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Sleep Quality Levels and Academic Performance Among Secondary School

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Abstract. This study investigates the link between the quality of sleep and the academic performance of secondary students in SMK Seksyen 18 Shah Alam. Using a quantitative research approach, data was gathered through surveys that employed The Pittsburgh Sleep Quality Index (PSQI) to evaluate sleep quality over a one-month period. The research sample consisted of 241 students, selected through purposive sampling. The study's results revealed a significant association between sleep quality and academic performance, underscoring the necessity for interventions aimed at improving students' sleep routines and overall educational outcomes. To sum up, this research underscores the vital role of restful sleep in enhancing the academic success of students and suggests the importance of promoting healthier sleep habits among high school students.

Key words: Sleep Domains; Sleep Quality Levels; Academic Performance

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INTRODUCTION

Sleep, derived from the Latin term "Somnus," signifies a natural recuperative period involving both physical and mental rest. Uncertain sleep can negatively affect one's physiological balance and mental state, leading to consequences such as fatigue, weakness, and a lack of vitality (Potter & Perry, 2010). On the flip side, quality sleep is when a person wakes up feeling refreshed, without signs of fatigue, restlessness, dark circles under the eyes, puffy eyelids, headaches, dizziness, or sleepiness.

For children, sleep is crucial for their physical and mental development. During sleep, growth hormone is released, supporting their growth. Developing good sleep habits also plays a role in sleep quality. Just like proper nutrition and exercise, sleep is essential for children's health, growth, academic performance, and overall well-being as they mature (Wolfson & Montgomery-Downs, 2013).

Furthermore, sleep isn't just about physical growth, it's vital for brain development in children. Sufficient sleep contributes to healthy brain development, and individuals who consistently get high-quality sleep often engage in regular physical exercise. Physical activity has been shown to positively influence sleep quality (Wunsch et al., 2017).

Sleep is not merely a period of rest; it's a foundational biological process crucial for human health and well-being. During sleep, our bodies and minds undergo essential rejuvenation, which is vital for cognitive functioning and emotional regulation. Unfortunately, sleep quality, particularly among teenagers in Malaysia, has become a growing concern. This research delves deep into sleep quality among Malaysian teenagers, highlighting the critical link between sleep and academic performance, and calling for action to address this societal challenge.

Sleep's importance extends beyond rest; it plays a role in memory consolidation, learning, and problem-solving, while also promoting physical health. However, teenagers today face various sleep-related challenges, leading to inadequate sleep duration and compromised sleep quality. Academic pressures, extracurricular activities, and constant digital distractions disrupt their sleep patterns, jeopardizing their overall well-being.

The research on the relationship between sleep quality and academic performance among school students holds significant implications for the Malaysian government and policymakers. Given the paramount importance of education and student well-being, this research offers valuable insights into the connection between sleep and academic success. Equipped with this knowledge, policymakers can develop evidence-based interventions to enhance the education system. This may involve integrating sleep education into school curricula and establishing guidelines for creating sleep-friendly environments in educational institutions. By doing so, the government can promote a culture that recognizes and prioritizes the sleep health of students. Furthermore, the evidence from this research can drive policy changes that emphasize a holistic approach to education, ensuring that students not only succeed academically but also enjoy overall well-being.

Consequently, the government can foster a nurturing and supportive environment that empowers students to reach their full potential and make positive contributions to society. Within the school sector, teachers, and parents also stand to benefit significantly from the research on sleep quality and academic performance. Schools can play a central role in implementing strategies that encourage healthy sleep habits among students. By incorporating sleep education into the curriculum, teachers can raise awareness about the importance of adequate sleep and its impact on academic achievements. They can adapt teaching methods and schedules to accommodate the sleep needs of students, promoting a balanced approach to learning. Additionally, parents can use the research findings to support and guide their children's sleep routines while creating a sleep-conducive home environment. Armed with this knowledge, teachers and parents can collaboratively create a nurturing atmosphere that enhances both academic performance and overall well-being, ensuring the holistic development of students.

