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The Impact Of Using Gadget With Insomnia Cases At Teenagers In Semambung Village, Kanor Sub Districts, Bojonegoro Districts

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ABSTRACT

The high number of gadgets use among teenagers today causes many negative impacts for them. Things that have a negative impact are experienced by teenagers in using gadgets, because at this age they tend to have no maturity in recognizing their identity and environment, considering that adolescence has vulnerabilities in self-esteem and depression. The purpose of this study was to analyze the impact of using gadgets on the incidence of insomnia at teenagers in Semambung Village, Kanor Sub District, Bojonegoro District. The population in this study were all teenagers in Semambung Village, Kanor Sub District, Bojonegoro District as many as 215, the number of samples in this study was 143 respondents taken by purposive sampling technique. The instrument used in this study was a questionnaire. Data analysis used Spearman Rho Correlation statistical test and processed using SPSS 16 for windows.

The results showed that the majority of respondents, namely 113 respondents (79%) used old gadgets, more than some of the respondents, namely 102 respondents (71.3%) experienced insomnia, based on the results of the SPSS test on the Rho Spearman correlation test with a significance value of 0.000 (0.000 < 0.05) concluded there is a relationship between the use of gadgets with the incidence of insomnia in teenagers. The intensity of using gadgets increases during the pandemic, because all learning is done online. So that teenagers inevitably have to interact longer with gadgets which ultimately increases the occurrence of insomnia.

Keywords : Gadget, Insomnia, Teenager

INTRODUCTION

Still high number of gadgets use among teenagers today causes many negative impacts for them. Things that have a negative impact are experienced by teenagers in using gadgets, because at this age they tend to have no maturity in recognizing their identity and environment, considering that adolescence has vulnerabilities in self-esteem and depression (Punkasaningtyas Resti, 2017). The high impact of using gadgets by teenagers can cause negative effects in the form of sleep disorders, namely insomnia (Salii Stella & Purnawinadi Gede, 2020). The impact of gadget use occurs in adults, about a third of adults have difficulty initiating sleep and/or maintaining sleep within a year, with 17% of them resulting in impaired quality of life. In Indonesia, the prevalence of insomnia in 2017 was 10%, which means that about 28 million of the total population of Indonesia suffers from insomnia (Sari Indah, 2018).

The problem is that the use of devices has increased dramatically in recent years, raising concerns about the health effects or impacts associated with exposure to electromagnetic radiation and microwaves produced by these devices. Radiation that is harmful to health is a general public health problem. Using gadgets before bed can stimulate psychophysiological factors that can affect sleep. Using a device before bed has some worrying effects, including slowing down the body clock (circadian rhythm), blocking the

release of melatonin, a sleep-inducing hormone, and making it harder to fall asleep (National Sleep Foundation, nd). According to King (in A'yun, SQ, 2018), using multimedia/electronic devices before going to bed is at risk of disease if used for more than 35 minutes. According to several epidemiological studies, the use of cellphones/smartphones tends to cause health problems such as headaches, irritability, lack of concentration, sleep disturbances, and hearing loss (Choo et al, 2010 and Takao, 2014).

Compared to other factors, the use of gadgets among teenagers has become a factor that is difficult to avoid. Based on a study in Indonesia conducted by the Ministry of Communication and Information in collaboration with UNICEF in 2014, it was found that 98% of the youth surveyed knew about the internet and that 79.5% of them were internet users. A study conducted by Syamsoedin et al (2015) regarding the impact of gadget use and the incidence of insomnia in teenagers, it was found that the majority of respondents who had used gadgets 96.25% and 71.0% experienced insomnia. Based on the results of the initial observations and interviews of researchers directly with 15 people, it was found that 11 teenagers used gadgets to play social media and games to the point of having difficulty sleeping or insomnia. According to a survey in Bojonegoro District, as many as 92.4% of teenagers use gadgets.

The high incidence of insomnia in teenagers reaches 71% which is caused by the use of gadgets. The impact of access to gadgets by the Indonesian people is quite high every day. Based on the Global Web Index (GWI) survey in January 2015, internet users access via tablet or PC at 5 hours 6 minutes, while via a mobile phone it reaches 3 hours 52 minutes per day. Gadget users access their accounts through various media, the impact reaches 2 hours 52 minutes per day (Ulfiana Nurhalija, 2018). Gadgets are sophisticated goods created with various applications that can present various news media, social networks, hobbies, and even entertainment. The gadget itself can be a computer or laptop, tablet pc, video game, and also a cell phone or smartphone.

Excessive use of cell phones and smartphones can lead to sleep problems, leading to anxiety and depression. The use of mobile phones/smartphones connected to the internet causes symptoms of insomnia in teenagers. The more people use gadgets at night, the harder it is to fall asleep (National Sleep Foundation, nd). Symptoms that make it difficult to fall asleep are called insomnia (A'yun, SQ 2018).

