



THE RELATIONSHIP BETWEEN SMARTPHONE USE AND SLEEP QUALITY

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KEYWORDS

handphone used, sleep qualities, student

ABSTRACT

Smartphones, in the current era of digital globalization, have become a sophisticated communication tool. Missing the use of smartphones will affect personal sleep qualities, such as making sleep disorders worse and inefficient. Several cases of the negative impact of this gadget often affect children and adults. Starting from internet addiction, games, and content containing pornography, it is possible that it can also affect sleep patterns in children and adults. The aim of that research is to determine the relationships between smartphone use and the sleep quality of Universitas Prima Indonesia students. The typed research is quantitative within the cross-sectional approach. This population used was 200 semester 5 and 7 medical students at Prima Indonesia University. The samples technique at the studies used a total sample and the samples on 200 samples. Data analytics used univariate with bivariate analytics using Spearman rank statistics. The results of the research show that smartphone use among Universitas Prima Indonesia students is in the abnormal or high category, namely 97.5%. The sleep quality of the majority of Universitas Prima Indonesia students is in the quite poor category, with a percentage of 74.5%. This conclusion on that research is relationships between handphone use with the sleep qualities Universitas Prima Indonesia students, p-value <0.05.

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INTRODUCTION

Smartphones in the digital era have now become a sophisticated communication tool. In this case, the smartphone becomes the center of communication media between one person and another, making work or activities easier (Carayannis et al., 2013; Anshari et al., 2017). Smartphones (cell phones) are smartphones that we often encounter among the public. A mobile phone is a cellular device based on a cell phone which can be used not only to make calls and send text messages or SMS but also to access websites, take pictures, download and play songs and videos, as well as play games, watch online TV shows, access calendars, and use other personal functions (Novaliendry et al., 2023).

This means that a cellphone is a device that has the potential of a computer and has a sophistication that surpasses the usual telephone. Some other opinions say that mobile phones are general tools that can process more news than other gadgets. Apart from being mainly used as a means of communication, smartphones also have many functions, such as games, internet, social media, messaging, videos, and browsing. Not only can you send messages, but you can also interact via telephone and video. Besides audio, there are also videos to enable people to meet face-to-face at that time (Sembiring & Harahap, 2021).

The impacts of use that will be caused to smartphones are divided into two impacts, namely:

1. Good Influence: Ease of interaction is experienced in using smartphones to fulfill other needs, as well as sharing the efficiency of doing things to get answers to assigned tasks, without being limited by time, anywhere and anytime can do anything easily. Another impact can also reduce stress by following the technology that has been provided by the features provided by smartphones in moderation (NF, 2020).

2. Negative impact Teenagers have a perceived habitual nature in using smartphones. The impact can be affected by sleep quality disorders. Smartphones will remind us of incoming notifications or messages about their content. This kind of conversation can last until late at night, shortening rest time, not sleeping well, and returning energy (Pebriandi & Marlaeni, 2020). The following are the negative impacts of using smartphones:
 - a. Brain Health is Affected: Although the negative effects of gadget radiation on health are controversial, various publications say that gadget radiation can cause brain tumours and insomnia. Cell phone electromagnetic waves contain radiation which penetrates vertically through the vacuum and brain tissue, and continuous use can cause glaucoma and the development of acoustic neuroma in brain cells. Gadget radiation leads to the rapid formation of new plasma in the brain, ranging from unnatural cells to active cancer cells. The most common harm of smartphone radiation experienced by the entire world population is the development of damaged brains (Nath, 2018).
 - b. Eye health is affected, and the font size is smaller than in books, and other print media materials can reduce the distance of the reader, increase the visual demands of the user, and lead to the appearance of symptoms which are classified as computer vision syndrome (Puspa et al., 2018)
 - c. Hand health is affected. Playing with gadgets while typing messages or simply holding them can quickly tire the muscles and joints in the arms and wrists. Even just holding the keyboard and typing for a long time while holding a heavy cell phone can cause arm and wrist pain (Laksono, 2018).
 - d. Insomnia is caused by the sound of cell phone notifications, such as emails and text messages, that interfere with concentration until late at night to reduce rest hours and restore energy (Bruihler, 2020).
 - e. Promiscuity, most teenagers who have gadgets have their own world and pay little attention to their environment. Smartphones owned by teenagers often cause solitude rather than interacting outside with friends. As a result, gadget addiction and individualistic traits are increasingly entrenched (Krikon, 2021).
 - f. Cyberbullying, which includes a form of violence made by individuals via voice or messages on cell phones, as well as social media which is now prevalent in all levels of society. Bullying, which includes insulting, mocking, threatening, intimidating, and even embarrassing someone. Individuals who are bullied may feel depressed/stressed. Therefore, many individuals commit suicide to relieve the pain and shame (Çakar-Mengü & Mengü, 2023).

