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Original Article

The prevalence of sleep disorders in students: The role of academic motivation, psychological problems, and sedentary behavior

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Abstract

This study investigated sleep disorder prevalence and associated factors among Malayer University students (N=386) using a descriptive-correlational design. Cluster random sampling was employed for a population of 6,000 students. Data collection utilized validated scales: Sleep Disorders Scale, Academic Motivation Scale, Brief Psychological Problems Scale, and Sedentary Behavior Scale. Analysis revealed gender differences in sleep disturbances: excessive daytime sleepiness (females 16.6%, males 23.7%), difficulty waking (males 36.1%, females 35.6%), and prolonged sleep latency (females 33.9%, males 26.8%). Academic level variations emerged, with associate students showing highest difficulty waking (52.4%) and doctoral students reporting most lecture sleepiness (35%). Regression analysis identified psychological distress as the sole significant predictor of sleep disorders (β=0.48, $p<0.001$), while sedentary behavior and academic motivation showed no significant association. These results emphasize the critical role of mental health in student sleep problems and recommend targeted psychological interventions through counseling and workshops to address underlying distress. The findings highlight the need for universities to prioritize mental health services to improve sleep quality and academic outcomes.

Keywords

Academic motivation
Anxiety
Depression
Sedentary behavior
Sleep disorders
Somatic symptoms

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Introduction

University students transitioning from adolescence to adulthood are at high risk for psychological problems and sleep disorders (Hashemi et al., 2024., Sepehrmanesh et al., 2023). Nearly 60% experience poor sleep quality or excessive daytime sleepiness, significantly higher than the general population (36%) (Ulrich et al., 2023). Dormitory students report poorer sleep quality than non-dormitory peers, often due to noise disturbances and irregular sleep schedules (Sepehrmanesh et al., 2023). Sun et al (2022) reported that 27% of students are at risk for a sleep disorder. Furthermore, previous research has indicated that at least 7.7% experiencing insomnia and 24.3% frequent nightmares (Alrashed et al., 2022).

Sleep deprivation negatively impacts academic performance, causing morning fatigue (31% of students) (Rea-Sandin et al., 2022), reduced cognitive function, and lower GPAs (Yao & Wang, 2023). Poor sleep impairs memory, learning, and concentration (Harrington et al., 2022), while chronic sleep loss leads to psychological distress, fatigue, and difficulties in academic tasks (Altena et al., 2023). Neurological and behavioral changes from sleep deprivation further reduce classroom engagement and increase drowsiness (Xu et al., 2025).

Academic motivation significantly influences sleep quality among university students. Research demonstrates that academic motivation enhances time management, reduces stress and anxiety, and promotes healthier behaviors - all factors that improve sleep quality (Sibley et al., 2019., Alotiby, 2022., Sánchez et al., 2022). Defined as the cognitive and affective processes behind goal-oriented academic behavior (Fong, 2022), academic motivation remains a crucial yet challenging aspect of education (Jiang & Maunder, 2025).

Studies show adaptive motivational beliefs strongly predict academic engagement and performance (Amoadu et al., 2025), though motivation typically declines through primary, secondary, and higher education, especially among marginalized groups (Foschi, 2023). Conversely, demotivation occurs when students perceive academic tasks as meaningless, potentially leading to anxiety, depression and impaired performance (Tolman, 2023., LaPaglia, 2023).

Highly motivated students demonstrate superior time management, enabling better balance between study and

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rest (Nouraei et al., 2024). They also maintain healthier lifestyles including proper nutrition and exercise (Zafarramazanian et al., 2023., Dehghani & Azizian-Kohan, 2024), and experience greater self-satisfaction that reduces nighttime anxiety (Sadooghi & Eskandari, 2024., Kadeh & Moazeni, 2024). These factors collectively contribute to improved sleep patterns and quality among motivated students.

