

Relationship of Sleep Quality to Academic Achievements of Students Faculty of Medicine Tarumanagara University

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Abstract

Medical students have a heavy academic burden that impacts poor sleep quality. Sleep has a close relationship with cognition, so it is associated with various types of memory, such as long-term and working memory, as well as some material, declarative, procedural/non-declarative knowledge, and several stages of memorization such as consolidation, coding, and reconsolidation. This study aims to determine the relationship between sleep quality and students' academic achievement at the Faculty of Medicine, Tarumanagara University. This study used a research design in the form of observational and cross-sectional as a research study design. Sampling using simple random sampling and obtained as many as 152 students of the Faculty of Medicine, University of Tarumanagara became respondents in this study. The Pittsburgh Sleep Quality Index (PSQI) questionnaire assesses sleep quality. Academic achievement is assessed on the value of blocks completed. The statistical test in this study used Chi-square to see the relationship between sleep quality and academic achievement. It was found that 126 respondents (82.9%) had poor sleep quality. Test Chi-square shows no relationship between Gender, age, class, napping habits, sleeping with other people, eating before bed, using gadgets before bed, using gadgets without blue light filters, and using gadgets for 24 hours on sleep quality. ($p > 0.05$). Furthermore, there is no relationship between sleep quality and academic achievement ($p > 0.05$) among students of the Faculty of Medicine, Tarumanagara University. In conclusion, this study's results indicate no relationship between sleep quality and academic achievement of students at the Faculty of Medicine, Tarumanagara University.

Keywords

Sleep; academic achievement; sleep habits; medical students



I. Introduction

Students have a heavy academic burden, so that which has an impact on poor sleep quality, from several previous studies concluded that not only medical students who have poor sleep quality but non-medical students also have a high prevalence of sleep deprivation.¹ Short sleep time in adults is associated with cognitive decline, driving accidents, and premature death. Furthermore, short sleep time also increases risk factors for metabolic diseases, including obesity, type 2 diabetes, cardiovascular disease, and mental health disorders. Sleep functions as memory consolidation, which occurs in the REM wave. Education is a very important human need because education has a duty to prepare Human Resources (HR) for the development of the nation and state (Pradana et al, 2020). According to Astuti et al (2019) Education is an obligation of every human being that must be pursued to hold responsibilities and try to produce progress in knowledge and

experience for the lives of every individual. Education is one of the efforts to improve the ability of human intelligence, thus he is able to improve the quality of his life (Saleh and Mujahiddin, 2020). Education is expected to be able to answer all the challenges of the times and be able to foster national generations, so that people become reliable and of high quality, with strong characteristics, clear identities and able to deal with current and future problems (Azhar, 2018). Education and skills are the main keys in gaining social status in community life (Lubis et al, 2019). However, there is also a mention that the REM-NREM cycle is also important in memory consolidation. A study with a large population of 7798 adolescents with an age range of 16-19 years in Norway in 2012 aimed to determine sleep quality and sleep patterns on academic achievement. Students who sleep 9 hours, especially those with short sleep duration <5 hours, then students who sleep between 22:00 and 23:00 also have the highest academic achievement. The same study conducted in Indonesia in 2015 on 594 medical students found that learning achievement is strongly influenced by sleep quality and quantity, so sleep is a necessity that greatly affects cognitive function, memory, and academic achievement. This study aims to determine the relationship between the characteristics of sleep habits on sleep quality and their impact on academic achievement in students of the Faculty of Medicine, Tarumanagara University.

II. Research Method

The research design used was observational and cross-sectional. This research was conducted at the Faculty of Medicine, Tarumanagara University. It was carried out in January – June 2022 with a sample of undergraduate students from the Faculty of Medicine, Tarumanagara University. The minimum sample size required is 152 people. The inclusion criteria were active students in the S1 Faculty of Medicine, Tarumanagara University. They had followed the Biomedical 2, Immunology, and Endocrine block and students who were willing to become respondents.

In contrast, the exclusion criteria included students who were unwilling to become research respondents. Sleep quality is measured using Pittsburgh Sleep Quality Index (PSQI) in Indonesian, which has been tested for reliability and validity by Setyowati A et al. (2021). It was found that Cronbach's alpha for PSQI-I was 0.72. Primary data collection was carried out by distributing questionnaires in the form of Google forms using social media to undergraduate students at the Faculty of Medicine, Tarumanagara University, as respondents containing information and the research objectives. Respondents who are willing and following the criteria contained in the Google form will continue to fill out the informed consent and will continue to fill out a questionnaire. After the respondent has filled in completely, the questionnaire is immediately collected. The data is processed using the SPSS application; the data analysis uses the Chi-Square test.

