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SLEEP DEPRIVATION, ACADEMIC MOTIVATION AND QUALITY OF LIFE AMONG UNIVERSITY STUDENTS

Original Research

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ABSTRACT

Background: Sleep deprivation has emerged as a significant concern in the post-pandemic academic environment, where mental health challenges such as anxiety, stress, and poor sleep hygiene are on the rise. University students, due to academic pressures and lifestyle changes, are particularly vulnerable to disrupted sleep patterns. Research suggests that inadequate sleep affects cognitive function, academic engagement, and overall quality of life, yet the interrelationship of these variables in the Pakistani student population remains underexplored.

Objective: To investigate the relationship between sleep deprivation, academic motivation, and quality of life among university students in Lahore.

Methods: A descriptive correlational research design was employed, involving 328 university students (167 males, 161 females) aged between 20 and 40 years, recruited via purposive sampling. Data were collected through an online survey comprising standardized instruments: the Sleep Quality Scale (28 items), the Academic Motivation Scale (28 items), and the Quality-of-Life Scale (16 items). Analysis was conducted using SPSS version 21, including descriptive statistics, Pearson correlation, linear regression, and independent sample t-tests.

Results: Findings revealed a significant negative correlation between sleep deprivation and academic motivation ($r = –.328$, $p < .001$), and between sleep deprivation and quality of life ($r = –.424$, $p < .001$). A positive correlation was observed between academic motivation and quality of life ($r = .447$, $p < .001$). Gender-based analysis showed females reported higher sleep deprivation ($M = 43.12$, $SD = 19.11$), while males exhibited better quality of life ($M = 81.42$, $SD = 15.06$). Academic motivation was similar across genders. Differences were also noted by age, marital status, socioeconomic status, and educational level.

Conclusion: Sleep deprivation significantly reduces academic motivation and quality of life among university students. Addressing sleep hygiene and motivational support may improve their mental health and academic outcomes.

Keywords: Academic Motivation, Mental Health, Quality of Life, Sleep Deprivation, Students, Stress, University Population.

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INTRODUCTION

Mental health has become an increasingly critical concern in recent years, especially in the wake of the COVID-19 pandemic, which imposed profound psychological burdens on individuals from all walks of life. Among the most vulnerable groups were university students, who encountered abrupt disruptions in their academic routines, heightened uncertainty about the future, and increased isolation. These stressors have been associated with sleep disturbances, reduced academic motivation, and impaired overall well-being. Sleep deprivation—commonly defined as obtaining fewer than eight hours of sleep per night—is particularly prevalent among students navigating fast-paced academic environments (1). Poor sleep is closely linked to diminished cognitive performance, emotional dysregulation, and impaired academic achievement (2,3). Moreover, sleep quality, encompassing factors such as sleep duration, continuity, and subjective restfulness, plays a pivotal role in maintaining optimal mental health (4,5). Scientific evidence suggests that chronic sleep deprivation adversely affects multiple domains of functioning, including attention, memory, decision-making, and emotional stability (6,7). Disruptions in the architecture of sleep—such as reduced REM and non-REM cycles—may impair physical recovery, learning capacity, and long-term memory consolidation (8,9). In particular, the hippocampus, a brain region critical for memory and emotional regulation, is vulnerable to the detrimental effects of sleep loss (10,11). These consequences are especially concerning for university students, whose academic success and psychological resilience are fundamentally intertwined with restorative sleep (12,13). In Pakistan, however, the combined impact of sleep deprivation, academic motivation, and quality of life has not been extensively investigated, despite growing global attention to student mental health. Academic motivation, often classified as either intrinsic or extrinsic, is defined by the internal or external forces that compel students to pursue academic goals. It is influenced by personal interest, goal orientation, social expectations, and the surrounding educational climate (14,15). A growing body of literature underscores that inadequate sleep can undermine academic motivation by reducing energy levels, increasing emotional fatigue, and impairing goal-directed behavior (16,17). According to Maslow's hierarchy of needs, foundational physiological needs, such as sleep, must be met before individuals can strive for higher-order aspirations like academic success and self-fulfillment (18).

