



The Effect of Gadget Use on the Level of Insomnia in Pharmacy Students at STIKES Bhakti Husada Mulia Madiun

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Abstract

Gadget use can have both positive and negative impacts on human life. On the one hand, gadgets facilitate access to information, communication, and entertainment. However, on the other hand, excessive use can lead to various health problems, one of which is insomnia. Insomnia is a sleep disorder that can significantly reduce a person's quality of life. The purpose of this study was to determine the effect of gadget use on insomnia levels among final-year D3 Pharmacy students at STIKES Bhakti Husada Mulia Madiun. The sample size was 36 respondents. This study used a quantitative cross-sectional design and a random sampling technique. Data analysis used bivariate analysis using SPSS with the chi-square test. The results showed that gadget use of ≥ 3 hours was categorized as high by 21 respondents (58%), and gadget use of < 3 hours was categorized as low by 15 respondents (42%). Mild insomnia was reported by 13 respondents (36%) and moderate insomnia by 23 respondents (64%). There is an influence of gadget use on the level of insomnia among final-year D3 Pharmacy students at STIKES Bhaktii Husada Mulia Madiun, as indicated by the p-value of $0.030 < 0.050$.

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Introduction

The rapid advancement of technology and communication has transformed the way individuals interact, learn, and entertain themselves. Smartphones and other gadgets have become indispensable tools, with the number of users in Indonesia rising dramatically from 73.7 million in 2015 to 171.2 million in 2019, and projected to reach 256.1 million by 2025 (Statista, 2021). The National Sleep Foundation (2024) defines sleep hygiene as a set of environmental and behavioral factors that significantly influence the quality and quantity of sleep. In Indonesia, 51% of people sleep less than they need, and 21% sleep less than five hours per day (Warastri, 2024), with Indonesia ranking 15th in global sleep hours.

While gadgets facilitate access to education, communication, and entertainment, their excessive use poses risks, including sleep disturbances. Insomnia, one of the most common sleep disorders, is characterized by difficulty initiating or maintaining sleep, resulting in poor daytime functioning (Patel et al., 2018). Exposure to blue light from gadget screens suppresses melatonin production, disrupting circadian rhythms and delaying sleep onset (Hysing et al., 2015).



Several studies have reported strong associations between gadget overuse and insomnia. Abdalqader et al. (2018) found that 72.7% of students experienced insomnia due to intensive gadget use at night. Similarly, Syamsoedin et al. (2015) reported that the duration of social media use correlated with insomnia among adolescents. In Indonesia, research shows that more than 70% of adolescents using the internet for over 6 hours daily report sleeping less than 6.5 hours (Prabowo et al., 2020).

Insomnia has severe implications for young adults, especially students, including impaired concentration, decreased academic performance, weakened immunity, and increased mental health risks (Sadock & Sadock, 2010). Given the growing reliance on gadgets among students, understanding the relationship between gadget use and insomnia is essential for promoting healthier lifestyle habits.

This study investigates the effect of gadget use on the level of insomnia among final-year Diploma in Pharmacy students at STIKES Bhakti Husada Mulia Madiun.

Methods

Study Design and Setting

This study used a quantitative cross-sectional design and was conducted in June 2025 at STIKES Bhakti Husada Mulia Madiun, Indonesia.

Population and Sample

The study population consisted of 40 final-year Diploma in Pharmacy students. Using Slovin's formula at a 5% margin of error, a total of 36 respondents were selected through random sampling.

Variables

Independent variable: Gadget use (categorized as high ≥ 3 hours/day, low < 3 hours/day).

Dependent variable: Insomnia level (measured using the Insomnia Rating Scale, categorized as mild or moderate).

Data Collection

Data were collected via structured questionnaires distributed through online forms. Gadget use was measured based on daily duration. Insomnia levels were assessed using the KSPBJ-IRS Insomnia Rating Scale, which has been validated in Indonesia.