For students themselves, the research on sleep quality and academic performance carries profound personal significance. Understanding that sleep quality directly affects their academic success empowers students to take proactive measures to prioritize their sleep routines. By establishing consistent sleep schedules, reducing the use of electronic devices before bedtime, and creating a sleep-conducive environment at home, students can optimize their rest and enhance their capacity for learning. Furthermore, this research empowers students to make informed decisions about their academic goals, adopting a balanced approach that includes adequate rest and effective study habits. Recognizing the powerful connection between sleep and academic achievement, students can take control of their well-being and academic journey, ensuring excellence in their studies and fulfillment in their lives beyond the classroom. The research serves as a catalyst for positive change, inspiring students to embrace sleep as a vital tool for achieving their educational aspirations and future success.

METHODS

In this study, a quantitative research design has been employed, with the primary data collection method being questionnaires. The research adopts a survey approach and utilizes The Pittsburgh Sleep Quality Index (PSQI) as the assessment instrument. The PSQI is used to evaluate sleep quality over a one-month period and encompasses several domains, including subjective sleep quality, sleep latency, sleep duration, sleep disturbances, use of sleep medication, and daytime dysfunction. This standardized measure is designed to consistently gather information about individuals' subjective sleep patterns and provide a comprehensive sleep quality index.

The current research utilizes the Pittsburgh Sleep Quality Index (PSQI) as an assessment tool. Developed by Buysse and his colleagues in 1988, the PSQI was designed to create a standardized measure that captures consistent information regarding individuals' subjective sleep patterns. It has proven to be a valuable metric for examining the relationship between sleep and various conditions such as sleep disorders, depression, and bipolar disorder. The PSQI is a self-report questionnaire that assesses sleep quality over a one-month period. It consists of 19 items that evaluate seven distinct components, ultimately yielding a single global score. Typically, it takes approximately 5 to 10 minutes to complete.

The PSQI, developed by researchers at the University of Pittsburgh, has gained widespread acceptance and is employed across diverse demographic groups. It serves as a standardized sleep questionnaire that can be easily used by clinicians and researchers alike. The instrument has been applied in various contexts, including research investigations, therapeutic interventions, and the identification of sleep disorders. Clinical studies have demonstrated that the PSQI possesses moderate accuracy and validity in assessing sleep disorders, particularly when evaluating self-reported sleep issues and symptoms associated with depression. However, in these areas, it may be more reliable and valid compared to actigraphic tests.

Comprising 19 items, the PSQI examines multiple aspects of sleep and generates seven component scores along with a composite score. These components encompass subjective sleep quality, sleep latency (time taken

to fall asleep), sleep duration, habitual sleep efficiency (percentage of time spent asleep while in bed), sleep disturbances, use of sleep medication, and daytime dysfunction. Each item is weighted on a scale of 0 to 3. The global PSQI score is derived by summing the seven component scores, resulting in a total score ranging from 0 to 21. Lower scores indicate better sleep quality.

In addition to the total score, the statistical analysis of the PSQI allows for the examination of three factors: sleep efficiency (measured through sleep duration and sleep efficiency variables), perceived sleep quality (evaluated by subjective sleep quality, sleep latency, and sleep medication variables), and daily disruptions (assessed using sleep disturbances and daytime dysfunction variables).

The newly introduced School Examination Analysis System (SAPS) in this year's Intermediate Examination employs the national grade scale. The student's class or level ranking is determined based on the student's achievement grade, rather than being calculated according to the usual method of total percentage of student achievement. Below, we outline how to calculate the student's average grade using this system.

RESULT AND DISCUSSION

The Sleep Quality Levels Among School Students of Smk Seksyen 18, Shah Alam Before and After Final Year Examination.