Maintaining a healthy lifestyle during university years and into adulthood is crucial for preventing psychological disorders (Ab Rahman et al., 2025). Psychological distress significantly impacts sleep quality, with approximately up to 50% of mental health disorders emerging during young adulthood (Wu et al.,, 2025). Globally, poor mental health represents the leading cause of disability among adolescents and young adults (10-24 years), accounting for 45% of disability-adjusted years (Gonzales et al., 2022). Notably, unipolar depression is the primary contributor to non-fatal disease burden in young adults (20-24 years), responsible for about 8% of disability-adjusted life years (DALYs) in this age group (Preston et al., 2023).

Depression and anxiety significantly impair sleep quality in university students, leading to insomnia symptoms and sleep disturbances (Correia et al., 2023., Mirchandaney et al., 2023). These sleep problems manifest as difficulty falling asleep, frequent nighttime awakenings, and early morning arousal (Rea-Sandin et al., 2022). Academic stress, particularly during exam periods, shows a strong negative correlation with sleep duration (Ulrich et al., 2023), while accumulated daily stressors contribute to persistent sleep difficulties and reduced sleep quality (Yao et al., 2025). Large-scale studies demonstrate that students with elevated depression and anxiety experience significantly more sleep disorders (Henrich et al, 2023), confirming the robust association between psychological distress and sleep impairment (Peltz, 2024).

Regular physical activity improves sleep quality Pang et al., 2023), yet university students frequently engage in sedentary behaviors (Guerriero et al., 2025), characterized by low-energy activities like prolonged screen use (Ariapooran et al., 2022). While exercise reduces anxiety and depression risks (Myśliwiec et al., 2025), excessive sedentary behavior correlates with poor mental health (Liu & Sun, 2023) and sleep disorders (Zou et al., 2023). Experimental studies confirm sedentary lifestyles directly impair sleep quality (Godoy et al., 2023).

This study investigates the prevalence of sleep disturbances among university students and explores their relationship with academic motivation, psychological issues (depression, anxiety, somatic symptoms), and sedentary behavior. Sleep problems significantly affect students' health, well-being, and academic performance. The research highlights how these factors influence sleep quality, providing insights for psychologists and policymakers to develop targeted interventions. By integrating psychological support and behavioral programs in universities, institutions can improve students' sleep, motivation, and mental health. The findings aim to advance existing literature and promote evidence-based strategies for enhancing student health and academic success.

Method

Participants

This correlational study examined relationships between academic motivation, psychological problems, sedentary behavior (predictors), and sleep disturbances (criterion) among Malayer University students (N=6,000., 2023-2024). Using Krejcie & Morgan's (1970) table, 361 students were required. Cluster sampling selected 5 classes each from Humanities, Basic Sciences, Engineering, and Agriculture. From 397 collected questionnaires, 11 incomplete responses were excluded, yielding 386 participants. Inclusion criteria: <4 years enrollment, ≥2 semesters dormitory residence, and voluntary consent. Exclusion criteria: academic probation history or incomplete questionnaires.

Instrument

Sleep Disturbance Questionnaire (SDQ):

The SDQ (Kubota et al., 2010) is an 8-item self-report tool measuring sleep issues, including sleep initiation/maintenance difficulties, early awakening, daytime napping, insufficient sleep, daytime sleepiness, morning awakening problems, and fatigue. Insomnia was defined as ≥1 affirmative response to items on sleep onset, maintenance, or early awakening. Problematic responses included: persistent (>1 week) issues for items 2-4,6-8., sleep latency >31 minutes (item 1)., and "definitely insufficient" sleep (item 5). Higher scores indicate worse sleep disturbances. Validated in Iran (Ariapooran, 2018)., α=0.70, split-half r=0.61), our study showed acceptable reliability (α=0.68).

