

Impact of Sleep Quality on Academic Performance among Students at University Kuala Lumpur Royal College of Medicine Perak (UniKL RCMP)

Muhammad Nurhamizan Faizal Sutiara¹, Siti Hannariah Mansor^{2*}, Norfaezah Mohd Rosli³, Mohd Faiz Putra Abd Razak⁴

^{1,2,3,4}Faculty of Sports Science and Recreation, Universiti Teknologi MARA (UiTM) Perlis Branch, Arau Campus, 02600 Arau, Perlis, Malaysia

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ABSTRACT

Sleep plays a vital role in academic performance, as it enables students to perform better in learning tasks and manage academic stress effectively. This study aims to examine the relationship between sleep quality and academic performance among students at UniKL RCMP. A total of 296 diploma students (Nursing, Pharmacy, Physiotherapy and Medical Imaging) were participated in this study by completing a questionnaire consisting of the Pittsburgh Sleep Quality Index (PSQI) and the Academic Performance Scale (APS). The data were analyzed using means and standard deviation for each item. The findings revealed that most students had poor sleep quality, with an average PSQI score of $M=5.31$. Despite this, their academic performance remained moderate to good, with an average score of 3.16. The correlation between sleep quality and academic performance was weak and not statistically significant ($r = 0.05$, $p = 0.38$). These findings suggest that poor sleep quality may not significantly impact students' focus, energy, or academic performance. Therefore, promoting healthy sleep habits and increasing awareness about the importance of sleep are essential steps in supporting student success, particularly for those managing academic demands in preparation for their future.

Keywords: academic performance, diploma programs, sleep quality, UniKL RCMP

INTRODUCTION

Sleep is a fundamental biological process essential for memory consolidation, learning, and overall cognitive functioning. However, university students frequently experience compromised sleep quality due to intense academic pressures, social commitments, and prolonged screen exposure - factors that collectively contribute to irregular sleep schedules and chronic sleep deprivation. Insufficient sleep impairs the neural mechanisms underlying attention, problem-solving, and information retention, thereby undermining academic performance and intrinsic motivation. In his foundational work, *Why We Sleep* (2017), Dr. Matthew Walker synthesized extensive scientific evidence demonstrating that sleep is an active neurobiological state critical for cognitive processing, sound judgment, and emotional regulation—core attributes necessary for effective learning and academic success among tertiary students.

Sleep disturbances are multifaceted and shaped by diverse sociodemographic and physiological factors, including age and sex. Gu et al. (2010) identified various sociodemographic variables, health-risk behaviors, and physiological conditions—such as gastrointestinal disorders, nightmares, and distinct chronotypes—as significant predictors of sleep dysfunction. Similarly, Rauchs et al. (2004) demonstrated that sleep provides an optimal neurophysiological environment for memory reorganization, specifically facilitating the consolidation of contextual and spatial memories.

Despite these established insights, contemporary lifestyle habits continue to disrupt student sleep architecture. Late-night study sessions, social obligations, and constant engagement with digital devices have become ubiquitous, altering circadian rhythms and compromising core cognitive domains such as concentration, memory retention, and executive decision-making. Among post-secondary students, these cognitive deficits

often manifest as reduced academic achievement, delayed coursework submission, and lower examination performance. Furthermore, prolonged sleep deprivation is strongly linked to heightened stress, emotional dysregulation, and an increased risk of anxiety and depression, fostering a cyclical decline in overall well-being. Students who habitually delay sleep also exhibit poorer time-management skills, which exacerbates physical fatigue, diminishes academic drive, and weakens overall preparation for scholastic challenges.

Poor sleep quality has emerged as an important concern among university students, as inadequate and disrupted sleep may impair cognitive functioning, including concentration, information processing, memory, and critical thinking, which are essential for effective learning and academic achievement. Previous research has demonstrated that insufficient and poor-quality sleep is associated with poorer academic outcomes among university students, suggesting that sleep may be an important and potentially modifiable factor influencing academic performance (Hershner & Chervin, 2014; Okano et al., 2019; Wang et al., 2022). However, limited research has specifically examined the relationship between sleep quality and academic performance among diploma students, who may face unique academic demands involving coursework, practical training, and other educational responsibilities. Therefore, this study investigates the relationship between sleep quality and academic performance among diploma students at University Kuala Lumpur Royal College of Medicine Perak (UniKL RCMP). By examining this relationship, the study aims to contribute to the existing literature on sleep and academic performance and provide a better understanding of the importance of sleep quality in supporting students' academic achievement.

