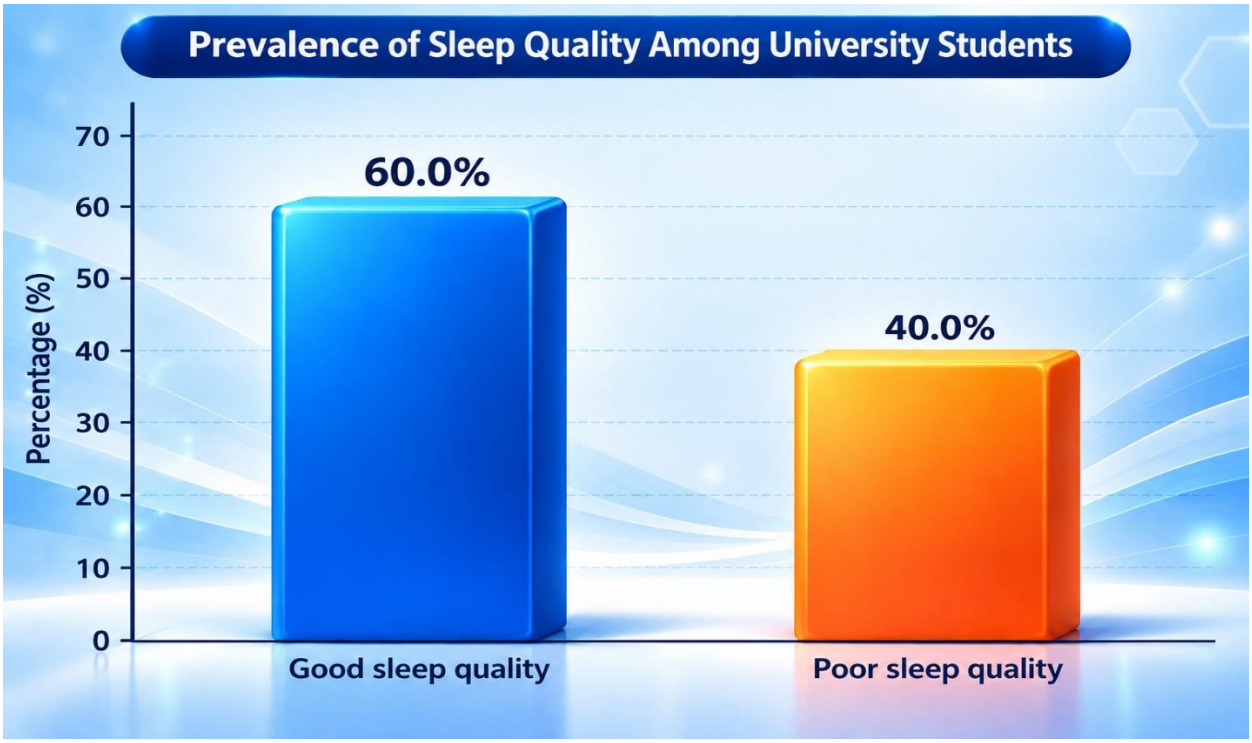


Figure 1. Prevalence of sleep quality among university students

the above figure shows that 60.0% of students had good sleep quality, while 40.0% had poor sleep quality. This indicates that poor sleep quality affected a substantial proportion of university students in the study.

Table 3. Perceived stress levels among university students

Perceived stress measure	Result	95% CI
Participants with complete PSS-10 data	198	
Mean PSS-10 score	18.08 ± 3.92	17.53–18.63
Median PSS-10 score	18	
PSS-10 score range	6–28	
Low perceived stress (0–13)	24 (12.1%)	8.2%–17.5%
Moderate perceived stress (14–26)	168 (84.8%)	79.1%–89.2%
High perceived stress (27–40)	6 (3.0%)	1.4%–6.6%

the above table show that the mean PSS-10 score among students is 18.08 ± 3.92, indicating an overall moderate level of perceived stress. Most students (84.8%) are classified as having moderate perceived stress, while 12.1% had low stress and 3.0% had high stress. The high-stress category contained only six students and should therefore be interpreted cautiously.

