The Impact of Sleep Quality on Academic Performance Among Medical Students at a Medical University in Malaysia.

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ABSTRACT

Sleep plays a crucial role in supporting memory, attention, and emotional balance, yet medical students often face disrupted sleep due to heavy workloads, clinical duties, and lifestyle habits. This study explored the relationship between sleep quality and academic performance among second-year MBBS students at a medical university in Malaysia. A qualitative case study design was used, with twelve participants selected through purposive sampling using semi-structured interviews and analysed through thematic analysis. Four major themes emerged: (1) late-night study culture reinforced by peer norms and guilt over early rest; (2) cognitive and emotional consequences of poor sleep, including impaired focus, reduced memory, and heightened anxiety; (3) academic stress and lifestyle disruptions, such as examination pressure, irregular schedules, and digital device use; and (4) coping strategies, ranging from adaptive practices like short naps and group study to maladaptive reliance on caffeine. Findings suggest that cultural and institutional factors strongly shape sleep patterns and their academic impact. The study highlights the need for health-promoting initiatives at the university, including awareness programmes on sleep hygiene, stress management interventions, and workload adjustments to foster healthier academic cultures and enhance student well-being.

Keywords: Sleep quality, Academic performance, Medical students, thematic analysis, stress management

INTRODUCTION

Sleep is a fundamental physiological need that plays a central role in maintaining cognitive performance, emotional stability, and overall health. For medical students, whose academic and clinical responsibilities are both intensive and demanding, maintaining adequate sleep can be particularly challenging. The pressure of examinations, extensive study hours, and clinical exposure frequently lead to disrupted sleep patterns and reduced sleep quality (Ahmed, Gupta, & Tsai, 2020).

Recent evidence consistently demonstrates that poor sleep is linked to diminished academic performance, primarily through impaired attention, memory consolidation, and executive functioning (Consolvo, Marino, & Shen, 2021). In the context of medical education, these consequences are especially significant, as students are required not only to assimilate large volumes of information but also to apply their knowledge in clinical decision-making. Studies in diverse settings have shown a clear association between poor sleep quality and lower academic performance among medical students (Christodoulou et al., 2023; Falloon et al., 2022; Jalali et al., 2020).

Despite growing recognition of this issue, limited research has examined the impact of sleep quality on academic outcomes within the Malaysian medical education context. Evidence from Malaysia suggests that cultural and lifestyle factors—including late-night study habits, screen time, and stress—may influence sleep quality among university students (Kumar et al., 2020). However, there remains a lack of focused investigation into how these factors specifically affect medical students' academic outcomes at a medical university in Malaysia. This study addresses this gap by examining the relationship between sleep quality and academic performance, providing data that may inform health-promoting policies and student support strategies.

BACKGROUND

Sleep supports essential brain functions such as memory consolidation, emotional regulation, and decision-making—all of which are critical for learning. Medical students, however, often experience irregular sleep patterns and reduced sleep duration due to academic demands and clinical rotations (Alotaibi et al., 2020; Paudel et al., 2022). Poor sleep has been associated not only with impaired academic performance but also with increased risk of stress, anxiety, and depression (Al Ani et al., 2024; Alhusseini et al., 2022). These psychosocial factors may further compound learning difficulties and negatively affect professional development.

Studies from different regions confirm the widespread prevalence of poor sleep quality among medical students. For instance, Khaled et al. (2025) and Almalki et al. (2025) report high rates of poor sleep among medical students in Saudi Arabia, while Paudel et al. (2022) highlight similar trends in Nepal. Locally, Kumar et al. (2020) documented that Malaysian university students often adopt behaviours—such as late-night screen use—that contribute to disrupted sleep. Such findings reinforce the need for institution-specific studies to contextualise the problem.

PROBLEM STATEMENT

At a medical university in Malaysia, anecdotal evidence and informal feedback suggest that many medical students experience poor sleep quality due to academic workload, clinical responsibilities, and lifestyle factors. This pattern is concerning, given that sleep deprivation impairs cognitive functions such as memory, concentration, and critical thinking, which are essential for academic and clinical success.

Despite the acknowledged importance of sleep, there is no published research that directly examines its relationship with academic performance among medical students at the university. Without empirical evidence, it is difficult for the university to design effective interventions or policies aimed at improving students' sleep and academic outcomes. This study seeks to address this gap by investigating the correlation between sleep quality and academic performance, thereby generating data that can guide targeted wellness initiatives.