This theoretical framework highlights how unmet basic needs may suppress academic ambition and life satisfaction. Additionally, quality of life (QoL), as defined by the World Health Organization, refers to an individual's perception of their position in life in the context of their culture, value systems, goals, and expectations (19). QoL includes physical health, psychological well-being, social relationships, and environmental stability. For students, disrupted sleep cycles not only compromise their cognitive abilities but also diminish their perceived QoL and emotional resilience (20,21). Several studies have demonstrated that students experiencing insufficient or poor-quality sleep are more likely to suffer from anxiety, social withdrawal, academic disengagement, and reduced life satisfaction (22,23). While studies from various countries have examined these relationships in isolation, limited research has explored their interconnected effects within the specific cultural and educational landscape of Pakistan. Indigenous research has indicated a substantial prevalence of poor sleep quality among Pakistani university students, along with an associated decline in both academic motivation and psychological health (24). However, there remains a significant gap in understanding how these variables interact holistically and whether demographic factors such as gender influence these outcomes. Given this context, the present study is designed to investigate the relationships among sleep deprivation, academic motivation, and quality of life among university students in Lahore, Pakistan. Specifically, it aims to assess the extent to which sleep deprivation correlates with academic motivation and QoL, and whether gender differences influence these associations. The objective is to generate culturally relevant evidence that could inform mental health interventions, educational policies, and student support services tailored to improving academic engagement and overall well-being.

METHODS

The study employed a descriptive, correlational research design to investigate the relationship between sleep deprivation, academic motivation, and quality of life among university students. A purposive sampling technique was utilized to recruit participants from various universities in Lahore. The final sample consisted of 328 students, comprising 167 males and 161 females, across different academic levels including undergraduate, postgraduate, and PhD programs. Participants fell within the age range of 20 to 40 years, meeting the inclusion criteria, while individuals below 20 years, above 40 years, or with physical disabilities were excluded to ensure homogeneity and eliminate confounding health-related variables. Data collection was conducted using a battery of validated instruments.

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Demographic data including age, gender, educational level, marital status, and residence were gathered through a structured questionnaire. Academic motivation was assessed using the Academic Motivation Scale (AMS), originally developed by Vallerand in 1989. This 28-item tool evaluates intrinsic and extrinsic dimensions of academic motivation on a 7-point Likert scale, and is widely recognized for its psychometric robustness. Sleep quality was measured using the Sleep Quality Scale (SQS), a 28-item instrument developed by Shin in 2006. This scale captures various aspects of sleep disturbance including daytime dysfunction, difficulty initiating or maintaining sleep, and perceived restoration. Items are rated on a 4-point Likert scale, with higher total scores reflecting poorer sleep quality. Notably, two subscales—restoration after sleep and satisfaction with sleep—require reverse scoring before generating the total score, which ranges from 0 to 84.

Quality of life was evaluated using the Quality-of-Life Scale (QOLS), originally conceptualized by Andrews and Crandall and later refined by Flanagan. The current 16-item version assesses five core domains: physical and material well-being, relationships, social and civic engagement, personal growth, and recreational satisfaction, along with independence. Responses are scored on a 7-point scale ranging from "terrible" to "delighted." The tool has shown high reliability and validity across health and well-being studies and typically takes about five minutes to complete. Before data collection, formal permission was obtained from the original authors of the assessment tools and the Department of Psychology, Lahore School of Professional Studies, University of Lahore. Participants were briefed about the research objectives and protocols, following which informed consent was secured. Ethical approval was granted by the institutional review board of the concerned academic institution (IRB). Participants were informed of their right to voluntary participation and withdrawal at any stage without any consequences. Anonymity and confidentiality were strictly maintained throughout the study. Data were analyzed using SPSS version 21. Descriptive statistics were computed for demographic variables, and Pearson's correlation coefficient was used to assess the relationships among sleep deprivation, academic motivation, and quality of life. Additionally, independent sample t-tests were conducted to examine gender-based differences in study variables. Results indicated a statistically significant positive correlation between academic motivation and quality of life, while sleep deprivation was negatively associated with both variables. Variations in outcomes were also observed across demographic factors such as age, gender, marital status, family structure, and residential background. Ethical considerations were rigorously observed, including transparent communication of research goals, voluntary participation, the safeguarding of personal data, and adherence to informed consent protocols. Participants were not subjected to any form of coercion, and data collection adhered to the ethical principles outlined in the Declaration of Helsinki.