Smartphone misuse can damage a person's rest hours as well as make sleep disorders worse and inefficient (Raina, 2019). In the current era, smartphone use is increasingly advanced, and even their level of understanding is high in smartphone use. However, their level of awareness began to decrease. When it is time for bed, people are so caught up in their busy work that their sleep quality is poor. Various problems regarding the side effects of cell phones often occur in teenagers and adults. It started with a feeling of addiction to social media, games, and things that contain pornography. It might even affect children's rest hours into adulthood (Hardell, 2018; Kuss et al., 2018; Foerster et al., 2019). The Academies Americ of Pediatrics, an institution that eradicates the problems of American students and youth, says that the learning age requires adequate rest hours (Gavrilayanti, 2021). The reasons which cause loss of sleep quality include the use of smartphones (Rugaiyah, 2019).

Kominfo, in 2015, said that Indonesia is a digital technology power that is not active in Asia. Indonesia has a population of 250,000,000 people and is the largest sector. The number of smartphone users in Indonesia is also increasing rapidly. Indonesian smartphone usage is estimated at 270,000,000 gadgets; only 250,000,000 people use them, but teenagers account for 80 per cent of Indonesian smartphone usage. According to Indonesian sources, the majority of youth or 63%, have poor sleep quality. Moreover, a survey of Indonesian citizens proved that only 50% of people who frequently use smartphones would make calls and send text messages, while the rest use smartphones through other social networking applications (such as Twitter, Instagram, line, Facebook, path, etc.) (Suci, 2018).

Previous researchers have shown that smartphones are a technology that promotes work and its purpose as a medium to improve personal abilities (Rahmandani et al., 2018).

Smartphone functions are needed to exchange information with others or just monitor news or information on social networks. The right time to relax and play with smartphones is at night because it can reduce activities that cause longer use of smartphones at night, to reduce rest hours to insomnia symptoms. The use of electronic media at night, especially smartphones, can have several undesirable effects, such as shortening sleep time and sleep quality (Sembiring & Harahap, 2021).

The length of an individual's sleep cycle depends on age; the older a person is, the shorter their sleep time. At the age of 12-18, or during puberty, it requires 8.5 hours/day of sleep. Adolescent sleep needs every night range from 8 to 10 hours to prevent fatigue after activities (Sismoyo, 2022). Unlike adult and child sleep patterns, sleep patterns in adolescents can change following hormonal changes that occur during puberty at the age of 13-23 years. Generally, adolescents have sleep needs in the range of 8.5-9.25 hours per day. In fulfilling sleep needs, adolescents know their own sleep patterns, but many adolescents have erratic sleep patterns. The teenager seems to know when he sleeps and how long he needs, so he does not realize the onset of sleep disorders (Laksono, 2018).

Quality of rest is a measure of how easily a person falls asleep and stays asleep. This can be disrupted by various behaviours, including pre-sleep cell phone use (Ting, 2022). Excessive pre-sleep cell phone use can have adverse effects on one's health, including poor rest quality. According to the literature, youth are a group of people who are very active in using cell phones, which can cause mental instability and ultimately lead to problems with their quality of rest (Subhan, 2019).

After prolonged smartphone use, youth take 1 hour longer to rest than when they are not using smartphones. As a result, youth often rest for longer periods of time and often have shorter sleep duration, which can reduce their ability to concentrate on their daily activities (Enthoven et al., 2021). So, it can be concluded that the quality of rest is closely related to cell phone dependence, which is often among young people. The reason is that someone who is dependent on cell phones will take a long break to reduce the quality of their rest.

Blood pressure can become abnormal if sleeping hours are disrupted, and routines can even decrease (Lomantow, 2016). Spegal, Lepruolt and Van Cutter argue that short periods of rest can cause changes in the amount of the hormones leptin and ghrelin, which maintain feelings of hunger and satiety. Knutson et al., Van Leeuwen et al., and Bikston et al. said that the limit of rest is related to the presence of an imbalance in total insulin and sugar in a person (Robi et al., 2015).