Academic Motivation Questionnaire(AMQ):

The AMQ (Vallerand et al., 1992) contains 28 items (5-point Likert scale., 4 reverse-scored) assessing reasons for university attendance. Total scores range 28-140 (higher=greater motivation). Original reliability showed α=0.83-0.86 and test-retest=0.71-0.83. The Persian version (Bagheri, 2003) demonstrated α=0.55-0.87. Current study reliability was excellent (α=0.93).

Psychological Problems Questionnaire(PPQ):

The PPQ (Durá et al., 2006) is an 18-item measure of somatization, depression, and anxiety using a 5-point Likert scale (scores: 18-90., higher=greater distress). Validated in Iran by Kafi et al. (2014), it showed strong reliability (α=0.88, split-half=0.81) and significant correlations with affect and happiness scales (r=-0.47 to 0.70). Current study reliability was excellent (α=0.93).

Sedentary Behavior Questionnaire (SBQ):

The SBQ (Rosenberg et al., 2010)) measures weekday (Saturday-Wednesday) and weekend (Thursday-Friday) inactivity through 18 items on a 9-point scale (1="6+

hours" to 9="not at all"). Total scores range 9-81 (higher=more sedentary). Original test-retest reliability was 0.51-0.93. Current study showed α=0.64, with strong convergent validity (weekday-weekend r=0.78., weekday-total r=0.943., weekend-total r=0.946).

Procedure

Participants were recruited from various faculties (Humanities, Basic Sciences, Engineering, Agriculture) at Malayer University during the 2023-2024 academic year. After obtaining informed consent, questionnaires were administered in-class, with researchers explaining the study's purpose, voluntary nature, and confidentiality. Participants completed questionnaires during class without compensation. Of 397 collected responses, 11 were incomplete, yielding a final sample of 386 students. Data analysis using SPSS 26 included Pearson correlation and multiple regression to examine variable relationships.

Results

Participants' mean age was 23.87 years. Gender distribution showed 74.9% female (n=289) and 25.1% male (n=97). By education level: 4.5% associate, 63% undergraduate, 26.4% master's, and 5.2% doctoral students.

Table 1 provides a detailed overview of the prevalence and frequency of sleep disorders among students based on questionnaire responses.