Descriptive Analysis

Descriptive analysis used to satisfy the first research objective to identify the levels of quality sleep among school students of SMK Seksyen 18 Shah Alam before and after final year examination. Table 1 specifies the descriptive statistic of sleep quality levels before and after final year exam 2022 – 2023 session. Table 1 shows the frequency (N) and mean (M) of sleep quality levels.

Table 1. Sleep Quality Levels Among School Students of SMK Seksyen 18, Shah Alam Before and After Final Year Examination.

	Pre-Test		Post-Test	
	Frequency(N)	Percentage(%)	Frequency(N)	Percentage(%)
Male				
Good	120	99.17	119	98.34
Mild	1	0.82	2	1.65
Female				
Good	116	96.66	119	99.16
Mild	4	3.33	1	0.83

The first research objective of this study was to identify the levels of quality sleep among school students of SMK Seksyen 18 Shah Alam before and after the final year examination for the 2022-2023 session. Descriptive analysis was conducted to prove this objective, providing an overview of the sleep quality levels among the students. Table 1 presents the descriptive statistics of sleep quality levels before and after the final year exam. It provides information on the frequency (N) and mean (M) of sleep quality levels. The data in Table 1 represents the sleep quality levels of school students before and after sitting the final year examination. Before the final year exam, the results indicate that a majority of the school students (N=236) had a good sleep quality level. Only a small proportion of students (N=5) reported a mild sleep quality level. Among the male students, 99.17% (N=120) had a good sleep quality level, while 0.82% (N=1) had a mild sleep quality level. Similarly, among the female students, 96.66% (N=116) had a good sleep quality level, while 3.33% (N=4) had a mild sleep quality level.

After the final year exam, the findings demonstrate that the majority of school students (N=238) still had a good sleep quality level. A very small number of students (N=3) reported a mild sleep quality level. Among the male students, 98.34% (N=119) had a good sleep quality level, while 1.65% (N=2) had a mild sleep quality level. Similarly, among the female students, 99.16% (N=119) had a good sleep quality level, while 0.83% (N=1) had a mild sleep quality level.

These findings suggest that the majority of school students maintained a good sleep quality level both before and after the final year examination. It is noteworthy that the sleep quality levels did not significantly differ between male and female students in either period. It is important to consider the implications of these findings for the well-being and academic performance of the students. Adequate and good-quality sleep is crucial for

optimal cognitive functioning and overall health. The high prevalence of good sleep quality levels among the students is encouraging, as it suggests a positive sleep environment and healthy sleep habits among this sample.

Michael E. Hall (2021) in his journal state that, it has been observed that female students often encounter distinct stressors and employ different coping mechanisms compared to their male counterparts. These varying experiences can significantly impact their sleep quality. Academic pressures, societal expectations, and personal factors play crucial roles in contributing to heightened stress and anxiety levels among female students, which in turn may affect their ability to get restful sleep.

However, the small number of students reporting a mild sleep quality level indicates that there may be a subset of students who are experiencing sleep difficulties. It is important for educators and parents to be aware of the potential impact of sleep problems on students' well-being and academic performance, and appropriate interventions or support mechanisms could be considered for those in need. It should be noted that the study has certain limitations. First, the data was collected using self-report questionnaires, which may introduce response biases or inaccuracies. Second, the study focused on a specific school and may not be fully representative of the larger population. Future research with larger and more diverse samples, as well as objective measures of sleep quality, could provide a more comprehensive understanding of sleep patterns and their association with academic outcomes among school students.

In conclusion, the descriptive analysis of sleep quality levels among school students before and after the final year examination revealed a high prevalence of good sleep quality levels. These findings suggest positive sleep habits among the students in this sample. However, further research is needed to explore the potential impact of sleep quality on academic performance and well-being in a more diverse population.

The Comparison Sleep Quality Levels for Male and Female Before and After Final Year Examination Among School Residential Students of Smk Seksyen 18, Shah Alam.