RESULTS

A total of 328 university students aged between 20 and 40 years participated in the study. Among them, 47% were aged 20–30 years and 53% were between 31–40 years. The sample comprised 168 males (51%) and 160 females (49%). In terms of educational level, 32% were undergraduates, 35% postgraduates, and 31% were PhD students. Regarding marital status, 51% were single and 49% were married. The majority (61%) resided in joint family systems, while 39% lived in nuclear settings. Most participants (69%) belonged to urban areas, with 31% residing in rural locales. Economically, 67% fell into the middle-income category, 25% were of low economic status, and only 8% were from high-income backgrounds. Reliability analysis showed excellent internal consistency for all scales used. Cronbach's alpha for the Sleep Quality Scale (SQS) was 0.95, for the Academic Motivation Scale (AMS) was 0.82, and for the Quality-of-Life Scale (QOLS) was 0.94, indicating strong reliability for all instruments. Correlation analysis demonstrated a statistically significant negative correlation between sleep deprivation and academic motivation ($r = –.328$, $p < .001$), and between sleep deprivation and quality of life ($r = –.424$, $p < .001$). Conversely, a significant positive correlation was found between academic motivation and quality of life ($r = .447$, $p < .001$). The mean scores for sleep deprivation, academic motivation, and quality of life were 40.32 (SD = 19.12), 139.02 (SD = 15.94), and 78.79 (SD = 15.94), respectively. Linear regression confirmed that sleep deprivation significantly predicted lower academic motivation ($\beta = –.33$, $p < .001$) and reduced quality of life ($\beta = –.42$, $p < .001$). The R^2 values for both models were 0.11, indicating that sleep deprivation accounted for 11% of the variance in both academic motivation and quality of life. Gender-based analysis revealed that females experienced significantly higher levels of sleep deprivation ($M = 43.12$, $SD = 19.11$) compared to males ($M = 37.65$, $SD = 18.78$), $p = .009$. However, no significant gender difference was found in academic motivation. Males, however, reported significantly better quality of life ($M = 81.42$, $SD = 15.06$) than females ($M = 76.03$, $SD = 16.41$), $p = .002$.

Marital status analysis showed married participants reported higher sleep deprivation ($M = 43.19$, $SD = 17.76$) than singles ($M = 37.57$, $SD = 19.98$), $p = .009$. Singles were more academically motivated ($M = 141.86$, $SD = 16.85$) than married individuals ($M = 136.05$, $SD = 14.37$), $p < .001$. No significant difference was found in quality of life based on marital status. Students from rural areas reported significantly higher academic motivation ($M = 142.17$, $SD = 17.58$) than urban students ($M = 137.62$, $SD = 14.98$), $p = .02$. However,

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no statistically significant difference was found in sleep deprivation or quality of life between rural and urban participants. With respect to age, individuals aged 20–30 years demonstrated significantly higher academic motivation (M = 140.61, SD = 17.94) than those aged 31–40 years (M = 137.62, SD = 13.84), p = .01. Sleep deprivation and quality of life did not differ significantly across age groups. Socioeconomic status was associated with statistically significant differences in both sleep deprivation and quality of life. Participants from high socioeconomic backgrounds reported more sleep deprivation (M = 47.14, SD = 16.47) than those from middle (M = 38.47, SD = 18.43) and low (M = 42.96, SD = 21.07) status. Quality of life was also highest among high-income participants (M = 85.57, SD = 15.53), followed by middle (M = 79.72, SD = 15.95) and low-income (M = 73.93, SD = 14.88) groups. Educational level was significantly associated with sleep deprivation. PhD students reported the highest levels (M = 49.31, SD = 19.12), compared to postgraduates (M = 32.67, SD = 20.86) and undergraduates (M = 40.39, SD = 18.01), p < .01. However, no significant differences were observed in academic motivation or quality of life across different educational levels.

Table 1: Demographic Distribution of University Student Participants (N = 328)

Variable	**F**	**%**
Age		
20-30	154	47
31-40	174	53
Gender		
Male	168	51
Female	160	48
Education		
Graduation	108	32
Masters	118	35
PhD	103	31
Marital Status		
Single	168	51
Married	160	49
No. of Siblings		
1 (0 - 3)	167	51
2 (4 - 6)	161	49
Family System		
Nuclear	127	39
Joint	201	61
Locale		
Rural	101	31
Urban	227	69
Economic Status		
High	28	8
Medium	219	67
Low	81	25
No. of Children		
0-2	253	77
3-4	**74**	**23**

Note f = Frequency and % = Percentage

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Table 2: Cronbach's Alpha of sleep deprivation, academic motivation and quality of life (N=328)

