The Relationship Between the Duration of Gadget Use and Sleep Quality and Visual Acuity of Students at Panrita Husada Health College Bulukumba

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ABSTRACT

Gadget use can raise concerns regarding its impact on health and social life for adolescents. The results of interviews with 17 students of STIKES Panrita Husada Bulukumba with respondents who use gadgets showed that some respondents experienced sleep disorders, usually past 12 am to 3 am. In addition, respondents also said they usually felt eye fatigue, dry and itchy eyes, and blurred vision after using gadgets for too long. This study aims to determine the relationship between the duration of gadget use with sleep quality and visual acuity in students at STIKES Panrita Husada Bulukumba. The design used in this study was a quantitative descriptive correlational non-experimental with a cross-sectional approach. The number of samples in this study was 74 respondents using non-probability sampling techniques and purposive sampling methods. Data collection tools were questionnaires on the duration of gadget use, sleep quality, and visual acuity observation sheets. The results of the analysis using the Kolmogorov-Smirnov alternative Chi-square test on the relationship between the duration of gadget use with sleep quality and visual acuity obtained a significance value (p-value) of 0.000. Conclusions and Recommendations: There is a relationship between the duration of gadget use and sleep quality and visual acuity in students at STIKES Panrita Husada Bulukumba. Based on these results, it is recommended that students regulate the duration of gadget use, especially at night, to maintain sleep quality and eye health.

Keywords: Gadget Use Duration, Sleep Quality, Visual Acuity.

INTRODUCTION

Gadgets are devices used to communicate with people around them and have many other functions through their various features. Gadgets such as cell phones and laptops are sophisticated electronic devices that set them apart from other devices. Their unique functions and properties make them easy to use. communication and various human activities (Afriani & Yuliana, 2022). Gadgets can also be accessing websites, texting, or accessing social media such as Facebook or Twitter (Fitriana et al., 2021). Gadget usage duration refers to the specific time spent accessing a gadget (Puspitasar, 2019). The use of gadgets has become part of everyday life in modern

society. While this technology offers various benefits, such as facilitating communication, learning, and entertainment, the unwise use of gadgets can have a negative impact on one's health (Khairunnisa et al., 2024). Smartphone screens emit ultraviolet radiation and X-rays, and prolonged exposure can cause eye health problems (Efendi et al., 2022).

Based on Smartphone Usage Statistics data in 2025, it is estimated that 4.69 billion people in the world will have gadgets, this number will increase by 440 million gadget users from 2024 to 2025. The average duration of gadget users in the world is around 3 hours 45 minutes / day. Meanwhile in Indonesia the duration of gadget use reaches 6.05 hours / day, where Indonesia is the country with the highest duration of gadget use in the world, followed by Thailand 5.64 and Argentina 5.33 hours / day (Team Backlinko, 2025).

Gadget use can raise concerns about its impact on adolescents' health and social lives. One health problem resulting from excessive gadget use is eye problems and sleep disturbances (Wahyuningsih et al., 2024). Teenagers need 7-9 hours of sleep per day for optimal health. However, several factors can disrupt sleep patterns in adolescents, such as busy schedules, stress, caffeine consumption, gadget use, medication, and mental health issues (Yogie et al., 2024).

A person's sleep quality can be measured by several aspects, such as sleep duration, difficulty falling asleep, wake time, sleep efficiency, and sleep disturbances. Several factors that influence sleep quality include age, environmental conditions, health status, lifestyle habits, dietary patterns, and academic pressure (Purwaningsih & Zulala, 2023). Poor sleep quality can result in health problems, such as headaches, difficulty concentrating, and metabolic disorders. If metabolic disorders occur, the body becomes fatigued and susceptible to disease (Caesarridha, 2021). Optimal sleep quality can provide a feeling of well-being fresh, energetic, and free from sleep disturbances in the morning. Therefore, good quality sleep is crucial and essential for maintaining the health and well-being of all individuals (Habibah, 2023). Excessive gadget use can cause eye fatigue, negatively impacting eye health, and can affect visual acuity. Factors such as body position, viewing distance, duration of use, and lighting intensity can affect the eye's ability to see clearly and sharply (Trihandoko et al., 2023). Visual impairment can be caused by several factors, including refractive errors, cataracts, and glaucoma. Excessive gadget use can negatively impact eye health and vision. Bright gadget screens

can lead to decreased vision, especially when used in low-light environments (Abdu et al., 2021).

Interviews with respondents who use gadgets revealed that some respondents experience sleep disturbances, with sleep times typically extending past midnight to 3 a.m. Furthermore, respondents also reported experiencing eye fatigue, dry and itchy eyes, blurred vision after prolonged gadget use, and neck stiffness due to bending over while using gadgets.

The aim of this study was to determine the relationship between the duration of gadget use and sleep quality and visual acuity in students at STIKES Panrita Husada Bulukumba.