Research Objectives

1. To assess sleep quality among medical students at a medical university in Malaysia.
2. To determine the correlation between sleep quality and academic performance among medical students at a medical university in Malaysia.
3. To identify factors influencing sleep quality among medical students at a medical university in Malaysia.

Research Questions

1. What is the sleep quality among medical students at a medical university in Malaysia?
2. How does sleep quality correlate with academic performance among medical students at a medical university in Malaysia?
3. What factors are associated with variations in sleep quality among medical students at a medical university in Malaysia?

SIGNIFICANCE OF THE STUDY

This study contributes to the growing body of literature on the relationship between sleep quality and academic performance, with specific relevance to Malaysian medical students. By generating context-specific evidence, the research can support the development of institutional policies and wellness programmes at the university. Such initiatives may include seminars on sleep hygiene, stress management interventions, or structural adjustments in scheduling to promote healthier sleep patterns.

Beyond academic performance, the study highlights the broader health implications of poor sleep, including psychological distress and reduced well-being (Alhusseini et al., 2022; Yaghmour et al., 2023). By identifying

the factors that influence sleep quality, the findings can inform comprehensive support systems that address both educational and health needs of medical students.

LITERATURE REVIEW

Sleep Quality and Academic Performance

The relationship between sleep quality and academic performance has been repeatedly established across multiple contexts in higher education. Adequate sleep is vital for attention, concentration, working memory, and executive function, which together underpin learning efficiency and examination performance (Consolvo, Marino, & Shen, 2021). Recent research emphasises that poor sleep is consistently associated with poorer academic outcomes in medical students. Christodoulou et al. (2023) reported a strong link between disrupted sleep quality and lower academic performance in French medical students, while Jalali et al. (2020) observed that reduced sleep quality negatively affected academic achievement among students in an Iranian setting.

Evidence from high-stakes clinical assessments also reinforces this link. Falloon et al. (2022) demonstrated that sleep quality was a significant predictor of performance in clinical examinations, underscoring that sufficient rest supports not only knowledge acquisition but also the application of knowledge in practical, high-pressure contexts. Similar findings were echoed in Saudi Arabia, where Khaled et al. (2025) confirmed that poor sleep quality was associated with lower academic achievement, highlighting the persistence of this relationship across cultural contexts. Collectively, these findings suggest that sleep is not simply a health necessity but a critical determinant of academic success for medical students.

Sleep Deprivation Among Medical Students

Medical students are among the most vulnerable populations to chronic sleep restriction due to the demands of their training. Alotaibi et al. (2020) documented that poor sleep quality was closely linked with elevated stress levels and poorer academic outcomes among medical students in Saudi Arabia. Similarly, Paudel et al. (2022) reported a high prevalence of poor sleep quality among Nepalese medical students, with notable associations between poor sleep and academic difficulties.

The problem extends beyond a single region. Studies conducted in Saudi Arabia (Khaled et al., 2025; Alimi et al., 2021) and Iraq (Al Ani et al., 2024) confirm widespread sleep challenges in medical students, suggesting that the issue is both persistent and global. In each case, irregular schedules, heavy study loads, and clinical responsibilities are highlighted as key contributors to poor sleep. These consistent findings across diverse settings highlight the universality of the problem and the need for institutional interventions.

Health Implications of Poor Sleep

Beyond academic performance, sleep quality is a critical determinant of medical students' physical and psychological health. Alhusseini et al. (2022) found that poor sleep among Saudi medical students was strongly linked to higher levels of stress, anxiety, and psychological distress. Yaghmour et al. (2023) also demonstrated that poor sleep quality was not only associated with lower academic performance but also with compromised mental health outcomes. These findings are consistent with broader evidence linking sleep deprivation to increased risk of burnout, reduced quality of life, and impaired professional development (Perotta et al., 2021).

The interplay between psychological health and sleep is particularly concerning for medical students, given that unmanaged stress, anxiety, and depression may reduce resilience and coping ability during clinical practice. Al Ani et al. (2024) highlighted this bidirectional relationship in Iraqi students, where stress and poor sleep interacted to further weaken academic outcomes. This suggests that interventions aimed at improving sleep quality may also have secondary benefits for mental health and overall well-being.