Variable	No. of Items	A
SQS	28	.95
AMS	28	.82
QOLS	**16**	**.94**

Note. α = Cronbach's Alpha, SQS = Sleep Quality Scale, AMS = Academic Motivation Scale, QOLS = Quality of Life Scale

Table 3: Correlational, mean and standard deviation of Sleep deprivation, academic motivation and Quality of Life scales (N=328)

Variable	SQS	AMS	QOLS
SQS	---	-.328***	-.424***
AMS	---	---	.447***
QOLS	---	---	---
M	40.32	139.02	78.79
SD	**19.12**	**15.94**	**15.94**

Note: *p<0.05, **p<0.01, SQS = Sleep Quality Scale, AMS = Academic Motivation Scale, QOLS = Quality of Life Scale, M = mean, SD = Standard Deviation

Table 4: Linear Regression Analysis of Sleep deprivation, academic motivation and Quality of Life scales (N=328)

Independent Variable	Dependent Variable	B	SEB	□	T	p
SQ	AM	-.274	.044	-.33	-6.28	.001***
	QOL	**-.353**	**.042**	**-.42**	**-8.45**	**.001*** **

Note: B = Standardized beta, SEB = Standard Error of Beta, □□ Coefficient of beta, p<.001***

Table 5: Independent Sample t-test Comparing Sleep Deprivation, Academic Motivation, and Quality of Life Across Demographic Variables (N = 328)

Variable	Group	M	SD	t	p	95% CI LL	95% CI UL	Cohen's d
SQS	Male (n = 168)	37.65	18.78	-2.60	.009**	-9.58	-1.35	0.3
	Female (n = 160)	43.12	19.11					
	Single (n = 168)	37.57	19.98	-2.69	.008**	-9.73	-1.50	0.3
	Married (n = 160)	43.19	17.76					
	Nuclear (n = 127)	43.83	15.83	2.67	.000***	1.51	9.96	0.3
	Joint (n = 201)	38.09	20.64					
	Rural (n = 101)	43.70	19.06	2.15	.82	0.42	9.36	0.3
	Urban (n = 227)	38.81	18.98					
	Age 20–30 (n = 154)	38.47	18.33	-1.64	.27	-7.60	0.66	0.18
	Age 31–40 (n = 174)	41.95	19.70					
AM	Male (n = 168)	138.50	16.33	-0.68	.500	-4.65	2.27	0.1
	Female (n = 160)	139.64	15.55					
	Single (n = 168)	141.86	16.85	3.35	.001**	2.40	9.22	0.4
	Married (n = 160)	136.05	14.37					
	Nuclear (n = 127)	140.33	16.96	2.09	.75	0.212	7.31	0.2
	Joint (n = 201)	138.20	15.24					
	Rural (n = 101)	142.17	17.58	2.41	.02*	0.83	8.27	0.3
	Urban (n = 227)	137.62	14.98					
	Age 20–30 (n = 154)	140.61	17.94	1.70	.01**	0.52	6.51	0.19

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Variable	Group	M	SD	t	p	95% CI LL	95% CI UL	Cohen's d
	Age 31–40 (n = 174)	137.62	13.84					
QOL	Male (n = 168)	81.42	15.06	3.11	.002**	1.98	8.81	0.3
	Female (n = 160)	76.03	16.41					
	Single (n = 168)	79.42	15.67	0.737	.462	-2.17	4.76	0.1
	Married (n = 160)	78.12	16.23					
	Nuclear (n = 127)	81.08	16.20	1.18	.59	-1.42	-1.51	0.6
	Joint (n = 201)	77.33	15.63					
	Rural (n = 101)	77.81	16.39	-0.73	.53	-5.16	2.34	0.1
	Urban (n = 227)	79.22	15.74					
	Age 20–30 (n = 154)	78.90	15.87	0.12	.86	-3.26	3.69	0.01
	Age 31–40 (n = 174)	78.68	16.04					

Note: $p < 0.05$, $p < 0.01$, $p < 0.001$ SQS = Sleep Quality Scale, AMS = Academic Motivation Scale, QOLS = Quality of Life Scale, M = Mean, SD = Standard Deviation, t = t-test, LL = Lower Limit of Confidence Interval, UL = Upper Limit of Confidence Interval, CI = Confidence Interval, Cohen's d = Effect Size

