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The Relationship between Gadget Addiction and Sleep Quality among Adolescents at SMK Negeri in Purbalingga

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ABSTRACT

Background: The global prevalence of sleep quality disorders ranges from 15,3% to 39,2%. According to Indonesian data, as much as 63% of adolescents' sleep quality needs have not been met. Poor sleep quality will result from excessive device use throughout the day. Sleep deprivation can affect sleep patterns and interfere with social interactions.

Methods: This quantitative study uses a correlation approach and data collection techniques for gadget addiction scales, namely the Smartphone Addiction Scale (SAS) and Sleep Quality Scale (SQS). The subjects of this study were 48 students of Central Java State Vocational Schools in Purbalingga. The sampling technique of this study used total sampling for data analysis techniques using non-parametric analysis techniques, namely Spearman rho analysis.

Results: A correlation value of $p = 0.00 < 0.05$ means that H_0 is not accepted. The correlation coefficient between the two variables is equal to 0.744. So it can be interpreted that there is a strong relationship between gadget addiction and sleep quality among adolescents.

Conclusion: There is a significant relationship between gadget addiction and sleep quality in adolescents.

KEYWORDS
Gadget addiction, sleep quality, adolescents.

INTRODUCTION

Sleep quality is defined as a condition that a person lives to get freshness and fitness when their wake up (Maisa *et al.*, 2021). Globally, the prevalence of sleep quality disorders varies significantly from 15.3% - 39.2%. Data obtained in Indonesia shows that most of the sleep quality in adolescents has not been met, namely as much as 63% (Keswara *et al.*, 2019). Research conducted in Yogyakarta shows that as many as 54% of adolescents have poor sleep quality (Apriana, 2015).

Poor sleep quality can occur in any age group (Veqar and EjazHussain, 2012). The elderly are an age group prone to poor sleep quality, which is 14.3% (Astria, 2016). Meanwhile, adolescents have shown a high prevalence of poor sleep quality of 63% (Keswara *et al.*, 2019). According to research conducted by Hutagalung *et al* (2021) poor sleep quality will disrupt the body's sleep-wake cycle, which can disrupt the brain's working system and will cause various health problems. Poor sleep quality can have physiological and psychological impacts such as fatigue, weakness, increased blood pressure, decreased activity and decreased endurance (Asmadi, 2012).

Factors that cause poor sleep quality result from a destructive lifestyle in adolescents, including excessive use of smartphones, playing online games, smoking habits and consuming caffeine (Keswara *et al.*, 2019). Using gadgets for a long time can cause them to take about 1 hour longer to fall asleep than expected. Thus, this will make adolescents sleep late more often than usual (Kawangkoan and Mawitjere, 2017). There is an ideal time to play with gadgets for adolescents in a day, which is 4 hours 17 minutes or about 257 minutes (Prasetyo, 2021).

Based on the results of a survey conducted at a school in Purwokerto, with a sample of 10 students to become respondents and fill out two types of

instruments. For sleep quality instruments, 6 out of 10 students have poor sleep quality. As for the gadget addiction instrument, 4 out of 10 students have a high level of gadget addiction, Therefore, it is necessary to conduct research to determine the relationship between gadget addiction and sleep quality among adolescents. Based on the phenomenon above, researcher decided to find out more about the relationship between gadget addiction and sleep quality and to examine more deeply the characteristics of gadget addiction and sleep quality among adolescents.

RESEARCH METHODOLOGY

This study used quantitative research using an analytical cross-sectional study design that aims to determine the correlation between gadget addiction and sleep quality among among adolescents. The sampling technique in this study used total sampling. The sample in this study was 48 students The inclusion criteria in this study are adolescents of class XII who attend, willing to be a respondent, have a gadget, can communicate well and use of gadget. Meanwhile, the exclusion criteria for this study are adolescents who have health problems, adolescents who refuse to participate become respondents and students that didn't attend due to absence.

The data analysis in this study used univariate and bivariate analysis. The univariate analysis analized the characteristics of respondents including age, gender, types of gadget and media sites. Meanwhile, bivariate analysis in this study was used to analyze two variables that were suspected to be related or correlated using the Spearman test.

RESULT AND DISCUSSION

1. Characteristics of Respondents

Table 1. Characteristics of respondents by age (n=48)

Age	Frequency	Percentage (%)
16	3	6.3
17	27	56.3
18	17	35.4
19	1	2.1
Total	48	100%

Based on table 4.1 shows that the majority of respondents in this study were 27 students aged 17 years (56.3%). In this study, it was known that the youngest was 16 years old, and the oldest age was 19 years. The median age of the respondents is 17 and the mean is 17.33. Based on data obtained through the questionnaire, the dominant age at SMK Negeri Jateng in Purbalingga is 17 years. This is because the dominant age of grade 12 students is usually in the range of 17 to 18 years old, which is the age at which the student enters the final year of upper secondary education. Grade 12 students are dominated by 17 year old (Octaviani and Martono, 2021).