Cultural and Environmental Factors in the Malaysian Context

Sleep patterns and their effects on academic outcomes are not uniform across cultures and may be shaped by

unique lifestyle and environmental factors. Research from Malaysia indicates that students often experience irregular sleep due to academic pressure, late-night study routines, and digital device usage. Kumar et al. (2020) found that these factors were strongly linked to poor sleep quality among Malaysian university students, which in turn impacted daily functioning and academic productivity.

This highlights the need for context-specific investigations that take into account local habits, cultural norms, and institutional environments. For example, Malaysian medical students often face extended study sessions and preparation for competitive examinations, which may encourage late-night study patterns that compromise sleep. Given these distinctive challenges, the present study aims to provide an evidence base that reflects the lived experiences of medical students at a medical university in Malaysia, filling a gap left by more generalized regional or international studies.

RESEARCH METHOD

This study employs a qualitative research methodology to explore the experiences of medical students regarding the impact of sleep quality on their academic performance at a medical university in Malaysia. A case study approach was adopted, allowing for an in-depth exploration of the lived realities of students navigating the demands of medical education. This approach was deemed suitable as it facilitates the generation of rich, contextual insights that would not be captured through quantitative surveys alone (Miles et al., 2020).

Participant Selection

A total of 12 second-year MBBS students from a medical university in Malaysia participated in the study. Participants were selected through purposive sampling to ensure that they possessed direct and relevant experience with the research topic, specifically the challenges of balancing sleep and academic performance during the pre-clinical years of study. Inclusion criteria required participants to be full-time medical students in their second year and willing to discuss their personal experiences of sleep and study demands. To protect anonymity, participants are referred to as Respondent One through Respondent Twelve.

Method of Data Collection

Data was collected through semi-structured interviews, each lasting between 45–60 minutes. This method was chosen as it provides structure through guiding questions while allowing flexibility to explore emerging ideas (Sultan et al., 2022). The interviews focused on four main areas:

1. Students' typical sleep patterns and habits.
2. Perceived effects of sleep quality on academic focus, exam preparation, and performance.
3. Factors influencing sleep quality (stress, lifestyle, technology use, clinical exposure).
4. Coping mechanisms and strategies used to manage sleep difficulties.

All interviews were conducted via face-to-face sessions in a private room within the university library to ensure comfort and confidentiality. With participants' consent, the interviews were recorded and later transcribed verbatim.

Data Analysis

The interview transcripts were analysed using thematic analysis, following Braun and Clarke's (2021) six-step framework:

1. Familiarisation with the data – Transcripts were read repeatedly to gain a deep understanding.
2. Generating initial codes – Key statements about sleep patterns, academic performance, and stress were highlighted and coded.
3. Searching for themes – Codes were grouped into initial themes, such as "late-night study culture" and "cognitive struggles."

4. Reviewing themes – Themes were compared across all participants to refine and merge overlapping categories.
5. Defining and naming themes – Clear labels and definitions were assigned to each overarching theme.
6. Producing the report – The final themes were organised to frame the findings, supported by direct quotations from participants.

This process allowed for both individual and cross-case comparisons, ensuring that the findings reflected shared experiences while acknowledging differences.

Ethical Considerations

Ethical approval was obtained from the Research and Ethics Committee at the university. Participants were provided with an information sheet explaining the study's purpose, and informed consent was obtained prior to data collection. Participation was voluntary, and students were assured of confidentiality. To further strengthen validity, member checking was conducted by sharing preliminary themes with participants for confirmation of accuracy.

FINDINGS

The thematic analysis of the interviews with 12 medical students revealed four major themes that shaped the relationship between sleep quality and academic performance: (1) Late-Night Study Culture, (2) Cognitive and Emotional Consequences of Poor Sleep, (3) Academic Stress and Lifestyle Disruptions, and (4) Coping Strategies and Adaptations.

