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The relationship between gadget use and headache among university students

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ABSTRACT

Gadget usage has become an integral part of the lives of students in the modern era, including Indonesia, where there has been a significant increase in gadget users. This study aims to investigate the relationship between the frequency of gadget use and the occurrence of headaches among medical students at Universitas Prima Indonesia in 2022. Using a quantitative descriptive approach and cross-sectional research design, this study analyzed the data collected through a questionnaire. Chi-square tests were used to examine the relationship between the independent variable, gadget usage, and the dependent variable, the occurrence of headaches. The results indicated that tension-type headaches were the most common type experienced by students, followed by migraines. However, some students reported cluster headaches, while others did not experience any headaches. The most significant finding was the strong correlation between the frequency and duration of gadget use and the increased risk of developing headaches. These findings underscore the importance of recognizing the negative health consequences of excessive gadget use, particularly among students. Therefore, there is a need for strategies to manage gadget usage wisely to prevent headaches that may disrupt academic performance and overall quality of life.

Keywords: gadget, headache, migraine, tension-type, student

Introduction

The use of gadgets among students and college students today is a necessity. The number of gadget users in Indonesia is also increasing. Advanced gadget can be used for various purposes, including playing online games, taking photos, watching videos, listening to music, and doing many other things in one room alone without assistance.[1] According to different studies, they have significant side effects, including headaches, decreased memory performance, impaired sleep and quality of life, impaired attention, and concentration. Research conducted by Demir[2] reported that many people experience problems such as eye fatigue, burning eyes, red eyes, dry eyes, blurred vision, neck pain, decreased proprioception, impaired posture, anxiety, depression, and headaches after frequent use of gadgets.

The prevalence of headache in Indonesia is high. Migraine without aura, 10%; migraine with aura, 1.8%; episodic tension-type migraine, 31%; and long-term migraine, 24%. The use of electronic media causes headache pain. Trauma, excessive drug use, and bacterial meningitis are the causes of headaches found by research institutions in Indonesia. The five largest gadget users in the world experience the most

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common type of headaches.[3] Primary headaches that arise as a result of gadget and Internet use are defined as headaches that become chronic or significantly worse. Chronic headaches were defined as headaches occurring more than 15 days a month for more than three months, and worsening was defined as a two-fold increase in headache severity or intensity.[4]

Most students used the gadget for more than three hours (73.9%). They also used gadget for more than 56 hours in one week (89.9%), and most respondents used gadget for a long time every day.[5] Another study also found several complaints experienced by students: itchy eyes (19.7 %), pain in the eye (17.5 %), glare (24.8 %), watery eyes (25.5 %), dry eyes (19 %), and blurry eyes (30.6 %). In addition, complaints not related to vision, such as headaches, had a prevalence of 40.9%, and complaints on the eyes and face had the same prevalence of 40.9%.[6]

According to research that can be taken as an example of data in a polyclinic in Medan, 78% of the patients experienced tension-type headache. Another study showed that 65% of patients in a Bandung hospital experienced tension-type headaches.[7] In addition, research conducted by Santosa et al.[8] showed that TTH is one of the many types of primary headaches, with 80.6% occurring in adolescents aged 14–19 years. This is due to the fact that adolescents, aged between 14 and 19 years old, often experience headaches caused by the use of gadgets without paying attention to their health effects according to previous studies. They experience headaches due to the unwise use of gadget. This can also occur in students of all ages; in this case, the researcher concentrates on students of the Faculty of Medicine. Head pain is the most common complaint, especially among medical students, because one of the factors causing head pain experienced by medical students is the use of gadget with a slightly longer duration. According to Farhan[9], respondents who use gadget for more than 5 hours are at risk of feeling pain in the head, or 45.6 percent, compared to people who use gadget <3 hours. This study aimed to analyze the relationship between gadget use and headache pain among students.

Method

Data for this cross-sectional study were collected concurrently through an observational analytical approach. The study population was limited to active medical students at Universitas Prima Indonesia (UNPRI), who also used electronic gadget. Exclusion criteria were applied to Students with incomplete questionnaires or a history of headache were excluded. This study was conducted on the UNPRI campus from April to June 2024. The study population comprised 207 students from the 2022 cohort in the UNPRI Faculty of Medicine. A simple random sampling technique was employed. Data were collected using a questionnaire divided into three sections: gadget usage (3 items), migraine headache (8 items), tension-type headache (8 items), and cluster headache (8 items). The independent variables in this study were the duration and frequency of gadget usage. The dependent variable was the presence of primary and secondary headaches. The data obtained from the questionnaire underwent several stages of processing, including editing, coding, cleaning, and tabulation.

Results

The study population consisted of 207 students enrolled in the 2022 cohort at the faculty. A sample of 67 students were selected using a sampling technique. The majority of respondents were aged between 18 and 22 years, which is typical for first-year university students. Table 1 provides valuable insights into the demographic and behavioral characteristics of the study participants. The predominance of young females and the high frequency and duration of gadget use are notable findings. The distribution of different pain types further contextualizes the study population. This information can be used to interpret the findings of the study and identify potential confounding factors that may influence the results. Data indicate that the study population was predominantly female, with nearly two-thirds of the participants identifying as female.