Table 1. Prevalence of Sleep problems according to gender and educational levels

Sleep latency	Less than 31 minutes								More than 31 minutes							
	Frequency				Percentage				Frequency				Percentage			
	262				67.9				124				32.1			
	Female		Male		Female		Male		Female		Male		Female		Male	
	191		71		66.1		73.2		98		26		33.9		26.8	
	AA	BA	MS	Phd	AA	BA	MS	Phd	AA	BA	MS	Phd	AA	BA	MS	Phd
	14	156	75	17	66.7	64.2	73.5	85	7	87	27	3	33.3	35.8	26.5	15
Amount of sleep per day	Sufficient								Insufficient							
	Frequency				Percentage				Frequency				Percentage			
	359				93				27				7			
	Female		Male		Female		Male		Female		Male		Female		Male	
	273		86		94.5		88.7		16		11		5.5		11.3	
	AA	BA	MS	Phd	AA	BA	MS	Phd	AA	BA	MS	Phd	AA	BA	MS	Phd
	20	223	96	20	95.2	91.8	94.1	93	1	20	6	0	4.8	8.2	5.9	0
Trouble staying asleep	Less than once a week								More than once a week							
	Frequency				Percentage				Frequency				Percentage			
	313				81.1				73				18/9			
	Female		Male		Female		Male		Female		Male		Female		Male	
	233		80		80.6		82.5		56		17		19/4		17.5	
	AA	BA	MS	Phd	AA	BA	MS	Phd	AA	BA	MS	Phd	AA	BA	MS	Phd
	16	193	86	18	76.2	79.4	84.3	90	5	50	16	2	23.8	20.6	15.7	10
Inability to fall back asleep	309				80.1				77				19.9			
	Female		Male		Female		Male		Female		Male		Female		Male	
	226		83		78.2		85.6		63		14		21.8		14.4	
	AA	BA	MS	Phd	AA	BA	MS	Phd	AA	BA	MS	Phd	AA	BA	MS	Phd
	16	190	86	17	76.2	78.2	84.3	85	5	53	16	3	23.8	21.8	15.7	15
Daytime napping	315				81.6				71				18.4			
	Female		Male		Female		Male		Female		Male		Female		Male	
	241		74		83.4		76.3		48		23		16.6		23/7	
	AA	BA	MS	Phd	AA	BA	MS	Phd	AA	BA	MS	Phd	AA	BA	MS	Phd
	16	196	90	13	76.2	80.7	88.2	65	5	47	12	7	23.8	19.3	11.8	35
Feeling sleepy in the classroom	326				84.5				60				15.5			
	Female		Male		Female		Male		Female		Male		Female		Male	
	250		76		86.5		78.4		39		21		13/5		21/6	
	AA	BA	MS	Phd	AA	BA	MS	Phd	AA	BA	MS	Phd	AA	BA	MS	Phd
	19	201	92	14	90.5	82.7	90.2	70	2	42	10	6	9.5	17.3	9/8	30
Hard to wake up	248				64.2				138				35.8			
	Female		Male		Female		Male		Female		Male		Female		Male	
	186		62		64.4		63.9		103		35		35.6		36.1	
	AA	BA	MS	Phd	AA	BA	MS	Phd	AA	BA	MS	Phd	AA	BA	MS	Phd
	10	147	79	12	47.6	60.5	77.5	60	11	96	23	8	52.4	39.5	22.5	40
Feeling restless upon waking	320				82/9				66				17.1			
	Female		Male		Female		Male		Female		Male		Female		Male	
	233		87		80.6		89.7		56		10		19.4		10.3	
	AA	BA	MS	Phd	AA	BA	MS	Phd	AA	BA	MS	Phd	AA	BA	MS	Phd
	16	196	91	17	76.2	80.7	89.2	85	5	47	11	3	23.8	19.3	10.8	15

Table 2 presents the mean, standard deviation, kurtosis, skewness, and correlation coefficients for sedentary behavior, psychological problems, academic motivation, and sleep disorders among students.

Table 2. Mean and standard deviation, Skewness and Kurtosis of the variables

Variable	M	SD	Skewness	Kurtosis	Criterion variable (sleep disorders)	
					Correlation (r)	P
Sleep disorders	23.10	6.56	0.01	-0.17	-	-
Academic motivation	112.08	16.35	-0.01	-0.22	-0.12	0.012
Somatic symptoms	5.79	4.53	0.87	0.21	0.39	0.001
Depression	8.59	6.58	0.65	-0.61	0.44	0.001
Anxiety	6.16	5.9	1.21	0.77	0.39	0.001
Psychological problems	20.68	14.56	0.07	-0.06	0.49	0.001
Sedentary behavior during weekdays	14.39	6.68	0.07	-0.06	-0.08	0.1
Sedentary behavior during weekends	14.65	6.75	0.06	-0.17	-0.05	0.27

Table 2 indicates a significant relationship between academic motivation and psychological problems with sleep disorders. However, no significant correlation was found between sedentary behavior and sleep disorders.

Table 3. Summary of simultaneous regression results for predicting sleep problems through the prediction variables

Predictor variables	R	R^2	F	Nonstandard Coefficients		Standard Coefficients	t	P	Variance inflation factor	Tolerance
				B	Standard error	B				
Constant value	-	-		20.92	2.269	-	9.219	0.001	-	-
Academic Motivation	0.49	0.24	30.86	-0.021	0.018	-0.052	-1.146	0.252	1.027	0.974
Psychological Problems				0.219	0.021	0.485	10.6	0.001	1.057	0.946
Sedentary Behavior During Weekdays				0.023	0.07	0.024	0.333	0.739	2.522	0.396
Sedentary Behavior During Weekends				-0.024	0.068	-0.024	-0.347	0.729	2.47	0.405

Before regression analysis, multicollinearity checks showed acceptable levels (VIF < 3, tolerance ≈ 1). The Durbin-Watson statistic (1.74) confirmed error independence. The significant regression model ($F=30.86$, $p<0.001$) explained 24% of sleep disorder variance. Psychological problems ($\beta=0.48$) significantly predicted sleep disorders, while sedentary behavior and academic motivation showed no significant effects.