Table 4. Association between perceived stress level and sleep quality

Perceived stress level	Good sleep n (%)	Poor sleep n (%)	Total
Low stress	15 (62.5%)	9 (37.5%)	24
Moderate stress	93 (60.8%)	60 (39.2%)	153
High stress	0 (0.0%)	6 (100.0%)	6
Total	**108 (59.0%)**	**75 (41.0%)**	**183**

Fisher's exact test: p = 0.011

Additional analyses of the stress–sleep relationship

Analysis	Estimate	95% CI	p-value
Spearman correlation between PSQI and PSS-10	ρ = 0.126		0.090
Unadjusted logistic regression, PSS-10	OR = 1.11	1.03–1.21	0.010
Adjusted for sex and age group	aOR = 1.13	1.04–1.24	0.005
Sensitivity analysis using first-occurrence/non-duplicate records	aOR = 1.13	1.00–1.28	0.049

the above table shows that there is a statistically significant association between perceived stress category and poor sleep quality (Fisher's exact p = 0.011). Poor sleep is present in 37.5% of students with low stress, 39.2% of those with moderate stress, and all six students classified as having high stress. However, the high-stress category is small and this 100% value should therefore be interpreted cautiously. In unadjusted logistic regression, each one-point increase in PSS-10 score is associated with an approximately 11% increase in the odds of poor sleep (OR = 1.11, 95% CI: 1.03–1.21, p = 0.010). After adjustment for sex and age group, each additional PSS-10 point is associated with approximately 13% higher odds of poor sleep (a OR = 1.13, 95% CI: 1.04–1.24, p = 0.005). The sensitivity analysis restricted to first-occurrence/non-duplicate response patterns produced a similar adjusted odds ratio (a OR = 1.13), although the confidence interval is wider and the result is borderline statistically significant (p = 0.049). The Spearman correlation between continuous PSQI and PSS-10 scores is weak and did not reach statistical significance (ρ = 0.126, p = 0.090).