Table 6: One Way Analysis of Variance of Family Status of participants on Sleep Deprivation, Academic Motivation and Quality of Life among University Students (N=328)

Variables	Socioeconomic Status	M	SD	F (2,325)	η2	Post Hoc
SQS	High(n=28)	47.14	16.47	3.65	0.02	1>2<3
	Medium(n=219)	38.47	18.43			
	Low(n=81)	42.96	21.07			
AM	High(n=28)	139.89	16.05	1.41	0.01	1>2<3
	Medium(n=219)	138.02	15.92			
	Low(n=81)	141.44	15.88			
QOL	High(n=28)	85.57	15.53	6.92	0.04	1<2<3
	Medium(n=219)	79.72	15.95			
	Low(n=81)	**73.93**	**14.88**			

Note: SQS = Sleep Quality Scale, AMS = Academic Motivation Scale, QOLS = Quality of Life Scale, M = mean, SD = Standard Deviation, M = Mean

Table 7: One Way Analysis of Variance of Education of participants on Sleep Deprivation, Academic Motivation and Quality of Life among University Students (N=328)

Variables	Socioeconomic Status	M	SD	F (2,325)	η2	Post Hoc
SQS	Graduation(n=108)	40.39	18.01	22.88	.12	1>2<3
	Masters(n=118)	32.67	20.86			
	PhD(n=103)	49.31	19.12			
AM	Graduation(n=108)	140.44	17.29	.90	.01	1>2>3
	Masters(n=118)	139.06	16.39			
	PhD(n=103)	139.03	15.94			
QOL	Graduation(n=108)	77.44	15.14	.82	.01	1<2<3
	Masters(n=118)	78.75	16.24			
	PhD(n=103)	**80.79**	**15.94q**			

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Note: SQS = Sleep Quality Scale, AMS = Academic Motivation Scale, QOLS = Quality of Life Scale, M = mean, SD = Standard Deviation, M = Mean

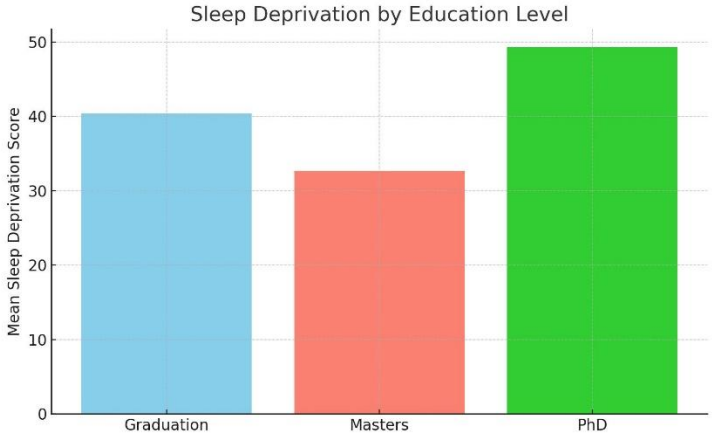


Figure 1 Sleep Deprivation by Educational Level

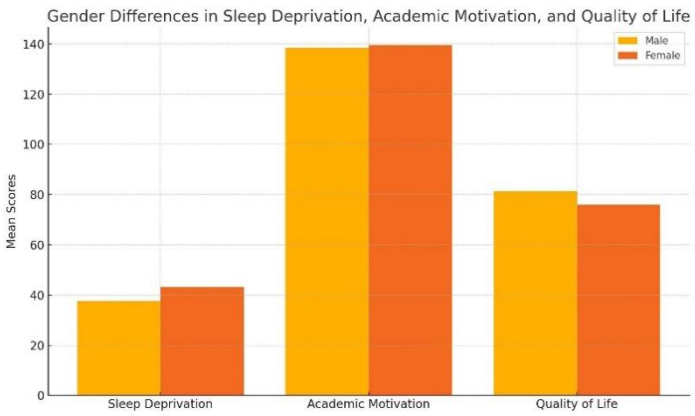


Figure 2 Gender Differences in Sleep Deprivation, Academic Motivation, and Quality of Life