III. Result and Discussion

Of the 169 respondents willing to become research respondents, 152 were taken by *simple random sampling* to meet the required sample size. The age of 20 years is the most age group, with as many as 51 respondents (33.5%). Women are the most respondents, with 102 respondents (67.1%). The 2019 generation of respondents were the most respondents, 70 respondents (46.1%). The study results based on sleep quality obtained as many as 126 respondents (82.9%) with poor sleep quality (Table 1).

Table 1. Characteristics of Research Respondents

Characteristics	Amount (%)	Median (IQR)
Age (Years)		20 (2)
Gender		
• Female	102 (67.1%)	
• Male	50 (32.9%)	
Class of		
• 2019	70 (46.1 %)	
• 2020	57 (37.5%)	
• 2021	25 (16.4%)	
Sleep Quality		
• Good	26 (17.1%)	
• Poor	126 (82.9%)	
Academic Achievement		
• (Block Score >3.00)	82 (53.9%)	
• Not Good (Block Value <3.00)	70 (46.1%)	

The majority of the female sex have poor sleep quality as many as 84 respondents (82.4%); the *chi-square* results get a $p > 0.05$. Therefore, it can be stated that there was no relationship between Gender and force with sleep quality (Table 2.).

Table 2. Relationship between Sex and Force on Sleep Quality Sleep

Characteristics	Quality		Total	<i>p</i>
	Good	Bad		
Sex				
• Female	18 (17.6%)	84 (82.4%)	102	0.800
• Male	8 (16%)	42 (84%)	50	
Class of				
• 2019	12 (17.1%)	58 (82.9%)	70	0.721
• 2020	11 (19.3%)	46 (80.7%)	57	
• 2021	3 (12%)	22 (88%)	25	

The results showed that respondents 11 respondents (15.5%) did not take a nap with good sleep quality, 60 respondents (84.5%) slept with other people with poor sleep quality as many as 35 respondents (83.3%) did not have a habit of drinking caffeine have poor sleep quality as many as 67 (81.7%), do not have the habit of eating before bed with poor sleep quality as many as 90 respondents (80.4%). The use of *gadgets* 30 minutes after the lights are turned off with poor sleep quality for 90 respondents (85.7%). Respondents who do not use *gadgets* without blue light filters with poor quality are 68 respondents (81.9%). The use of *gadgets* for 8 hours/24 hours with poor sleep quality was 72 respondents (85.7%) and obtained $p > 0.05$ (Table 3.).

Table 3. Relationship between Sleep Habits and Sleep Quality Sleep

Habits Characteristics Sleep	Quality		Total	<i>p</i>
	Bad	Good		
Napping Habit				
Yes	66 (81.5%)	15 (18.5%)	81	0.62
No	60 (84.5%)	11 (15.5%)	71	
Sleeping with Others				
Yes	35 (83.3%)	7 (16.7%)	42	0.93
No	91 (82.7%)	19 (17.3%)	110	
Caffeine Drinking Habit				
Yes	59 (84.3%)	11 (15.7%)	70	0.67
No	67 (81.7%)	15 (18.3%)	82	
Eat before bed				
Yes	36 (90%)	4 (10%)	40	0,16
No	90 (80.4%)	22 (19.6%)	112	
Use of <i>Gadgets</i>				
30 Minutes After Turning Off the Light				
Yes	90 (85.7%)	15 (14.3%)	105	0.167
No	36 (76.6%)	11 (23.4%)	47	
Use <i>Gadget</i>				
No Blue Light Filter				
Yes	58 (84.1%)	11 (15.9%)	69	0.73
No	68 (81.9%)	15 (18.1%)	83	
Use <i>Gadget</i> For 24 hours				
8 hours/24 hours	72 (85.7%)	12 (14.3%)	84	0.30
<8 hours/24 hours	54 (79.4%)	14 (20.6%)	68	

The *chi-square* obtained $p > 0, 05$ based on sleep quality and academic achievement, so it can be concluded that there is no significant relationship (Table 4).