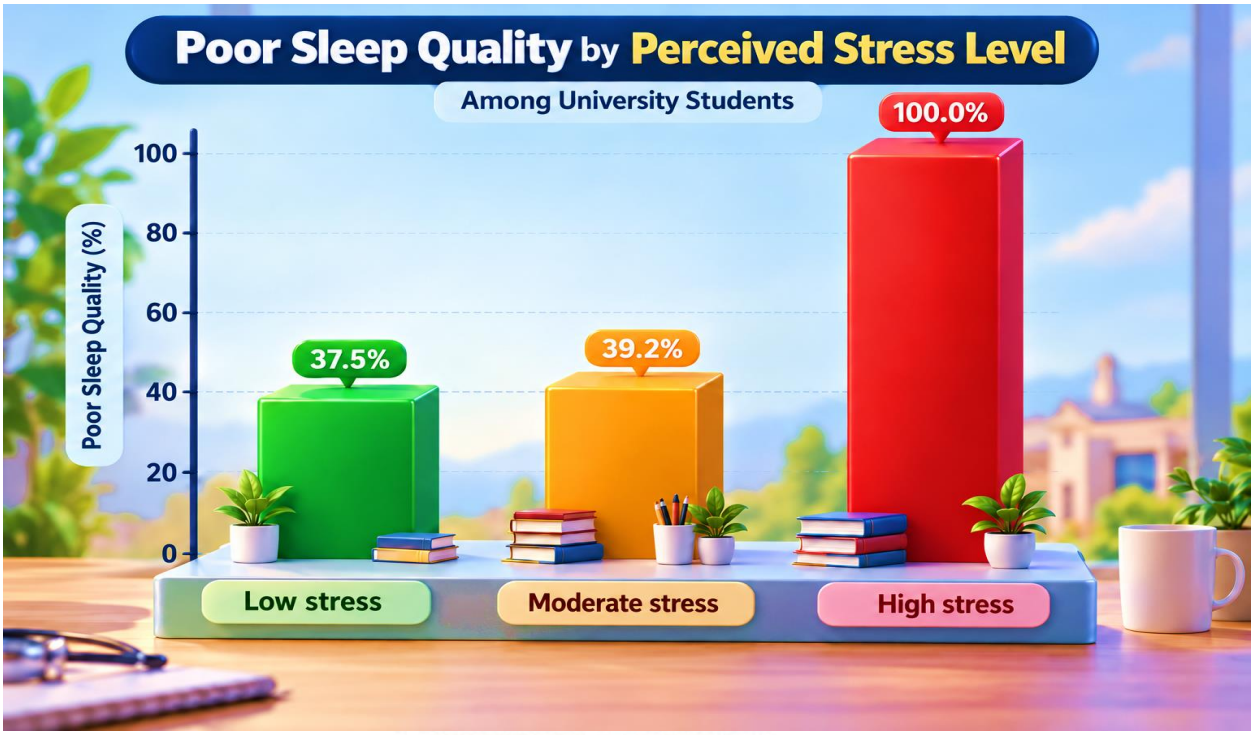


Figure 2. Poor sleep quality according to perceived stress level

The above table shows that the poor sleep quality is observed in 37.5% of students with low perceived stress and 39.2% of those with moderate perceived stress. All six students in the high-stress category had poor sleep quality. The overall association between stress category and sleep quality is statistically significant (Fisher's exact p = 0.011), although the high-stress group is small.

Table 5. Bivariate associations between selected factors and poor sleep quality

Factor	Poor sleep prevalence	Fisher's exact p-value
Sex		0.723
Age group		0.855
Marital status		<0.001
Faculty		0.698
Residence		<0.001
Year of study		0.688
Non-academic screen time		**<0.001**
Smartphone use before sleep		0.091
Caffeine consumption		0.868
Exercise frequency		**<0.001**
Academic stress		**<0.001**
Major personal/family problem		**0.016**

the above table shows that the poor sleep quality is significantly associated at the bivariate level with marital status, residence, daily non-academic screen time, exercise frequency, academic stress, and major personal or family problems. No statistically significant association is found with sex, age group, faculty, year of study, smartphone use immediately before sleep, or caffeine consumption.

Table 6. Multivariable logistic regression of factors associated with poor sleep quality

Predictor	Adjusted OR	95% CI	p-value
PSS-10 score, per 1-point increase	1.10	0.97–1.24	0.127
Screen time, per category increase	**2.48**	**1.47–4.16**	**0.001**
Academic stress, per category increase	**2.14**	**1.36–3.37**	**0.001**
Major personal/family problem: Yes vs No	**4.88**	**1.75–13.63**	**0.003**
Major problem: Prefer not to answer vs No	1.12	0.32–3.99	0.858
Female vs Male	1.82	0.59–5.64	0.301
Age 26–30 vs 20–25 years	0.47	0.02–11.46	0.644
Age 30–40 vs 20–25 years	0.52	0.18–1.46	0.213
Age >40 vs 20–25 years	0.55	0.07–4.04	0.555

Model statistics: n = 165; LR $\chi^2(9) = 76.35$; $p < 0.001$; pseudo-$R^2 = 0.338$.

the above table shows that after adjustment for perceived stress, sex, age group, screen time, academic stress, and major personal/family problems, three factors remained independently associated with poor sleep quality. Each one-category increase in daily non-academic screen time is associated with approximately 2.5 times higher odds of poor sleep (aOR = 2.48, 95% CI: 1.47–4.16, p = 0.001).Each one-category increase in academic stress is associated with approximately 2.1 times higher odds of poor sleep (aOR = 2.14, 95% CI: 1.36–3.37, p = 0.001).Students who reported experiencing a major personal or family problem had approximately 4.9 times higher odds of poor sleep compared with those who reported no major problem (aOR = 4.88, 95% CI: 1.75–13.63, p = 0.003).PSS-10 score is no longer statistically significant after simultaneous adjustment for these factors (aOR = 1.10, 95% CI: 0.97–1.24, p = 0.127). This suggests that part of the observed stress–sleep relationship may overlap with academic stress and other lifestyle or personal factors.

Sensitivity analysis of the final model

Predictor	Adjusted OR	95% CI	p-value
PSS-10 score	1.10	0.91–1.33	0.333
Screen time	**2.07**	**1.13–3.80**	**0.019**
Academic stress	**2.57**	**1.35–4.90**	**0.004**
Major personal/family problem: Yes vs No	**16.36**	**3.12–85.75**	**0.001**
Prefer not to answer vs No	5.67	0.86–37.20	0.071

Female vs Male	1.97	0.32–12.07	0.462

Sensitivity-analysis sample: n = 92.