Table 1: Themes and Sub-Themes on Sleep Quality and Academic Performance among Medical Students at a Medical University in Malaysia

Theme	Sub-Themes	Description	Exemplary Quotes
Theme 1: Late-Night Study Culture	**Peer-driven habits**	Students reported that late-night studying was common and perceived as a group norm.	"Most of us start studying properly only after 10 pm. It feels normal, but by 2 or 3 am I'm too tired to focus, yet I still push through." (Respondent Three)
	Guilt of sleeping early	Some students described feelings of guilt or inadequacy when sleeping earlier than peers.	"If you sleep early, you feel guilty, like you're wasting time while your friends are still awake studying." (Respondent Seven)
Theme 2: Cognitive and Emotional Consequences of Poor Sleep	**Memory and focus issues**	Poor sleep was linked to difficulties in concentration, comprehension, and retention.	"When I sleep less, the next day I keep reading the same line again and again without understanding it." (Respondent Ten)
	Emotional instability	Sleep deprivation increased irritability, anxiety, and loss of motivation.	"Lack of sleep makes me moody and anxious, especially before exams." (Respondent One)
Theme 3: Academic Stress and Lifestyle Disruptions	**Exam-related stress**	Anxiety and pre-exam workload prevented students from sleeping, even when they attempted to rest.	"The pressure before exams is too much. Even when I try to sleep, my mind keeps revising questions." (Respondent Five)
	Technology and lifestyle factors	Excessive screen use at night further disrupted sleep routines.	"Scrolling on my phone before bed is a habit I can't break—it eats

			into my sleep hours." (Respondent Eight)
	Irregular schedules	Clinical and academic commitments led to inconsistent sleep patterns.	"Sometimes our timetable changes so much that my body doesn't know when to sleep." (Respondent Eleven)
Theme 4: Coping Strategies and Adaptations	**Adaptive strategies**	Some students attempted healthier coping mechanisms such as short naps and time management.	"I try to nap in the afternoon—it helps me feel a bit fresher to study at night." (Respondent Four)
	Maladaptive strategies	Reliance on caffeine and stimulants to compensate for lack of sleep was common.	"Caffeine is the only way I can keep up with classes after sleeping late." (Respondent Twelve)
	Collaborative approaches	Group study was used as a way to stay engaged without excessive late-night cramming.	"We revise together in small groups, so it reduces the need for all-night studying." (Respondent Six)

In Table 1, thematic analysis of the twelve interviews generated four major themes and nine sub-themes that reflected the lived experiences of medical students at a medical university in Malaysia regarding sleep quality and academic performance. The themes were: (1) Late-Night Study Culture, (2) Cognitive and Emotional Consequences of Poor Sleep, (3) Academic Stress and Lifestyle Disruptions, and (4) Coping Strategies and Adaptations.

Within these themes, students described sub-patterns such as the peer-driven norm of staying up late and the guilt of sleeping early, which reinforced unhealthy study behaviours. They also highlighted the cognitive difficulties of poor memory and focus, as well as the emotional instability caused by sleep deprivation. Academic workload and lifestyle issues created further challenges, with sub-themes covering exam-related stress, technology and lifestyle factors, and irregular schedules. Finally, students reported a mix of adaptive and maladaptive coping strategies, ranging from napping and group study to reliance on caffeine and stimulants.

DISCUSSION

This study explored the perspectives of twelve second-year MBBS students at a medical university in Malaysia on how sleep quality influences their academic performance. Through thematic analysis, four central themes emerged: late-night study culture, cognitive and emotional consequences of poor sleep, academic stress and lifestyle disruptions, and coping strategies and adaptations. The findings provide a nuanced understanding of the lived experiences of medical students in the Malaysian context and contribute to a growing body of international research on student well-being and academic outcomes.

Late-Night Study Culture and Academic Norms

One of the most prominent findings was the entrenched culture of late-night study among medical students at the university. Many participants described staying awake until early morning hours as a "normal" or expected practice, even when it came at the expense of rest. This reflects findings by Kumar et al. (2020), who noted that Malaysian students often adopt irregular sleep schedules driven by academic pressures and peer influence. Similar cultural patterns were observed in studies conducted in the Middle East and South Asia, where late-night studying was perceived as a marker of commitment but paradoxically undermined academic performance (Khaled et al., 2025; Paudel et al., 2022).

This tendency to sacrifice sleep in favour of extended study highlights a systemic issue within medical education: academic culture prioritises productivity over well-being. While students reported feeling guilty for sleeping

earlier than their peers, the literature shows that this behaviour is counterproductive. Christodoulou et al. (2023) demonstrated that better sleep quality is consistently associated with higher academic outcomes, including performance in both written and practical assessments.