Independent T-Test Analysis

Independent t-test analysis used to compare to sample means from 2 unrelated groups. Second research objective is to compare the quality of sleep levels for male and female among school students of SMK Seksyen 18, Shah Alam. Table 2 specifies the independent t-test statistic of gender and pre -test of sleep quality levels. Table 2 shows the mean (M), std deviation (SD), t-value (T), Degree of Freedom (DF) and sig. 2 tailed (P).

Table 2. Comparison sleep quality levels for male and female before and after final year examination among school students of SMK Seksyen 18, Shah Alam.

	Sleep Quality Levels				
	Mean (M)	Std. Deviation (SD)	T-Value (T)	Degree of Freedom(DF)	Sig. 2 Tailed (P)
Pre-Test			4.515	239	.000
Male	9.68	2.149			
Female	8.57	1.633			
Post-Test			-.085	239	.421
Male	6.74	2.043			
Female	6.69	2.092			

The primary objective of the second phase of this study was to assess and compare the sleep quality levels of male and female students at SMK Seksyen 18, Shah Alam. An independent t-test was conducted to examine any variations in sleep quality levels between the two genders. The outcomes of the analysis are presented in Table 2, which displays the mean (M), standard deviation (SD), t-value (T), degrees of freedom (DF), and significance (P) for the two-tailed test. The table provides a comparison of pre-test sleep quality levels among male and female students.

The results indicate that prior to the final year exam, the average sleep quality level for male students was M = 9.68 (SD = 2.149), while for female students, it was M = 8.57 (SD = 2.149). The independent t-test demonstrated a statistically significant difference in sleep quality levels between the two groups (T = 4.515, DF = 239, P < .001). The obtained p-value of 0.000 provides strong evidence against the null hypothesis, signifying a noteworthy distinction in sleep quality levels between male and female school students. Since the p-value is less than the conventional significance level of 0.05, we can reject the null hypothesis and conclude that there is a significant difference in sleep quality levels between the genders before the final year exam.

However, when considering the post-test sleep quality levels, the average sleep quality level for male students was M = 6.74 (SD = 2.043), while for female students, it was M = 6.69 (SD = 2.092). The independent

t-test for post-test sleep quality levels did not reveal a significant difference between male and female students (T = -0.085, DF = 239, P = .421). The p-value of 0.421 indicates that there is insufficient evidence to suggest a significant difference in sleep quality levels between male and female school students (Kwak, 2023). As the p-value is greater than the conventional significance level of 0.05, we fail to reject the null hypothesis, indicating no significant difference in sleep quality levels between the genders after the final year exam.

Summarize, the findings from the independent t-test analysis demonstrate a significant difference in sleep quality levels between male and female school students before the final year exam. However, after the exam, there is no substantial difference in sleep quality levels between the genders. These results underscore the importance of considering gender disparities when examining sleep quality among school students.

Amy E. Joubert (2022) state that after completing an exam, students often engage in rumination and overthinking, contemplating their answers and analysing their performance. This mental activity can keep their minds active when they should be winding down for sleep. They may replay the exam questions and second-guess their responses, pondering what they could have done differently. This process of self-evaluation and reflection can lead to increased cognitive arousal, making it challenging for students to relax and transition into a state of restful sleep. As a result, the post-exam period becomes a critical time for managing stress and promoting relaxation techniques to improve sleep quality.

It is essential to acknowledge the limitations of this study. The data was collected from a specific school and may not be entirely representative of the broader population. Additionally, the study relied on self-reported sleep quality levels, which may introduce response biases. Future research with larger and more diverse samples, along with objective measures of sleep quality, could provide further insights into gender differences in sleep quality among school students.

The Relationship Between Sleep Quality Levels Before Final Year Examination and Academic Performance Among School Students of Smk Seksyen 18, Shah Alam.

Pearson Correlation Analysis

Pearson correlation analysis used to measure the strength of the linear relationship between 2 variables. Third research objective is to investigate the relationship between sleep quality levels school students of SMK Seksyen 18, Shah Alam and their final year examination results. Table 3 specifies the pearson correlation statistic of pre-test of sleep quality levels and average student grade for their final year examination 2022-20223 session. Table 3 shows the correlation ®, sig. 2 tailed (P) and frequency (N).