The above table shows that the sensitivity analysis restricted to first-occurrence/non-duplicate records produced a broadly similar pattern. Screen time and academic stress remained statistically significant predictors of poor sleep. Students reporting a major personal or family problem also had higher odds of poor sleep, although the confidence interval is very wide, indicating considerable uncertainty in the magnitude of this association.

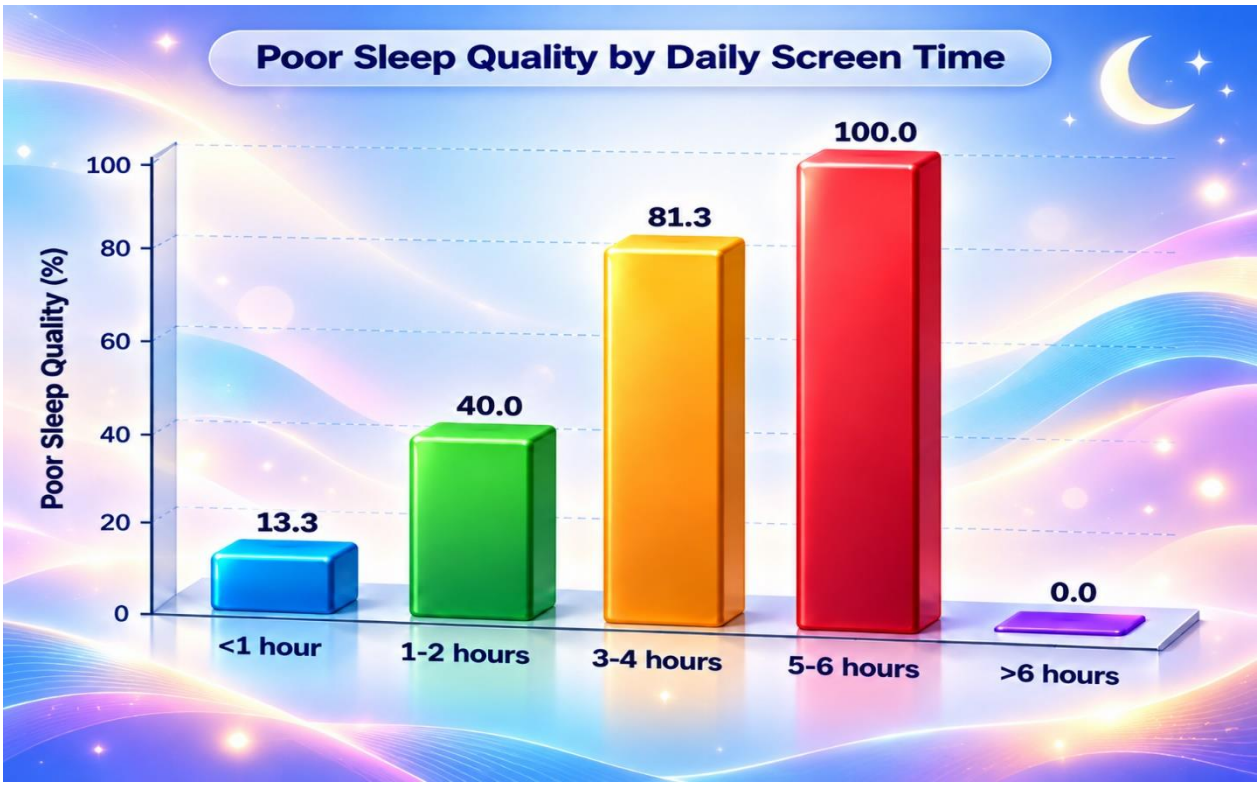


Figure 3. Poor sleep quality according to daily non-academic screen time

the above figure show that the prevalence of poor sleep increased from 13.3% among students using screens for less than one hour per day to 40.0% among those reporting 1–2 hours and 81.3% among those reporting 3–4 hours. All nine students reporting 5–6 hours had poor sleep. However, only three students are in the >6-hour category, and none had poor sleep; this very small category should not be interpreted as evidence of a protective effect. The overall association is statistically significant (Fisher's exact $p < 0.001$).