Apart from affecting an individual's hormones, the quality of irregular rest can affect the body's immunity. Dethony's writing found that poor rest can increase stress hormones cortisol and nor-adrenaline so that when stress occurs, it affects the immune system, which results in a decrease in the feeling of resistance to antigens. Blasko has found that if someone often stays up late, the nocturnal hormone melatonin is suppressed, resulting in disruption of rest, which can slow down the immune system, leading to the risk of infection and slow healing of wounds during surgery (Robi et al., 2015).

Randal, Rogers and Ruth said that not enough rest time affects cognitive performance, desire, concentration and memory. Amskhler and McKenzie also stated that a decrease in sleep quality also affects the potential stimulus response that occurs (Robi et al., 2015). Smith and Van der Liden found a link between emotional states and sleep symptoms. Smith and Van der Liden stated that people with bad emotional feelings (regret, shame, guilt) suffer from sleep symptoms. This is also confirmed by the words of McNamira, Anderson, Arowod, and Meser, where the bad feelings a person feels are transmitted during sleep, giving rise to sleep which is very unpleasant (Robi et al., 2015).

The results of previous studies by Randal, Rogers, Ruth, Amskhler, McKenzie, Smith, Van der Liden, McNamira, Anderson, Arowod, and Meser highlight the importance of this study. When taken as a whole, these studies show a strong correlation between poor sleep quality, insufficient rest periods, and negative effects on mood, desire, memory, and cognitive function. A number of negative effects may result from using smartphones for extended periods of time when sleep quality is compromised, according to the results of research currently present. Knowing these side effects is essential to educating people about the possible risks of excessive smartphone use and highlighting the importance of maintaining appropriate sleeping patterns in order to protect their psychological well-being.

METHOD

This research article is quantitative research using cross-sectionals. The research was carried out from 1 September 2023 to 31 October 2023. The research was carried out at Prima Indonesia University. This research has gone through the Health Research Ethics Committee (KEPK) of Universitas Prima Indonesia, number 007/KEPK/UNPRI/XI/2023. The population in this research consist of 200 people from semester 5 and 7 medical students at Prima Indonesia University. Samples in this research use sample size to take samples from the entire population to become a sample⁶. So, the sample for this research is 200 respondents. Data analysis in this research is univariate and bivariate descriptive analysis. Through univariate analysis, the characteristics of age, gender, smartphone use, and sleep quality of respondents were determined and presented in the form of a frequency distribution. In bivariate analysis, the data is processed and tested with statistical tests using the sperm ranking test, which is carried out with the help of a computer using the statistical product and service solution (SPSS) version 25.0 program with a significance level of $\alpha = 0.05$.

RESULTS AND DISCUSSION

Frequency Distribution of Respondent Characteristics

Table 1. Frequency Distribution of Respondent Characteristics

Gender	n	%
Man	67	33.5
Woman	133	66.5
Total	200	100
Age	n	%
< 20 Years	47	23.5
20 – 30 Years	152	76
30 – 40 Years	1	0.5
> 40 Years	0	0
Total	200	100

Source: Primary data processed in 2023

Table 1 describes the results of research on the characteristics of respondents based on gender and age. There were 67 male respondents, with a percentage of 33.5%, and 133 female respondents, with a percentage of 66.5% of the total 200 respondents in this study. From these results it can be seen that the majority of respondents are female. Characteristics of respondents based on the current age of the respondent: there were 47 respondents aged < 20 years with a percentage of 23.5%, respondents aged 20 - 30 years were 152 people with a percentage of 76%, and respondents aged 31 - 40 years were as many as 1 person with a percentage of 0.5% of the total 200 respondents in this study. From these results it can be seen that the majority of respondents are 20 - 30 years old.

Univariate Analysis Results

Table 2. Univariate Analysis Results

Smartphone Use	n	%
Normal (Low)	5	2.5
Abnormal (High)	195	97.5
Total	200	100
Sleep Quality	n	%
Very good	0	0
Pretty good	25	12.5
Pretty Bad	149	74.5
Very bad	26	13
Total	200	100

Source: Primary data processed in 2023

Table 2 explains the results of univariate tests on variables. 5% of the total respondents in this study were 200 people. From the results it can be concluded that the majority of students at Universitas Prima Indonesia use smartphones in the abnormal or high category. The results of the research show that respondents with fairly good sleep quality were 25 respondents with a percentage of 12.5%, respondents with fairly poor sleep quality were 149 respondents with a percentage of 74.5%, and respondents with very poor sleep quality were 26 respondents. With a percentage of 13% of the total respondents in this study, there were 200 respondents. From these results, it can be seen that the sleep quality of the majority of respondents in this study was quite poor (Wahyudi, 2019).