LITERATURE REVIEW

Sleep Quality

Sleep quality refers to an individual's subjective evaluation of their overall sleep experience and encompasses multiple dimensions beyond sleep duration alone. These dimensions may include sleep onset latency, sleep continuity, nocturnal awakenings, sleep efficiency, daytime dysfunction, and the extent to which an individual feels rested and refreshed after waking. Thus, sleep quality represents both the quantitative and qualitative aspects of sleep and is considered an important component of overall health and well-being. Adequate sleep has been associated with positive physical and mental health outcomes, as well as optimal cognitive functioning and quality of life (Hirshkowitz et al., 2015). Consequently, contemporary research has increasingly emphasised sleep quality, rather than sleep duration alone, as an important indicator of overall well-being.

The determinants of sleep quality are multifaceted and may include behavioural, environmental, and psychological factors. Behavioural factors, such as excessive screen exposure and caffeine consumption before bedtime, may interfere with sleep patterns and negatively affect sleep quality. Environmental conditions, including noise, light exposure, and ambient temperature, may also influence an individual's ability to initiate and maintain sleep. In addition, psychological factors such as stress, anxiety, and depressive symptoms have frequently been associated with sleep disturbances and poor sleep quality. Poor or insufficient sleep may have important consequences for emotional regulation, memory, cognitive functioning, and long-term physical health (Walker, 2017). Furthermore, sleep disorders, such as insomnia, may significantly impair sleep quality and contribute to reduced daytime functioning and overall well-being (Roth et al., 2011). Conversely, regular physical activity and appropriate sleep hygiene practices may contribute to improved sleep outcomes (Buman et al., 2013).

Among students, sleep quality has become an important area of concern due to the academic, social, and lifestyle demands associated with student life. Students may experience irregular sleep schedules because of academic workload, examination pressure, technology use, and other personal or social commitments. Poor sleep quality may negatively affect important cognitive processes, including attention, concentration, memory consolidation, and decision-making, which are essential for effective learning and academic success. Previous research has demonstrated that students with better sleep quality tend to achieve better academic outcomes, while poor sleep quality has been associated with lower academic performance (Okano et al., 2019; Sultan et al., 2020). Therefore, understanding the factors associated with sleep quality among students is essential,

particularly because sleep may represent a potentially modifiable factor that could contribute to improved learning and academic performance.

Academic Performance

Academic performance refers to the extent to which students achieve their learning objectives and demonstrate mastery of the knowledge and skills acquired through educational activities. It is commonly assessed through indicators such as grades, examination results, test scores, and other evaluations of students' knowledge and skills (York et al., 2015). Academic performance is an important indicator of students' educational progress and achievement, reflecting not only their cognitive abilities but also a range of personal and contextual factors that may influence learning outcomes.

Previous studies have demonstrated that academic performance is influenced by various psychological, behavioural, and environmental factors, including students' motivation, time management, emotional well-being, learning strategies, and physical health (Credé & Kuncel, 2008; Richardson et al., 2012). Among these factors, sleep quality has received increasing attention because adequate and quality sleep plays an important role in cognitive functioning, memory consolidation, concentration, and overall learning capacity. Poor sleep quality may negatively affect students' ability to maintain attention, process information, retain knowledge, and perform effectively in academic activities (Curcio et al., 2006; Hershner & Chervin, 2014).

A growing body of research has examined the relationship between sleep quality and academic performance. Evidence suggests that students with better sleep quality tend to demonstrate better academic outcomes, whereas poor or disrupted sleep may be associated with lower grades and impaired learning. For example, Okano et al. (2019) found that better sleep quality, longer sleep duration, and greater sleep consistency were associated with better academic performance among college students. Similarly, a systematic review and meta-analysis among medical students reported a significant association between sleep quality and academic grades, although the relationship was relatively modest (Sultan et al., 2020). More recently, a 2026 systematic review and meta-analysis involving 59 studies and more than 163,000 participants found a significant positive relationship between sleep quality and academic performance, further supporting the importance of sleep as a factor associated with students' educational outcomes (Chen et al., 2026).