DISCUSSION

The present study explored the predictive impact of sleep deprivation and academic motivation on the quality of life among university students. The findings revealed significant relationships among all three variables, reinforcing the interconnectedness of psychological, cognitive, and lifestyle factors in determining student well-being. The negative correlation between sleep deprivation and academic motivation demonstrated that reduced sleep is associated with lower drive and focus toward academic goals. This finding is consistent with previous literature indicating that insufficient sleep compromises self-regulatory processes, goal persistence, and academic engagement, particularly in high-pressure educational environments. Similarly, the negative correlation between sleep deprivation and quality of life highlighted the substantial toll inadequate sleep takes on students' physical and emotional health, affirming earlier reports that chronic sleep loss impairs mood, cognition, and subjective well-being (15-17). Academic motivation was positively associated with quality of life, suggesting that students who are internally or externally driven to excel academically tend to report higher life satisfaction and general functioning. This pattern is well-aligned with prior research linking achievement orientation with better coping skills, greater resilience, and proactive help-seeking behaviors in academic settings. The combined interpretation of these associations points toward a multidimensional interaction, where inadequate sleep not only suppresses motivation but indirectly diminishes the perception of life quality, likely through reduced mental clarity, emotional resilience, and academic competence (18-20).

Demographic factors further shaped these outcomes. Gender-based analysis revealed that females experienced greater sleep deprivation, while males reported a higher quality of life. These gender disparities may be attributable to different coping mechanisms, hormonal influences, or social role expectations, a pattern corroborated in several cross-cultural studies. Age differences showed that younger students exhibited higher academic motivation compared to older counterparts, possibly due to differences in academic stage, energy levels, or life responsibilities. Marital status also influenced findings, with married students reporting poorer sleep and lower academic motivation, likely due to increased personal obligations or work-life conflicts. Interestingly, students from lower socioeconomic backgrounds reported higher academic motivation than their middle- or upper-class peers. This observation may reflect heightened goal orientation driven by economic challenges and aspirations for upward mobility (21,22). However, despite their increased motivation, these students did not report a superior quality of life, underscoring the complex balance between ambition and resource-related stressors. Conversely, higher socioeconomic status was positively linked with better sleep and life satisfaction, consistent with literature suggesting that financial security facilitates access to healthcare, rest, and supportive environments (23). Educational level also played a role. PhD candidates, although more sleep deprived, reported a relatively better quality of life, possibly due to their academic maturity, adaptive coping strategies, or perceived goal fulfillment (24). In contrast, undergraduate students exhibited the highest academic motivation,

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which could be associated with initial enthusiasm and fewer competing responsibilities. These findings underscore the evolving nature of academic priorities and stress profiles across educational tiers.

One of the key strengths of this study was its comprehensive evaluation of multiple interrelated psychological and lifestyle variables within a localized student population. It employed validated instruments and ensured methodological rigor through ethical data collection protocols and statistically robust analyses. However, limitations must be acknowledged. Data collection through online self-reported forms introduced the possibility of response bias, inattentiveness, or socially desirable answers. The length of the questionnaire may have contributed to participant fatigue, potentially affecting data quality. Moreover, the cross-sectional design limited the ability to infer causal relationships, and the absence of objective sleep measures such as actigraphy or sleep diaries constrained the depth of physiological insights. Despite these limitations, the study provides valuable groundwork for future research. Longitudinal studies are warranted to explore the directionality and long-term implications of these relationships. Including qualitative data could offer nuanced understanding of students' lived experiences, motivations, and coping strategies. Expanding the sample to include younger populations, students from Islamic institutions, or different academic disciplines could enhance generalizability and yield comparative insights. Interventions promoting sleep hygiene and motivational enhancement, especially among high-risk groups such as female or economically disadvantaged students, may significantly improve academic performance and psychosocial functioning. Overall, this study contributes to the growing body of literature highlighting the centrality of sleep and motivation in shaping students' mental health, academic productivity, and life satisfaction. It advocates holistic, student-centered approaches in higher education policy, emphasizing the need for integrated academic and psychological support systems that can foster healthier, more motivated, and better-functioning student communities.

CONCLUSION

The findings of this study highlight the significant influence of sleep deprivation on both academic motivation and quality of life among university students. As sleep quality declined, students experienced lower levels of motivation and overall well-being, underscoring the crucial role that adequate rest plays in supporting academic engagement and mental health. Conversely, higher academic motivation was associated with a more positive perception of life quality, reflecting the interdependence between psychological drive and emotional resilience. These outcomes emphasize the importance of addressing sleep hygiene and motivational support within university settings to enhance student performance and holistic well-being.

AUTHOR CONTRIBUTION

Author	Contribution
Samia Latif Khan*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Dua Mobeen	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published

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