Data Analysis

Data were analyzed using SPSS software. Descriptive statistics summarized respondent characteristics, gadget use, and insomnia levels. The chi-square test was used to examine the relationship between gadget use and insomnia, with significance set at $p < 0.05$.

11 – 19 = no complaints of insomnia

20 – 27 = mild insomnia

28 – 36 = severe insomnia

37 – 44 = very severe insomnia

(KSPBJ-IRS, 2009)

Results

Respondent Characteristics

Table 1. Characteristics of Respondents

Characteristic	n	%
Gender		
Female	31	86%
Male	5	14%
Age		
18–25 years	32	89%
26–30 years	4	11%



Most respondents were female (86%) and aged between 18–25 years (89%).

Gadget Use

Table 2. Gadget Use among Students

Gadget Use	n	%
High (≥ 3 hrs/day)	21	58%
Low (< 3 hrs/day)	15	42%

Insomnia Levels

Table 3. Insomnia Levels among Students

Insomnia Level	n	%
Mild	13	36%
Moderate	23	64%

Association between Gadget Use and Insomnia

Table 4. Relationship between Gadget Use and Insomnia

Gadget Use	Mild Insomnia n (%)	Moderate Insomnia n (%)	p-value
< 3 hrs/day	9 (60%)	6 (40%)	0.030
≥ 3 hrs/day	4 (19%)	17 (81%)	

Chi-square test results showed a significant association between gadget use and insomnia ($p = 0.030$).

Discussion

This study found that students with higher gadget use were more likely to experience moderate insomnia compared to those with lower gadget use. Specifically, 81% of students using gadgets ≥ 3 hours daily reported moderate insomnia, whereas 60% of those using gadgets < 3 hours daily reported only mild insomnia. Cultural factors that drive dependence on gadgets include the phenomenon of popularity and trends that make gadgets part of a lifestyle, the lack of socialization of traditional values that shifts direct interaction, social pressure to always be connected in cyberspace, and parenting patterns that adopt technology without limits that then become family habits.

These findings are consistent with previous research indicating that excessive gadget use negatively impacts sleep quality. Exposure to blue light delays melatonin secretion, while stimulating activities such as gaming or social media increase cognitive arousal, both of which hinder sleep initiation (Hysing et al., 2015; Hale et al., 2018).

The predominance of female respondents experiencing insomnia is aligned with prior studies suggesting that women are more prone to insomnia due to hormonal fluctuations, stress, and psychosocial roles (Sadock & Sadock, 2010).

The implications of insomnia among students are profound. Poor sleep can lead to reduced academic performance, emotional instability, and long-term health risks such as anxiety and depression. Interventions such as cognitive behavioral therapy for insomnia (CBT-I), sleep hygiene education, and reducing gadget use before bedtime are essential strategies for prevention (Patel et al., 2018).

While this study confirms the significant effect of gadget use on insomnia, several limitations must be acknowledged. First, the cross-sectional design limits causal inference. Second, self-reported data may introduce bias. Future studies should consider longitudinal designs and objective sleep measurements such as actigraphy.

Conclusion

This study demonstrates a significant effect of gadget use on the level of insomnia among final-year Diploma in Pharmacy students. Students with higher gadget use (≥ 3 hours/day) are more likely to suffer from moderate insomnia compared to those with lower gadget use. Implement a 2-hour gadget usage limit with sleep hygiene education.



Author Contributions

Dara Aceh Brigifianti, Karina Nur Ramdhanintyas, Pipid Ari Wibowo.; methodology, validation, resources, writing original draft preparation, writing review and editing, project administration, and funding acquisition.

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Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of STIKES Bhakti Husada Mulia Madiun Number: 024/E-KEPK/STIKES/BHM/VIII/2025 .

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Conflicts of Interest:

The authors declare no conflict of interest

Appendix

- Table 1. Characteristics of Respondents
- Table 2. Gadget Use among Students
- Table 3. Insomnia Levels among Students
- Table 4. Relationship between Gadget Use and Insomnia

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