Overall, these findings suggest that academic performance should be viewed as a multidimensional outcome influenced by the interaction of cognitive, psychological, behavioural, and environmental factors. Although sleep quality is not the only determinant of academic success, existing evidence indicates that it may play an important role in supporting the cognitive and behavioural processes necessary for effective learning. Therefore, examining the relationship between sleep quality and academic performance is important for improving understanding of the factors that may contribute to students' academic achievement.

METHODOLOGY

Respondents and Research Design

This study employed a quantitative research design to investigate the relationship between sleep quality and academic performance among diploma students at University Kuala Lumpur Royal College of Medicine Perak (UniKL RCMP). A cross-sectional approach was utilized to gather data at a single point in time, providing an objective snapshot of students' sleep habits and academic outcomes through statistical analysis. Ethical standards were strictly maintained throughout the process to ensure voluntary participation and data confidentiality. Data was collected from participants using online questionnaires.

A total of 296 diploma students from UniKL RCMP participated in this study, consisting of 163 males and 133 females. The sample was equally distributed across four allied health programs, with 74 participants representing each of the following courses: Diploma in Nursing, Diploma in Pharmacy, Diploma in Physiotherapy, and Diploma in Medical Imaging.

Research Instruments

Data was collected using an adapted version of the Pittsburgh Sleep Quality Index (PSQI) (Buysse et al., 1988). As one of the most widely applied self-reporting questionnaires, the PSQI evaluates individual sleep habits, quality, and disturbances. This 19-item instrument measures seven core sleep components: 1) subjective sleep quality, 2) sleep latency, 3) sleep duration, 4) sleep efficiency, 5) sleep disturbances, 6) sleep medication use, and 7) daytime dysfunction. Each component is scored from 0 (no difficulty) to 3 (severe difficulty). The global PSQI score, ranging from 0 to 21, is calculated by summing all seven component scores, with higher scores indicating poorer sleep quality. The internal consistency for this scale yielded a Cronbach's alpha coefficient of 0.65. Meanwhile, to assess academic performance, this study utilized the Academic Performance Scale (APS) adopted from Birchmeier et al. (2015). Comprising 8 items, this instrument employs a 5-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree), with higher aggregate scores indicating greater academic performance. The scale demonstrates strong psychometric properties, exhibiting an internal consistency (Cronbach's alpha) of 0.89 and a test-retest reliability of 0.85.

Data Collection

Ethical approval to conduct this study was obtained from the Universiti Teknologi MARA (UiTM) Research Ethics Committee (Reference number: REC-ERC 8/2025). Prior to data collection, official institutional permission was granted by the Deputy Rector of Student Affairs at Universiti Kuala Lumpur Royal College of Medicine Perak (UniKL RCMP). Informed consent was obtained from all participating diploma students, who were explicitly informed of the voluntary nature of the study and their right to withdraw at any stage without penalty. Participants then received a link to the online questionnaire hosted on Google Forms and were given 20 minutes to complete the survey before responses were collected for analysis.

Data Analysis

The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) for Windows, version 27. Descriptive statistics, including means and standard deviations, were calculated for each item. To investigate the relationship between sleep quality and academic performance among students at UniKL RCMP, the Spearman Rank Correlation Coefficient was employed. Statistical significance was set at $p < .05$.

FINDINGS

The Level of Sleep Quality among Students at UniKL RCMP

Table 1 shows the descriptive statistic results of level of sleep quality among students at UniKL RCMP. Among the PSQI Components, Sleep Duration was recorded the highest mean score ($M = 1.14$, $SD = 0.83$) followed closely by sleep disturbance ($M = 1.11$, $SD = 0.36$), and subjective sleep quality ($M = 1.08$, $SD = 0.47$). Daytime dysfunction showed a mean score of 1.00 ($SD = 0.41$), while sleep latency recorded a mean of 0.80 ($SD = 0.73$). Lower mean scores were observed for sleep efficiency ($M = 0.08$, $SD = 0.36$) and the use of sleep medication, which recorded the lowest mean score ($M = 0.06$, $SD = 0.31$). Overall, the participants obtained a total PSQI mean score of 5.31 ($SD = 1.72$).