Table 4. The Relationship between Sleep Quality and Academic

Achievement Academic Achievement	Sleep Quality		Total	<i>p</i>
	Good	Bad		
Good (Block Score >3.00)	14 (17.1%)	68 (82.9%)	82	0.991
Poor (Block Score <3.00)	12 (17.1%)	58 (82.9%)	70	

Based on the processed data, it is known that the majority of respondents in this study were 20 years old, as much as 33.5%, with the most Gender being female, as much as 67.1% of the 152 respondents were women. Class of 2019 – 2021. Each respondent has varying sleep quality, and 17.1% of respondents have good sleep quality, but 82.9% have poor sleep quality. with data on academic achievement of respondents in the good category as much as 53.9% and the poor category as much as 46.1% of 152 respondents. In a study conducted by Saragih EB (2016) in Pontianak, the results were in line with this study because the criteria for the majority of respondents were female respondents, namely 76.7%, with the most sleep quality being poor sleep quality, namely 91.7% of 70 respondents.⁸ Research conducted by Yekti R et al. (2021) on medical faculty students also showed results in the same direction as female respondents who were mostly 59.7%, the

majority of respondents had poor sleep quality (69.7%), while respondents with good learning achievement (99.2%). In FK Untar students, 66 respondents (81.5%) had a habit of napping and had poor sleep quality. The results above were analyzed regarding the relationship between naps and sleep quality. They obtained $p > 0.05$, meaning there is no relationship between naps and sleep quality. Three times per week and napping more than 2 hours had poor sleep quality with $p < 0.05$. History of sleeping with other people found that 91 respondents (82.7%) had poor sleep quality. That $there > 0.05$ was obtained so that there is no relationship between sleeping habits and other people on sleep quality. A study conducted by Fuentes B et al. (2022) found that sleeping with a partner was associated with better sleep quality and overall mental health.¹¹ Respondents with a history of drinking coffee had poor sleep quality 84.3%, with a $p > 0.05$, it can be concluded that there was no relationship between a history of drinking caffeine and sleep quality. In contrast to the research of Watson EJ et al. (2016) in Australia, which showed a significant relationship between caffeine consumption and sleeps quality ($p < 0.05$).majority of respondents who have the habit of eating before bed have poor sleep quality (90%), $p > 0.05$ so it can be concluded that there is no relationship between eating habits before bed and sleep quality. In contrast to the research conducted by Faris MAIE et al. (2021), eating snacks at night before bed and eating irregularly correlated with poor sleep quality. Respondents who use *gadgets* 30 minutes after turning them off have poor sleep quality, as many as 90 respondents (85.7%).value $p > 0.05$, so it can be concluded that there is no relationship between using *gadgets* 30 minutes after the lights are turned off or not using *gadgets* for 30 minutes does not affect sleep quality. Research conducted by Alaswad W et al. (2017) examined the relationship between using *gadgets* before going to bed and sleep quality; there were similarities in the study's objectives. The results showed no relationship between using *gadgets* before bed and sleep quality. In addition, another study by Jniene A et al. (2019) found that using *gadgets* 2 hours before bed affects sleep quality. majority of respondents who use blue light filters have poor sleep quality. Obtained $p > 0.05$, meaning there is no relationship between the use of *gadgets* without a blue light filter and sleep quality. In contrast to the research conducted by Jniene A et al. (2019) in Morocco, most respondents have a habit of using *gadgets* with blue light filters before going to bed. It was found that the majority had poor sleep quality with a $p < 0.05$. Respondents with a duration of *Gadget* within 8 hours/24 hours and < 8 hours/24 hours the majority have poor sleep quality.value of $p > 0.05$, so it can be concluded that there is no relationship between the duration of using *gadgets* within 24 hours on sleep quality. Research by Nazish R et al. (2020) found a relationship between the use of *gadgets* 8 hours/24 hours on sleep quality. the data obtained regarding the relationship between age, Gender, and class on sleep quality, each has a $p > 0.05$, meaning there is no significant relationship between Gender and class on sleep quality. In contrast to research conducted by Tang J et al. (2017), it was found that there was a relationship between Gender and age in sleep quality; poor sleep quality was higher in women (27.0%) than men (26.3%). Academic achievement can not only be influenced by sleep quality but also by other factors. In this study, the majority of poor sleep quality had good academic achievement (53.97%), and a $p > 0.05$ was also obtained, meaning there is no relationship between sleep quality and academic achievement.

IV. Conclusion

The sleep quality of the majority (82.9%) of the students of the Faculty of Medicine, Tarumanagara University, in this study was poor. There is no relationship between Gender, age, college class, napping habits, sleeping with other people, eating before bed, use of gadgets without blue light filters, and use of gadgets 24 hours on sleep quality. Furthermore, there is also no relationship between sleep quality and academic achievement of students of the Faculty of Medicine, Tarumanagara University. Therefore, it is suggested that further researchers can examine other risk factors that can affect academic achievement.

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