Discussion

This study investigated sleep disorder prevalence among students and the predictive role of academic motivation, psychological issues, and sedentary behavior. Significant findings included prevalence rates of: daytime napping (18.4%), sleep maintenance difficulties (18.9%), classroom sleepiness (32.1%), sleep-onset problems (19.9%), morning awakening difficulties (46.9%), and restless waking (24.9%). These align with previous reports of daytime sleepiness (<68.5%) in student populations (Lee et al., 2019., Vilela et al., 2016., Ford et al., 2015). Contributing factors include academic/financial stress (Dehghani & Azizan, 2022), pre-sleep screen exposure (Bozorgkhoo et al., 2022), neuroticism (Baharloo et al., 2021), and medical conditions like sleep apnea (Miri et al., 2020) and sensory processing disorders (Mahmoudi et al., 2019).

The results demonstrated a significant negative correlation between academic motivation and sleep disorders (Önder et al., 2014), with poor sleep quality leading to daytime sleepiness that impairs academic performance (Lee et al., 2019). Key mechanisms explaining this relationship include: (1) goal-directed behaviors like academic planning and time management in motivated students (Sibley et al., 2019)., (2) reduced academic stress and anxiety through better control over responsibilities., (3) improved balance between academic tasks and sleep schedules (Demırdağ, 2021)., (4) lower stress levels in intrinsically motivated students (Alotiby, 2022)., and (5) healthier lifestyle choices including exercise, nutrition, and sleep hygiene (Sánchez et al., 2022). These factors collectively contribute to better sleep patterns and reduced sleep disturbances among academically motivated students.

The results showed a significant positive correlation between psychological problems and sleep disorders (Alimoradi et al., 2021), with depression rates of 30-38% among students with insomnia demonstrating their bidirectional relationship (Olufsen et al., 2020). Insomnia often co-occurs with poor coping skills, health issues, and rumination, worsening psychological distress, while depressive symptoms like fatigue and cognitive difficulties perpetuate sleep disturbances (Grandner & Malhotra, 2017). External academic stressors further disrupt sleep homeostasis, creating a vicious cycle where poor mental health impairs sleep quality and vice versa.

This study found no significant link between sedentary behaviors and sleep disorders in students. Individual differences in circadian rhythms and genetic factors may buffer sedentary effects (Aguirre Velasco et al., 2020), while compensatory behaviors like good sleep hygiene and academic motivation can maintain healthy sleep despite inactivity (Mason & Holt, 2012). Younger students' developing circadian systems may also increase resilience to short-term sedentary impacts (Deng et al., 2021). Although not a direct predictor here, unregulated sedentary behavior remains a health risk, emphasizing the need for balanced lifestyle habits to mitigate potential negative effects.

Conclusion

This study has limitations, including the lack of a control group for comparative analysis and restricted generalizability due to a homogeneous sample. Future research should explore diverse student populations. To address sleep disorders, universities should adopt a multidisciplinary approach, combining psychological support, sleep hygiene education (e.g., consistent sleep schedules, reduced stimulant use), and stress management (mindfulness, time management). Counseling centers should offer personalized interventions, accessible resources, and awareness campaigns to destigmatize sleep issues. Integrating physical activity programs and relaxation workshops could further enhance student well-being, academic performance, and overall sleep quality.

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No potential conflict of interest was reported by the authors.

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