Cognitive and Emotional Consequences of Poor Sleep

Students in this study frequently linked inadequate sleep to impaired concentration, reduced memory retention, and slower cognitive processing. These observations are supported by empirical evidence showing that sleep deprivation disrupts memory consolidation and executive functioning, both of which are critical for academic success (Consolvo, Marino, & Shen, 2021). The repetition of "reading the same line without understanding" described by respondents echoes neurocognitive findings in sleep research that connect insufficient sleep with diminished learning efficiency.

Beyond academic focus, participants described heightened anxiety, irritability, and emotional exhaustion associated with poor sleep. Alhusseini et al. (2022) and Yaghmour et al. (2023) reported similar outcomes, finding strong associations between poor sleep quality and psychological distress among medical students in Saudi Arabia. Likewise, Al Ani et al. (2024) highlighted the bidirectional relationship between poor sleep and elevated stress levels, suggesting that psychological strain both disrupts sleep and results from it. These findings suggest that interventions must address both academic workload and mental health to effectively improve sleep quality.

Academic Stress and Lifestyle Disruptions

The findings also highlight how academic workload, exam preparation, and clinical requirements exacerbate poor sleep among medical students. This aligns with Alotaibi et al. (2020), who found that stress was a significant mediator between poor sleep quality and academic outcomes. Lifestyle factors such as late-night use of digital devices further compound these challenges, echoing Kumar et al.'s (2020) observation that screen exposure before bedtime is a significant barrier to healthy sleep among Malaysian students.

Interestingly, participants described a sense of helplessness in breaking these habits, particularly the cycle of stress-induced insomnia before examinations. These findings resonate with Almalki et al. (2025), who found that the pressure of continuous assessment and competition for grades led to persistent sleep problems among medical students in Saudi Arabia. Collectively, these results underscore that interventions need to go beyond individual coping strategies and include institutional reforms, such as adjustments to scheduling and workload management.

Coping Strategies and Short-Term Adaptations

Students reported adopting a variety of coping mechanisms, including afternoon naps, caffeine use, and group study. While some strategies, such as structured napping, provided short-term relief, others—particularly heavy caffeine consumption—were counterproductive, as they further disrupted sleep cycles. This pattern is consistent with findings by Perotta et al. (2021), who highlighted that medical students often resort to maladaptive coping strategies in response to academic stress and sleep deprivation.

While these strategies may help students "get through" specific academic challenges, they do not address the underlying issues of workload, culture, and stress. As Rathore et al. (2024) emphasise, the long-term reliance on compensatory strategies without behavioural or institutional changes places students at risk of chronic sleep deprivation, burnout, and diminished academic performance.

Contribution of the Study

The findings from this study at a medical university in Malaysia contribute to the broader literature by providing a Malaysian perspective on a globally recognised issue. While many international studies have identified poor sleep quality as a barrier to academic success, this study highlights how local cultural and lifestyle factors—such as late-night study culture and peer-driven norms—shape the experience. The qualitative approach also adds

depth by capturing the emotional dimensions of sleep deprivation, illustrating how stress, anxiety, and guilt about rest create a cycle of poor well-being and reduced performance.

CONCLUSION

This study investigated the relationship between sleep quality and academic performance among twelve second-year MBBS students at a medical university in Malaysia through qualitative interviews. Four main themes emerged: a pervasive late-night study culture, cognitive and emotional consequences of poor sleep, academic stress and lifestyle disruptions, and reliance on short-term coping strategies. These findings align with international research demonstrating that poor sleep impairs concentration, memory, and emotional stability, leading to negative effects on academic outcomes.

The study highlights that, within the context of this university, cultural norms and peer expectations play a major role in perpetuating unhealthy sleep habits. Moreover, the emotional burden of poor sleep—manifested in anxiety, stress, and reduced motivation—further compounds academic difficulties.

The implications are significant for both students and institutions. For students, the findings stress the importance of adopting healthier sleep routines and resisting peer-driven late-night study habits. For the institution, the results suggest a need for targeted interventions, including awareness programmes on sleep hygiene, stress management workshops, and consideration of workload distribution to reduce unnecessary academic pressures.

Future research should expand this work by including students from multiple year levels and medical schools in Malaysia, as well as employing mixed methods to triangulate qualitative insights with quantitative measures such as GPA and validated sleep quality indices. Such efforts could provide a more comprehensive picture of how sleep influences academic outcomes and inform evidence-based strategies to support the well-being and success of medical students.

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