Table 1. The Level of Sleep Quality among Students at UniKL RCMP

Components	mean	Std. Dev
Subjective sleep quality	1.08	0.47
Sleep Latency	0.80	0.73
Sleep duration	1.14	0.83
Sleep Efficiency	0.08	0.36

Sleep disturbance	1.11	0.36
Use of sleep medication	0.06	0.31
Daytime dysfunction	1.00	0.41
Overall Total PSQI Score	5.31	1.72

The Level of Academic Performance among Students at UniKL RCMP

Table 2 presents the descriptive statistics for the level of academic performance among UniKL RCMP students. Among the individual items, Item 3 "I want to get good grades in every subject" recorded the highest mean score ($M = 4.22$, $SD = 0.52$). This was followed by Item 7 ($M = 3.79$, $SD = 0.56$), Item 4 ($M = 3.63$, $SD = 0.61$), Item 2 ($M = 3.61$, $SD = 0.55$), and Item 1 ($M = 3.50$, $SD = 0.60$). Lower agreement was reported for Item 5 ($M = 3.34$, $SD = 0.61$) and Item 6 ($M = 3.32$, $SD = 0.57$). Finally, Item 8 "Solving problems is a useful hobby for me" recorded the lowest mean score ($M = 3.05$, $SD = 0.67$). Overall, the mean score for the level of academic performance among diploma students at the Royal College of Medicine Perak (RCMP), UniKL, was 28.46 ($SD = 2.69$). This implies that students' academic performance was reasonably high on average. Furthermore, the comparatively low standard deviation suggests that most responses clustered closely around the mean, reflecting consistent APS scores across the sample.

Table 2. The Level of Academic Performance among Students at UniKL RCMP

Items No.	Items	Mean	Std. Dev
1	I made myself ready in all my subjects	3.50	0.60
2	I pay attention and listen during every discussion	3.61	0.55
3	I want to get good grades in every subject	4.22	0.52
4	I actively participate in every discussion	3.63	0.61
5	I start papers and projects as soon as they are assigned	3.34	0.61
6	I enjoy homework and activities because they help me improve my skills in every subject	3.32	0.57
7	I exert more effort when I do difficult assignments	3.79	0.56
8	Solving problems is a useful hobby for me	3.05	0.67
Overall Total APS Score		3.16	2.69

Relationship between Sleep Quality and Academic Performance Among Diploma Students at UniKL RCMP

A Spearman's rank-order correlation was conducted to evaluate the relationship between students' sleep quality (PSQI score) and academic performance (APS score). As presented in Table 3, the results indicated a weak, positive relationship between sleep quality and academic performance; however, this relationship was not statistically significant, $r(296) = 0.05$, $p = 0.38$.

Table 3: Spearman's Correlation Analysis Relationship between Sleep Quality and Academic Performance among Students at UniKL RCMP

		Academic Performance (APS)
Sleep Quality (PSQI)	Correlation Coefficient	0.05
	Sig. (2-tailed)	0.38

Notes: * Correlation was significant at the $p < 0.05$ level (2-tailed)

DISCUSSION

The Level of Sleep Quality Among Students at UniKL RCMP

Based on the descriptive statistics presented in Table 1, the present study provides empirical evidence regarding the relationship between sleep quality and academic performance among diploma students at the Universiti Kuala Lumpur Royal College of Medicine Perak (UniKL RCMP). The findings offer valuable insights into how variations in sleep quality relate to students' perceived academic outcomes within this demographic. Descriptive statistical analysis revealed that Component 3 (Sleep Duration) recorded the highest mean score ($M = 1.14$, $SD = 0.83$). In the context of the Pittsburgh Sleep Quality Index (PSQI), higher component scores reflect greater dysfunction, indicating that a substantial proportion of students do not achieve adequate sleep duration. This insufficiency is likely driven by demanding academic schedules, social engagements, and lifestyle routines that disrupt consistent sleep patterns. These findings align with those of Lund et al. (2010), who reported that college students frequently experience reduced sleep duration due to academic pressures and irregular daily routines. Similarly, Hershner and Chervin (2014) emphasized that insufficient sleep is highly prevalent among university populations, negatively impacting both academic performance and mental health. Collectively, these results highlight restricted sleep duration as a widespread challenge in higher education, particularly for students balancing intensive coursework, clinical training, and personal commitments.