MATERIALS AND METHODS

This study used a quantitative research method with a non-experimental correlational descriptive design and a cross-sectional approach. The population is the entire research object that includes/encompasses various objects that are expected to represent the phenomenon to be studied. The population in this study was obtained in 2024 students at STIKES Panrita Husada Bulukumba with a population of 708. The number of samples obtained in this study was 74 using the Slovin formula. The technique applied in this study was non-probability sampling with a purposive sampling method. This research instrument used a questionnaire sheet for the duration of gadget use, the Pittsburgh Sleep Quality Index (PSQI) Questionnaire, and a visual acuity observation sheet.

Data analysis is a structured and formal stage and aims to find themes and formulate research hypotheses. Data is analyzed using: (1) Univariate analysis, which is the analysis of one variable to describe parameters. (2) Bivariate analysis, which is a method used to examine the relationship between two variables. The test used is the Chi-squar statistical test with the Kolmogorov-Smirnov alternative.

RESULTS

Table 1. Distribution of Respondents by Age and Gender of Students at the Panrita Husada Bulukumba Health College Campus from March to April 2025

Characteristics	Frequency (f)	Percentage %
Age		
17-20 years	38	51.4
21-23 years old	36	48.6
Gender		
Woman	74	100.0
Total	**74**	**100.0**

Table 1 shows that the distribution of respondents based on age is 38 people

(51.4%) aged 17-20 years and 36 people (48.6%) aged 21-23 years. Based on gender, all respondents were female (74 people) (100.0%).

Table 2. Frequency Distribution based on Duration of Gadget Useto Students at the Panrita Husada Bulukumba Health College Campus

Duration of Gadget Use	Frequency (f)	Percentage (%)
Low	19	25.7
Currently	5	6.8
Excessive	50	67.6
Amount	**74**	**100.0**

Based on Table 2, it can be seen that the majority of students at the Panrita Husada Bulukumba Health College campus have excessive gadget usage, namely 50 respondents (67.6%). Meanwhile, 5 respondents (6.8%) are in the moderate category, and 19 respondents (25.7%) are in the low category.

Table 3. Frequency Distribution based on Sleep Quality in Students at the Panrita Husada Bulukumba Health College Campus

Sleep Quality	Frequency (f)	Percentage (%)
Good	25	33.8
Bad	49	66.2
Amount	**74**	**100.0**

Table 3 shows that the majority of students at the Panrita Husada Bulukumba Health College (STIKES) have poor sleep quality. This is indicated by the number of respondents in the poor sleep quality category, which is 49 people, or 66.2% of the total. Meanwhile, only 25 respondents, or 33.8%, reported good sleep quality.

Table 4. Frequency Distribution based on Visual Acuity of Students at the Panrita Husada Bulukumba Health College Campus

Visual Acuity	Frequency (f)	Percentage (%)
Normal	22	29.7
Abnormal	52	70.3
Amount	**74**	**100.0**

Table 4 illustrates the distribution of students' visual acuity, indicating that the majority of respondents had abnormal visual acuity. Fifty-two respondents, or 70.3%, fell into the abnormal category, while only 22 respondents, or 29.7%, had normal visual acuity

Table 5. Relationship between the duration of gadget use and the quality of sleep of students at the Panrita Husada Bulukumba Health College campus from March to April 2025

Duration of Gadget Use	Sleep quality				Total		*P*
	Good		Bad		N	%	
	N	%	N	%			
Low	15	6.4	4	12.6	19	19.0	0.000
Currently	2	1.7	3	3.3	5	5.0	
Excessive	8	16.9	42	33.1	50	50.0	
Total	**26**	**26.0**	**48**	**48.0**	**74**	**74.0**	

In Table 5, 42 (33.1%) of the student groups with excessive gadget use reported poor sleep quality, while only 8 (16.9%) reported good sleep quality. In the group with moderate gadget use, 2 (1.7%) reported good sleep quality, and 3 (3.3%) reported poor sleep quality. In the group with low gadget use, 15 (6.4%) reported good sleep quality and 4 (12.6%) reported poor sleep quality.

Table 6. Relationship between the Duration of Gadget Use and Visual Acuity in Students at the Panrita Husada Bulukumba Health College Campus from March to April 2025

Duration of Gadget Use	Visual Acuity				Total		*p*
	Normal		Abnormal		N	%	
	N	%	N	%			
Low	14	5.6	5	13.4	19	19.0	0.000
Currently	3	1.5	2	3.5	5	5.0	
Excessive	5	14.9	45	35.1	50	50.0	
Total	**22**	**22.0**	**52**	**52.0**	**74**	**74.0**	

In the 6 groups above with excessive gadget use duration, as many as 5 respondents (14.9%) had normal visual acuity, while the majority, namely 45 respondents (35.1%) experienced abnormal visual acuity. Then, in the group with moderate gadget use duration, there were 3 respondents (1.5%) who had normal visual acuity, and 2 respondents (3.5%) experienced impaired visual acuity. Meanwhile, in the group with low gadget use, it was found that 14 respondents (5.6%) had normal vision, and 5 respondents (13.4%) experienced impaired visual acuity.