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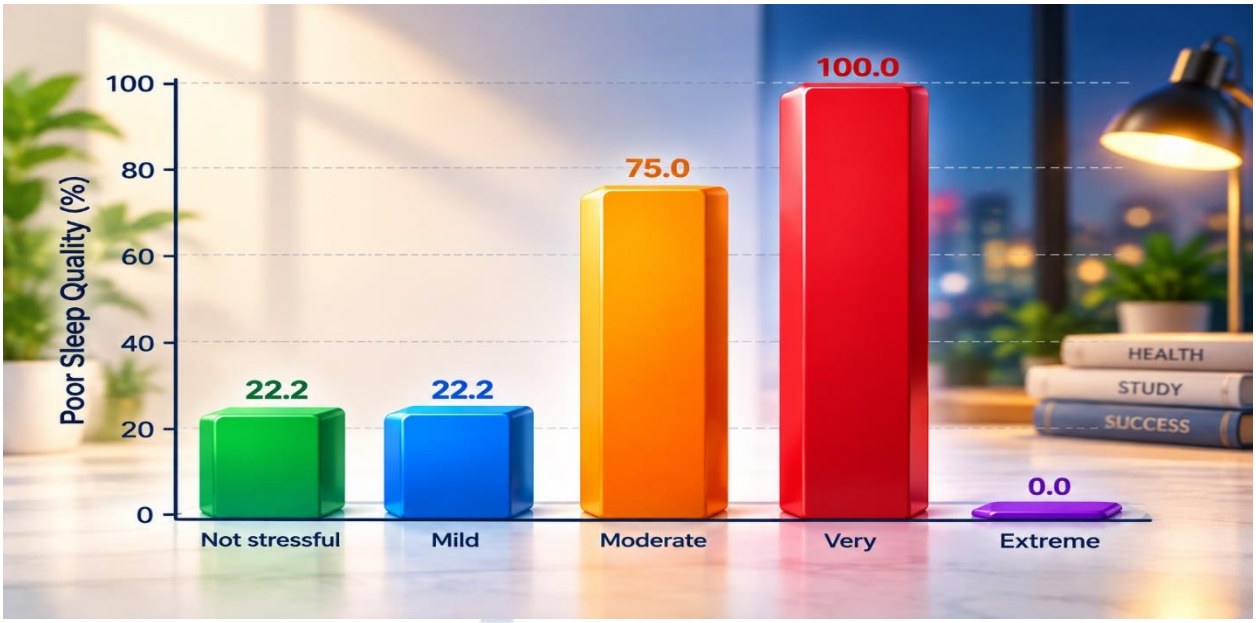


Figure 4. Poor sleep quality according to academic stress level

the above figure shows that the poor sleep quality is present in 22.2% of students reporting no academic stress and 22.2% of those reporting mild academic stress. The prevalence increased markedly to 75.0% among students reporting moderate academic stress and 100.0% among those reporting very high academic stress. The extremely stressed category contained only three students, none of whom had poor sleep, so this small group should be interpreted cautiously. Overall, academic stress is significantly associated with poor sleep quality (Fisher's exact $p < 0.001$).

Discussion

This study found that poor sleep quality is common among university students in Jalalabad City, affecting 40.0% of participants with complete PSQI data. Sleep disturbances and difficulty initiating sleep are the most prominent problems. This finding is consistent with studies conducted among university students in Ethiopia, Italy, Herat, and Bamyan, as well as among other Afghan populations, which reported that poor sleep is common and related to poorer physical and psychological well-being (Lemma et al., 2012; Carpi et al., 2022; Gox, 2024; Mohammadi et al., 2025; Neyazi et al., 2025).

Most students (84.8%) experienced moderate perceived stress. Perceived stress is significantly associated with poor sleep in the initial analyses, and each one-point increase in PSS-10 score is associated with higher odds of poor sleep after adjustment for age and sex. This finding agrees with previous studies showing relationships among stress, insomnia, anxiety, and poor sleep in university students (Manzar et al., 2021; Alrashed et al., 2022; Omopo, 2025). However, perceived stress is no longer statistically significant after screen time, academic stress, and personal or family problems are included in the final model. This suggests that the relationship between general perceived stress and sleep may overlap with these more specific academic, behavioral, and personal factors.

Non-academic screen time is independently associated with poor sleep. Each category increase in screen time is associated with approximately 2.5 times higher odds of poor sleep. This supports Sherzad et al. (2025), who found that excessive Facebook use is linked with sleep and other health problems among students. Prolonged screen use

may delay bedtime, reduce total sleep time, and increase mental stimulation. However, smartphone use immediately before sleep is not significantly associated with poor sleep, possibly because total screen exposure is more influential or because most students reported similar bedtime smartphone habits.