Conversely, the lowest mean score was recorded for Component 6 (Use of Sleep Medication) ($M = 0.06$, $SD = 0.31$), indicating that the majority of UniKL RCMP diploma students rarely or never rely on pharmacological aids to induce sleep. This low reliance suggests either a preference for natural sleep management or limited access to medical interventions for sleep disturbances. This trend is consistent with findings by Brick et al. (2010), who noted that university students generally avoid sleep medications due to concerns regarding side effects, dependency risks, and associated social stigma. Overall, the global mean PSQI score was 5.31 ($SD = 1.73$). Based on established PSQI scoring criteria, where a global score exceeding 5.0 denotes poor sleep quality. These results confirm that the majority of students in this sample experience suboptimal sleep quality, which may adversely affect both their academic performance and overall well-being.

The Level of Academic Performance Among Students at UniKL RCMP

The findings of this study revealed that the highest mean score was recorded for Item 3, "I want to get good grades" ($M = 4.22$, $SD = 0.52$). This indicates that academic achievement serves as a strong motivational factor among diploma students at Universiti Kuala Lumpur Royal College of Medicine Perak (UniKL RCMP). The high mean suggests that most respondents place substantial importance on achieving good grades, reflecting a strong sense of academic commitment and performance-driven motivation. Conversely, the lowest mean score was observed for Item 8, "Solving problems is a useful hobby for me" ($M = 3.05$, $SD = 0.56$), implying that students are generally less inclined to view problem-solving as an enjoyable or habitual personal activity. Although this result reflects moderate agreement, it highlights that problem-solving may not be a dominant intrinsic motivator compared to grade-oriented aspirations within this student population.

Overall, the mean overall score for academic performance among the respondents was $M = 28.46$ ($SD = 2.69$), indicating a moderately high level of academic achievement. These results are consistent with the findings of Trockel, Barnes, and Eggett (2000), who reported that students with stronger motivation and better study habits tend to achieve superior academic outcomes. Similarly, Elias et al. (2011) emphasized that academic performance is largely shaped by internal factors such as motivation, self-discipline, time management, and sleep quality. The current findings suggest that students at UniKL RCMP maintain a commendable level of academic performance, potentially influenced by their high academic motivation and goal-oriented mindset. Collectively, these findings underscore the importance of promoting overall well-being as a fundamental aspect of academic success. Despite high academic motivation, a significant portion of students reported poor sleep quality—particularly regarding short sleep duration—which may hinder cognitive performance, concentration, and memory. This reveals a discrepancy between students' motivation to excel and their health-related behaviors. Because sleep hygiene often receives less attention despite its essential role in cognitive and emotional regulation, UniKL RCMP should implement awareness initiatives and wellness programs emphasizing adequate sleep and healthy lifestyle habits to foster a more balanced academic environment.

Relationship between Sleep Quality and Academic Performance Among Diploma Students at UniKL RCMP

The present study investigated the relationship between sleep quality, assessed using the Pittsburgh Sleep Quality Index (PSQI), and academic performance, measured through the Academic Performance Scale (APS), among diploma students at Universiti Kuala Lumpur Royal College of Medicine Perak (UniKL RCMP). Correlational analysis revealed a weak positive association, $r(296) = .05$, $p = .38$, suggesting that students with better sleep quality tended to achieve slightly higher academic performance. However, this relationship was not statistically significant, indicating that while a positive trend exists, the association is minimal and should be interpreted cautiously. These results imply that sleep quality alone is not a strong predictor of academic achievement in this population and that other factors may exert a greater influence on students' academic outcomes.