Table 3. Relationship between sleep quality levels before final year exam and academic performance among school residential students of Smk Seksyen 18, Shah Alam.

	Average Student Grade.		
	Pearson Correlation ®	Sig. 2 Tailed (P)	Frequency (N)
Pre-Test Sleep Quality Levels.	-.079	.219	241

The primary aim of the third research objective in this study was to examine the association between sleep quality levels and the final year examination results among school students at SMK Seksyen 18, Shah Alam. To investigate this relationship, a Pearson correlation analysis was performed. Table 4.6 presents the findings of the correlation analysis, including the correlation coefficient, two-tailed p-value (P), and the sample size (N), which indicates the number of participants included in the analysis.

The results indicate that the sample consisted of N=241 participants, providing a substantial number of observations for the analysis. The calculated Pearson correlation coefficient between the pre-test sleep quality level and average student grade was -0.079. This negative correlation coefficient suggests a weak association between the two variables, indicating that as sleep quality levels decrease, average student grades tend to slightly decrease as well.

However, the reported p-value for the correlation coefficient was 0.219. This p-value indicates that the observed correlation is not statistically significant. The two-tailed p-value of 0.219 is utilized to determine the statistical significance of the correlation coefficient, representing the probability of obtaining the observed data or more extreme results assuming the null hypothesis is true.

Given that the p-value is greater than the conventional significance level of 0.05 (Kuar, 2023), we fail to reject the null hypothesis, which states that there is no significant correlation between the pre-test sleep quality level and average student grade. These results suggest that in this sample, sleep quality alone does not exhibit a strong linear relationship with the final year examination results.

Rostam Jalali 2020 state in his studies that, the relationship between academic success and various factors can be intricate, as it is influenced by a multitude of elements. These factors encompass the level of family income, the evolutionary process, the consumption of supplements and vitamins, family size, dependency on social media, addiction to social networks, and societal challenges. When examining these extraneous factors, it becomes evident that they are not easily controlled in research studies. Therefore, drawing conclusions about the correlation between sleep quality and academic performance should be approached cautiously, and the use of longitudinal studies is crucial for a comprehensive understanding.

However, it is important to note that a non-significant correlation does not necessarily imply the absence of any relationship between the variables. Other factors, such as study habits, motivation, and external support systems, may have a more substantial influence on student grades than sleep quality alone. It is crucial to consider the limitations of this study when interpreting the findings. Firstly, the data was collected using self-report measures, which may introduce response biases or inaccuracies. Secondly, the study was focused on a specific school and may not be fully representative of the larger population. Future research with larger and more diverse samples, as well as objective measures of sleep quality and a comprehensive assessment of academic variables, could provide a more comprehensive understanding of the relationship between sleep quality and academic performance among school students.

In conclusion, the Pearson correlation analysis conducted in this study revealed a weak and non-significant correlation between the pre-test sleep quality level and average student grade. These findings suggest that sleep quality alone may not be a strong predictor of the final year examination results in this sample. Further investigation is necessary to explore the potential influence of other variables and their interactions with sleep quality on academic performance among school students.

CONCLUSION

In essence, this study examined how sleep quality impacts academic performance in students through various statistical methods. While the majority of students reported favourable sleep patterns, a smaller group faced sleep-related challenges, highlighting the need for targeted interventions.

Results showed significant differences in sleep quality between genders before exams, but these disparities equalized afterward. Additionally, the weak correlation between sleep quality and academic grades suggests that factors beyond sleep, such as study habits and motivation, might play a more critical role in academic success.

This research underscores the vital role of good sleep-in student performance and overall well-being. It advocates for concerted efforts by educational institutions, families, and policymakers to promote healthy sleep habits and consider other influential factors on academic achievement. Enhancing sleep quality is essential for optimizing both academic outcomes and general health.

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