Table 1. Characteristics of subjects

Characteristics	n=67	%
Gender		
Female	45	67,16
Male	22	32,84
Age		
≤ 20	61	91,0

> 20	6	9,0
Gadget use frequency		
Rarely	17	25,4
Medium	13	19,4
Frequent	37	55,2
Duration of gadget use		
Rarely	18	26,9
Medium	16	23,9
Frequent	33	49,3
Pain type		
Migraine	21	31,3
Tension type	22	32,8
Cluster	9	13,4
No pain	15	22,4

The majority of participants were young, with 91% being 20 years old or younger. This suggests that the study focused on a younger population such as adolescents or young adults. The data show that a significant proportion of the subjects (55.2%) used gadgets frequently. This information is crucial for understanding the potential impact of gadget use on the study's outcomes, especially if it is linked to the variables being investigated. Similar to the frequency of gadget use, the duration of gadget use was also categorized. Again, a substantial proportion of the participants (49.3%) reported frequent gadget usage. Migraine- and tension-type headaches were the most common, followed by cluster headaches. A significant number of participants (22.4%) reported no pain.

Data analysis in the table 2 showed a strong correlation between these two variables. Most respondents who rarely used gadgets (17 people) (88.2%) did not experience headache complaints at all. In contrast, respondents who frequently used these gadget (37 people) had a much higher prevalence of headache pain. The majority of this group experienced migraines (45.9 %) and tension-type headaches (40.5%). Cluster-type headaches were found in a smaller proportion (13.5%), and none of the respondents in this group had any headache at all. The statistical test results with a p-value of 0.000 and an Odds Ratio of 62.625 provide strong evidence that the more frequently a person uses gadgets, the more likely they will experience headaches, especially migraine and tension-type headaches. This finding indicates a significant relationship between the frequency of gadget use and the risk of various types of headaches.

Table 2. The relationship between frequency and duration of gadget use and types of headache pain among medical students

Risk factor	Pain type				Total	p	OR
	Migrain	Tension type	Cluster	No pain			
Gadget use frequency							
Rarely	1	1	0	15	17	0,000	62,625
Medium	3	6	4	0	13		
Frequent	17	15	5	0	37		
Duration of gadget use							
Rarely	1	2	0	15	18	0.000	57,682
Medium	7	5	4	0	16		
Frequent	13	15	5	0	33		

Based on Table 2, there is a significant relationship between the duration of gadget use and the type of headache experienced by respondents. Fifteen out of 18 respondents who rarely used gadgets did not experience headache complaints. This indicates that using fewer gadget can reduce the risk of headaches. In contrast, among the 33 respondents who frequently used gadgets, the majority experienced migraine-(13 respondents) and tension-type (15 respondents) headaches. In fact, there was no single respondent in this group who did not experience headache pain at all. This shows a strong correlation between intense gadget use and an increased risk of headaches, especially migraine and tension-type headaches. Respondents with a moderate duration of gadget use showed a more diverse distribution of headache types. Although most

experienced migraine (seven respondents) and tension (five respondents), there were also some respondents who experienced cluster pain (four respondents). The statistical test results with a p-value of 0.000 and an Odds Ratio (OR) of 57.682 provide strong evidence of a significant relationship between the duration of gadget use and the type of headache pain. This very high OR value indicates that individuals who frequently use gadgets have a 57.682 times higher risk of experiencing headache pain than those who rarely use gadgets. Based on the results of the data analysis, it can be concluded that the longer a person uses gadgets, the higher their chances of experiencing headache pain, especially migraine and tension types. Therefore, reducing the duration of gadget use can prevent or reduce the frequency of headache pain.

Discussion

The results of the analysis show that most students (55.2%) used gadgets with high frequency, and almost half (49.3%) used gadgets for a long duration. This finding indicates that the use of gadgets is a very common daily activity among university students. Given this intensive pattern of gadget use, this study aimed to explore the possible relationship between gadget use and health problems, especially headache pain.

Further bivariate analysis showed a significant relationship between how often students used gadgets and the type of head pain they experienced. Students who frequently use gadgets tend to experience migraine and tension headaches compared to those who rarely use gadgets. These results reinforce the notion that a high frequency of gadget use can increase the risk of experiencing headaches, especially migraine and tension-type headaches. This finding is in line with previous research, which shows that intensive use of technology can trigger various symptoms of head pain, such as improper posture while using the gadget and eye strain.[2,4,10]

In addition to frequency, the duration of gadget use also contributed significantly to the type of headache experienced by students. Those who use gadgets for a longer duration tend to experience migraine and tension pain. This suggests that the longer a person stares at the screen, the higher their risk of experiencing headaches due to eye strain and muscle tension.

The results of this study strongly suggest that both the frequency and duration of gadget use are the main risk factors for headaches in university students. Excessive use of gadgets can trigger serious health problems such as headache pain. Therefore, it is important for college students to manage the time spent using gadgets wisely and adopt healthy habits, such as adequate rest and maintaining good posture when using gadgets. These findings underscore the importance of awareness of the negative health effects of excessive gadget use. To reduce the risk of headaches, it is recommended that students take regular short breaks while using gadgets and ensure ergonomic screening and sitting positions.[11,12]

Conclusion

The data analysis reveals a strong correlation between the frequency and duration of gadget use and the prevalence and type of headache pain. Individuals who frequently use gadgets are significantly more likely to experience headaches, particularly migraines and tension-type headaches. Conversely, those who rarely use gadgets have a much lower risk of developing headaches. It is evident that excessive gadget use is a significant risk factor for headache disorders. Therefore, reducing the frequency and duration of device use can be an effective strategy to prevent or mitigate headache pain.

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