These findings align with previous research in the field. Orzech et al. (2011) reported that although students with healthier sleep patterns generally performed better academically, the effect size was small and moderated by various psychological and behavioral factors. Similarly, Eliasson et al. (2002) observed only a modest correlation between sleep quality and grade point average among medical students, suggesting that sleep represents one of many components influencing academic performance. Likewise, Gilbert and Weaver (2010) found that insufficient sleep was linked to lower academic achievement among college students, though the magnitude of this relationship varied based on individual differences and study context. Collectively, these studies reinforce the notion that while sleep quality contributes to academic outcomes, its influence may be overshadowed by other determinants such as motivation, study strategies, mental health, and time management.

Although the correlation in the present study did not reach statistical significance, the observed weak positive trend contributes valuable insight into the complex interaction between sleep and learning in higher education settings. The findings suggest that enhancing students' sleep habits may still yield beneficial effects on academic engagement and overall well-being, even if immediate improvements in performance are modest. Future research should incorporate additional variables such as stress levels, sleep hygiene practices, and chronotype preferences to provide a more comprehensive understanding of the relationship between sleep and academic performance. Moreover, adopting qualitative methods such as interviews or focus groups could offer deeper insight into students' perceptions and lived experiences related to sleep, complementing quantitative analyses and enriching the overall understanding of this

LIMITATION OF STUDY

However, several limitations of the present study should be acknowledged when interpreting the findings. First, the study sample was drawn exclusively from a single institution—diploma students at Universiti Kuala Lumpur Royal College of Medicine Perak (UniKL RCMP). This geographic and institutional confinement limits the generalizability of the results to broader populations of medical and allied health students across

Malaysia. Second, the study relied entirely on self-reported instruments, specifically the Pittsburgh Sleep Quality Index (PSQI) and the Academic Performance Scale (APS). Self-reported measures are inherently subject to response biases, such as social desirability, recall bias, or subjective misestimation of sleep quality and academic performance. Third, the study lacked an integrated theoretical framework, which may constrain the conceptual interpretation of the findings and mask potential underlying mechanisms. Fourth, due to the cross-sectional, correlational design, this study cannot establish causal relationships between sleep quality and academic performance. Finally, unmeasured confounding variables—such as psychological stress, daily caffeine consumption, screen time exposure, and individual study habits—were not controlled for, which may have confounded the observed relationship between sleep and academic outcomes.

CONCLUSION

In conclusion, the empirical findings reveal that diploma students at UniKL RCMP generally experience poor sleep quality, despite demonstrating high and consistent levels of academic performance and motivation.

Data from the Pittsburgh Sleep Quality Index (PSQI) indicates an overall mean score exceeding the standard clinical threshold that signifies sleep dysfunction. This poor sleep quality is primarily driven by prolonged sleep duration difficulties, frequent sleep disturbances, and low subjective sleep quality, though reliance on sleep medication remains remarkably low. Conversely, results from the Academic Performance Scale (APS) demonstrate a high level of academic achievement and engagement. Students displayed particularly strong grade orientation and effort investment, with low statistical variance reflecting a uniform commitment to academic success across the cohort.

Crucially, the inferential analysis via Spearman's rank-order correlation revealed a weak and statistically insignificant relationship between sleep quality and academic performance. This demonstrates that poor sleep quality does not directly translate to lower academic outcomes among these students. Instead, high baseline levels of motivation, discipline, and targeted effort appear to act as a psychological buffer, enabling students to sustain academic performance despite compromised sleep hygiene.

While students successfully compensate for poor sleep in the short term, the high prevalence of sleep dysfunction poses long-term risks to their physical and mental well-being. Universities should implement targeted interventions such as sleep hygiene workshops, workload distribution reviews, and stress management support to foster a sustainable balance between academic excellence and health.

Conflict of Interest Statement

The authors agree that this research was conducted in the absence of any self-benefits, commercial or financial conflicts, and declare the absence of conflicting interests with the funders.

Authors' Contribution

Muhammad Nurhamizan Faizal Sutiara: Investigation, data curation, formal analysis, and writing – original draft; Siti Hannariah Mansor: Conceptualization, methodology, supervision, and writing – review and editing; Norfaezah Mohd Rosli: Methodology, formal analysis, and writing – review and editing; Mohd Faiz Putra Abdul Razak: Validation and writing – review and editing.

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