Academic stress is also an independent predictor of poor sleep, with each category increase associated with approximately twice the odds of poor sleep. This result corresponds with Gox (2024) and Alrashed et al. (2022), who identified academic pressure as an important factor affecting students' sleep and psychological health. Academic workloads, examinations, late-night studying, and concerns about academic performance may interfere with students' sleep.

Students experiencing a major personal or family problem had nearly five times higher odds of poor sleep. This finding is consistent with Hameed et al. (2024), who reported that difficult life situations and traumatic experiences affect students' psychological well-being, and with Afghan studies linking adverse experiences and family circumstances with sleep difficulties (Haidarzada et al., 2024; Neyazi et al., 2025). Social support and healthy coping strategies may therefore help protect students facing serious personal difficulties.

Marital status, residence, exercise frequency, academic stress, screen time, and personal or family problems are significantly associated with poor sleep in the bivariate analyses. In contrast, sex, age, faculty, year of study, smartphone use before sleep, and caffeine consumption are not significantly associated. Some findings should be interpreted cautiously because several categories contained few participants.

Overall, the findings agree with previous Afghan and international evidence showing that sleep quality is influenced by psychological, academic, behavioral, and personal factors. Universities should provide sleep-health education, stress-management programs, academic support, counselling services, and guidance on reducing unnecessary screen time. Nevertheless, because this is a cross-sectional study based on self-reported information, causal conclusions cannot be made. Future longitudinal and multicenter studies with larger and more representative samples are recommended.

Conclusion

Poor sleep quality is common among the surveyed university students, affecting 40.0% of those with complete PSQI data. Most students experienced moderate perceived stress, and higher PSS-10 scores are initially associated with greater odds of poor sleep. However, this association is no longer statistically significant after accounting for academic stress, non-academic screen time, personal or family problems, age, and sex.

The multivariable analysis identified longer non-academic screen time, greater academic stress, and experiencing a major personal or family problem as independent predictors of poor sleep quality. These findings are broadly supported by the sensitivity analysis, particularly for screen time and academic stress. Therefore, university-based interventions should promote healthy screen-use habits, provide academic stress-management support, and strengthen counselling and psychosocial services for students facing personal or family difficulties.

Because this is a cross-sectional study, causal relationships cannot be established. In addition, the small number of students in some categories, incomplete responses, and the predominance of male and first-year students should be considered when interpreting and generalizing the findings. Further longitudinal studies with larger and more representative samples are recommended to clarify the direction and mechanisms of the relationships between stress, lifestyle factors, personal difficulties, and sleep quality.

Recommendation

Universities should establish or strengthen student counselling and psychological support services, with particular attention to students experiencing academic stress and major personal or family problems.

Stress-management programs should be incorporated into student-support activities. These

may include workshops on coping strategies, relaxation techniques, time management, study planning, and examination preparation.

Students should be educated about healthy sleep practices, including maintaining a regular sleep schedule, creating a suitable sleeping environment, and avoiding stimulating activities before bedtime.

Awareness programs should encourage students to reduce unnecessary non-academic screen time, particularly during the evening and before sleep. Students may benefit from setting daily screen-time limits and replacing excessive screen use with healthier activities.

Universities should regularly assess students' academic workload and provide academic advising, tutoring, and study-skills support to students who report moderate or high academic stress.

Confidential referral systems should be developed to identify and support students facing serious personal or family difficulties. Where necessary, students should be connected with qualified mental-health or social-support professionals.

Regular physical activity and other healthy lifestyle practices should be promoted through accessible sports facilities, student clubs, and university wellness programs, given the bivariate association between exercise frequency and sleep quality.

Screening for poor sleep quality and perceived stress using validated instruments such as the PSQI and PSS-10 may be incorporated into university health services to facilitate early identification and support.

Future research should use larger and more representative samples from different universities and faculties, with greater inclusion of female and senior-year students. Longitudinal studies are recommended to determine the direction of the relationships between sleep quality, stress, screen time, and personal difficulties.

Future studies should also assess additional factors such as depression, anxiety, academic workload, sleep environment, substance use, and the timing and purpose of screen use. Because the present study is cross-sectional, interventions and causal interpretations should be guided by further evidence.

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