Bivariate Analysis Results

Table 3. Relationship between Smartphone Use and Sleep Quality of Universitas Prima Indonesia Students

		Correlations		
			Smartphone Use	Sleep Quality
Spearman's rho	Smartphone Use	Correlation Coefficient	1,000	,179 *
		Sig. (2-tailed)	.	,011
		N	200	200
	Sleep Quality	Correlation Coefficient	,179 *	1,000
		Sig. (2-tailed)	,011	.
		N	200	200

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Primary data processed in 2023

Table 3 explains the results of research regarding the relationship between smartphone use and sleep quality of Universitas Prima Indonesia students using statistical tests using the sperm rank test carried out with computer assistance using the statistical product and service solution (SPSS) program version 25.0 with a significance level of $\alpha = 0.05$. The research results show that the sig value or p-value is $0.011 < 0.05$, which means the results show that there is a relationship between smartphone use and the sleep quality of Universitas Prima Indonesia students.

The Relationship Between Cell Phone Use and Sleep Quality of Universitas Prima Indonesia Students

The vision of this research is to find a link between cell phone use and the quality of rest for students at Prima Indonesia University. The output of the research which has been carried out indicates that there are 5 students with normal or low smartphone usage, with a percentage of 2.5%, and 195 students with abnormal or high smartphone usage, with a percentage of 97.5% of the total number of respondents in the research of 200 respondents. Here, the conclusion can be drawn from the results that the majority of students' smartphone use at Universitas Prima Indonesia falls into the realm of abnormal or high levels.

Respondents who had a fairly good rest time were 25 respondents, with a percentage of 12.5%; respondents whose rest quality was quite poor were 149 respondents, with a percentage of 74.5%. Respondents who had a very bad rest time 26 respondents, with a percentage of 13%, out of the total number of respondents. At the time of this research, there were 200 respondents. Here, it can be seen that the majority of respondents' sleep quality in this study was quite poor. Here, the statistical analysis uses the sperm test, sig point ranking or p-value $0.011 < 0.05$, meaning the results indicate that there is a link between cell phone use and the quality of rest for students at Universitas Prima Indonesia.

The results of the research are in accordance with the research of Elly et al. (2021) entitled Writing about the Relationship between Cell Phone Use and the Quality of Rest for Nursing Students at the Faculty of Health, Muhamadiyah University, Tangerang. The research output shows that there is a relationship between cell phone use and the quality of rest for nursing students at the health faculty. The appropriate output was obtained in the written output with the title research on the relationship between cell phone use and the quality of rest for students at SMAN1 Kawedaan level XI IPS. At the same time, the results also show that cellphone use has an intense impact on the quality of rest for students at SMAN1 Kawedaan level XI IPS (Kurnia, 2020).

There is a link between cell phone use and the quality of rest because using cell phones, especially at night, can ruin sleep hours. Besides, if you stare at your cellphone screen for too long, it can be difficult to get a good night's sleep because of the dazzling blue light during the day. When the light is dim, people tend to be sleepy but still awake (Koswara Umi et al., 2019).

Suitable sleep is very urgent for everyone's physical and psychological health. Impaired rest quality has a negative impact on an individual's physical health. Physiological effects caused by poor sleep quality include reduced daily activities, fatigue, worsening neuromuscular conditions, delayed recovery, reduced immunity, and functional instability. The psychological effects of sleep disorders also include stress, mental failure, anxiety, difficulty concentrating, and lack of coping strategies. Steps that can be taken to reduce smartphone use in order to improve the quality of rest can be done by using a smartphone only if there is a need, this can reduce smartphone use before bed.

CONCLUSION

The research regarding the relationship between cell phone use and the quality of rest at Universitas Prima Indonesia has been completed with the following conclusions: 1) The use of cell phones by Universitas Prima Indonesia students is in the abnormal or high category, namely 97.5%, 2) The quality of rest for the majority of Universitas Prima Indonesia students in the quite bad category with a percentage of 74.5%, 3) There is a relationship between cell phone use and the quality of rest at Prima Indonesia University, p -value <0.05 . According to the results, the students have to be more selective in the use of smartphones, not use smartphones for too long, and it is advisable to stop using or operating their smartphones 1 hour before bedtime. This aims to reduce the level of radiation caused by smartphones to our bodies so that the quality of our sleep becomes better. Parents also should pay more attention to the use of smartphones in their children, and more regularly supervise the use of smartphones because if smartphones are used for a long time, it can affect the health of our bodies, especially our eyes.

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