DISCUSSION

The results of the analysis of the duration of gadget use with sleep quality obtained the results of this study showed that the group with excessive duration of gadget use, as many as 42 people (33.1%) had poor sleep quality, while only 8 people (16.9%) had good sleep quality. In the group with moderate duration of gadget use, 2 respondents (1.7%) had good sleep quality, and 3 respondents (3.3%) experienced poor sleep quality. Meanwhile, in the group with low gadget use, there were 15 respondents (6.4%) who had good sleep quality and 4 respondents (12.6%) who had poor sleep quality. From the results of the analysis using the Kolmogorov-Smirnov alternative Chi-square test, the p-value was 0.000 which means it is smaller than $\alpha = 0.05$. Thus, it can be concluded that there is a relationship between the duration of gadget use and the quality of sleep of students.

The results of research Andira et al., (2022) entitled "The Relationship Between Gadget Use and Sleep Quality in Nursing Students at National University," which found a significant relationship between gadget use and sleep quality in nursing students at National University. Excessive gadget use has the potential to disrupt students' sleep

quality. Data analysis results indicate a relationship between the two variables. The longer the duration of gadget use, the greater the likelihood of students experiencing poor sleep quality.

The results of the study are in line with the study Amelia et al., (2022) entitled "The Relationship between the Duration of Gadget Use and the Quality of Sleep of University Students." At Baiturrahmah, the results of the bivariate analysis showed that there was a relationship between the duration o fgadget use and sleep quality. Where the significance level is 0.000 and the p-value is 0.000. 41.878. When compared with the table p-value of 18.307 (df = 10, α= 0.05), then because p count > p table, so there is a relationship between the duration of gadget use and sleep quality in medical students of the 2018 intake at Baiturrahmah University.

Excessive gadget use among adolescents can lead to dependency, which can lead to a number of physical health problems. Common conditions include dry eyes, back pain due to poor posture while using devices, and disturbed sleep patterns. Therefore, adolescents need to limit their gadget use and establish healthy sleep habits to maintain a healthy balance between health and well-being. physical and mental health (Nazia et al., 2024). Sleep quality is not only influenced by gadget use, but also by various other factors such as environmental conditions, physical activity, and stress levels (Nugraha et al., 2023).

In the group with excessive gadget usage duration, 5 respondents (14.9%) had normal visual acuity, while the majority, 45 respondents (35.1%) experienced abnormal visual acuity. The results of the statistical analysis using the SPSS application with the Kolmogorov-Smirnov alternative Chi-square test method, considering the non-normal distribution of the data. The test results showed a p value = 0.000, which is smaller than α = 0.05, so it can be concluded that there is a statistically significant relationship between the duration of gadget use and students' visual acuity. This research is in line with research conducted by Hanun & Riyadi, (2024) "The relationship between gadget usage duration and visual acuity in adolescents: a correlation study" found a relationship between gadget usage duration and visual acuity. Gadgets are used for various activities, from online learning and communication to entertainment and information seeking. The increased intensity of gadget use causes the eyes to be continuously exposed to screen light for extended periods, potentially leading to eye fatigue and decreased visual acuity.

The results of the study by Kalsum et al., (2024) entitled "The Relationship between the Duration of Gadget Use and the Quality of Visual Acuity in Early Adolescents in Negeri 2 Samarinda" with the most results of 56 respondents (57.7%) with the category of poor visual acuity quality who have eye vision results of <20/20 feet or <6/6 meters. With the p value obtained on the variable of the duration of gadget use with the quality of visual acuity of 0.038 <α = 0.05, which means there isa significant relationship between the duration of gadget use and the quality of visual acuity in early adolescents at SMP Negeri 2 Samarinda.

Another factor contributing to decreased visual acuity is the distance from the eyes when viewing gadget screens. Using digital devices at too close a viewing distance, particularly less than 30 cm, has been shown to increase the impact of visual acuity impairment by up to three times compared to using them at a more ideal distance, which is greater than 30 cm. The eyes have to work harder when too close to the screen, which can trigger eye fatigue and contribute to long-term visual acuity decline (Wibowo, 2023).

CONCLUSIONS

Based on the research results and discussions that have been described previously, it can be concluded that there is a relationship between the duration of gadget use with sleep quality and visual acuity in students at the STIKES Panrita Husada Bulukumba Campus. The results of this study can be used as an additional reference in the Nursing Student Library of STIKES Panrita Husada Bulukumba. The findings regarding the relationship between the duration of gadget use with sleep quality and visual acuity in students can enrich the existing literature, as well as provide a broader view of the impact of gadget use on student health. Further research is recommended to involve a wider sample and consider other variables. therapy.

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