2. Characteristics of gadget addiction among adolescents

Table 2. Characteristics of respondents by gender (n=48)

Category	Frequency	Precentage%
Gender		
Male	45	93,8
Female	3	6,3
Total	48	100%

Table 4.2 shows that the majority of respondents in this study were male; as many as 45 students (93.8%) and 3 students (6.3%) were female respondents. This is because this research was conducted in a technical

school where most students are male. Technical schools are male-dominated because in technical schools they are focused on skills that use heavy technology work (Erdinawati, 2011).

3. Characteristics of sleep quality among adolescents

Table 3. Characteristics of respondents based on demographic data (n=48)

Category	Frequency	Precentage%
Types of Gadgets		
Smartphone	48	100%
Total	48	100%

Table 4.3 shows that all respondents in this study, namely 48 students (100%), used a type of gadget: a smartphone. This is in accordance with the statement mentioned by APJII 2016, which states that the use of smartphones in Indonesia is as many as 63.1 million users (APJII, 2016). According to Triastuti, Prabowo, and Nurul in 2017 stated that Indonesians access social media using smartphones as much as 62%, computers as much as 16%, and tablets as much as 6% (Supratman, 2018).

In the category of applications that students in this study often use, it was found that the majority of students used the WhatsApp application, namely 36 students (75%). *Whatsapp* is an internet-based digital communication application used as a means of communication. Based on information services at the Center for Research in Science and Technology (Puspitek), the use of WhatsApp for the last 3 years, from 2016 to 2018 was dominated by the use of Whatsapp as a media communication (Rahartri, 2019).

4. The relationship between gadget addiction and sleep quality among adolescents

Table 4. The relationship between gadget addiction and sleep quality in adolescents

		Sleep Quality		Total	Sig (2-tailed)	*p* value
		Bad	Good			
Gadget Adicction	Rendah	10	0	10	0.744	0.00
	Sedang	28	0	28		
	Tinggi	10	0	10		
Total		48	0	48		

From table 4.6 it can be seen that the Spearman rho correlation test between gadget addiction and sleep quality obtained a significance value $p = 0.00$ ($p < \alpha$, $\alpha = 0.05$) because the significance value is less than 0.05, it means H_a is accepted, there is a relationship between gadget addiction and sleep quality. The coefficient correlation value obtained is 0.744. Based on observations in the Spearman correlation test table, this value is in the range of 0.70 - 0.90 it can be concluded that the relationship between gadget addiction and sleep quality is strong. In addition, the correlation coefficient value shows a positive value, it means it has a unidirectional correlation direction, if the higher level of gadget addiction, the worse the value of sleep quality. So there is a significant relationship between gadget addiction and sleep quality with a positive correlation and strong relationship strength.

This may happen because when someone uses gadgets too often, it will have a harmful impact on eye health, especially from the effects of blue light

emanating from gadgets. Exposure to blue light can affect human circadian rhythms through photoreceptors in the retina. Prolonged exposure to blue light can trigger photoreceptor (light-sensitive) cells in the eye to produce toxic molecules that harm the eye (Nashriyah, 2019). This molecule referred to as the retina originally served to assist photoreceptor cells in capturing light and transmitting signals to the brain. However, the presence of blue light can turn the retinal into molecules that are harmful to photoreceptor cells because it can dissolve the cell membranes of photoreceptors. In addition to triggering retinal damage, exposure to blue light also triggers a decrease in the naturally produced hormone melatonin. This hormone triggers drowsiness and sends signals to the brain to sleep immediately. If the production of this hormone is disrupted, it will result in difficulty sleeping to a decrease in sleep quality (Saputra, 2022).

RESEARCH LIMITATIONS

In this study, most of the students were male, so the description of the gadget addiction and sleep quality variable only described male students, while female students could not represent the description of the gadget addiction and sleep quality variable in senior high school. This research was also conducted in school that limited their students from using gadget during school hours, so that there is no variation in the duration of using the gadget in one day.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the research that has been done, it can be concluded that most students have a moderate level of gadget addiction, namely 28 students (58.33%), all students at SMK Negeri in Purbalingga have poor sleep quality, as many as 48 students (100%). This research shows that there is a significant relationship between gadget addiction and sleep quality among adolescent students at SMK Negeri in Purbalingga, with a positive correlation and strong relationship strength in the range of 0.70 – 0.90.

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