Teenagers who use the media excessively even to the point of sacrificing their night's sleep can affect psychological aspects, one of which is poor sleep quality in the form of insomnia. Poor sleep quality will have an impact on the first few factors, namely, it can interfere with growth hormone because the highest levels of growth hormone are released during sleep. Second, it has an impact on development because adequate sleep can repair the body's cells, if the quality of sleep is poor, it will lead to a decreased immune system and susceptibility to disease. Third, the psychology of a person whose sleep quality is poor causes emotional disturbances, namely irritability, irritability, aggressiveness, and even stress. Fourth, it causes drowsiness so that when doing some work or activity, it is difficult to concentrate. Fifth, poor sleep quality can also disrupt the body's rhythm and hinder the brain's work to learn new information. People in Indonesia still underestimate it because of the lack of public knowledge about sleep health. For example, the view of sleep reflects lazy behavior (Prasadja, 2019). One of the factors that affect sleep quality according to the results of research by Javaheri and Cleveland (2018), is internet use. At this time the use of electronic media and internet access and gadgets is no longer a new thing. Teenagers spend a lot of time doing activities on gadgets or in cyberspace (Nafiah Nurniati, 2018).

The opportunity to rest and sleep is as important as the need for food, activity, and other basic needs. Adequate rest can affect the physical, psychological and social conditions of teenagers. Every individual needs rest and sleep to restore his health. Insomnia is a sleep

disorder that covers every system, disturbances in every function, in the dark, in silence, and alone at night, all of these are caused by anxiety problems, arise along with excessive energy, and are haunted by feelings of lack of enthusiasm (Ramadhani, 2014). Provide information about the impact of using gadgets that affect sleep quality in teenagers.

Semambung village is one of 25 villages within the government of Kanor Sub District, Bojonegoro District with an area of ± 200 ha. During a pandemic like this with an area and respondents of 143, it is quite difficult, the primary data collection is hampered due to the micro-scale PPKM government policy (Enforcement of Community Activity Restrictions) in every village, not all subjects understand how to use the google form and when distributing research instruments using the google form where there is a possibility that the filling does not match the actual situation.

Based on the description of the background above, the researcher wants to further examine the impact of using gadgets on the incidence of insomnia at teenagers in Semambung Village, Kanor Sub District, Bojonegoro District.

METHODS

This study uses a quantitative method with an analytical observational design, where researchers analyze the impact of using gadgets on the incidence of insomnia at teenagers in Semambung Village, Kanor Sub District, Bojonegoro District. This research was carried out in Semambung Village, Kanor Sub District, Bojonegoro District in May – June 2021. The population in this study were teenagers from Semambung Village, Kanor Sub District, Bojonegoro District, the number of samples in this study was 143 respondents. The sampling method was carried out by non-probability sampling using the purposive sampling method, which was based on a certain consideration made by the researcher himself, based on the characteristics or characteristics of the population that were previously known. The instrument in this research was the KSPBJ-IRS (Jakarta Biological Psychiatric Study Group-Insomnia Rating Scale) questionnaire.

RESULTS

A. Characteristics of Respondents

Table 1. Distribution of Respondents Based on Characteristics in Semambung Village, Kanor Sub District, Bojonegoro District

Characteristics	N	(%)
Gender		
Man	81	56.6
Woman	62	43.4
Age		
10-15	18	12.6
16-20	69	48.3
21-24	56	39.1

Respondents in this study were teenagers who live in Semambung Village, Kanor Sub District, Bojonegoro District, aged 10-24 years, totaling 143 respondents. The number of respondents consisted of men amounting to 81 or (56.6%) and 62 women or (43.4%). It is known that less than part respondents aged 16-20 years/middle teens were 69 or (48.3%), respondents aged 20-24 years/late teens were 56 or (39.1%) and lastly 10-15 years/early teens were 18 or (12.6%).

B. Characteristics Variable

Table 2. Distribution of Variable Based on Characteristics in Semambung Village, Kanor Sub District, Bojonegoro District

Characteristics	N	(%)
Gadget Usage		
Short	5	3.5
Currently	25	17.5
Long	113	79
Insomnia in Teenagers		
Insomnia	102	71.3
No Insomnia	41	28.7

The majority of respondents, namely 113 respondents (79%) used old gadgets, 25 respondents (17.5%) used medium gadgets and 5 respondents (3.5%) used gadgets briefly. More than some respondents, namely 102 respondents (71.3%) experienced insomnia and 41 respondents (28.7%) did not experience insomnia.

C. Cross Tabulation Results

Table 3. Cross-tabulation between the use of gadgets and the incidence of insomnia at teenagers in Semambung village Kanor Sub Districts Bojonegoro Districts in 2021

CROSS TABULATION			INSOMNIA		Total
			INSOMNIA	NO INSOMNIA	
GADGET	SHORT	Count	3	2	5
		% within GADGET	60.0%	40.0%	100.0%
	CURRENTLY	Count	9	16	25
		% within GADGET	36.0%	64.0%	100.0%
	LONG	Count	90	23	113
		% within GADGET	79.6%	20.4%	100.0%
Total		Count	102	41	143
		% within GADGET	71.3%	28.7%	100.0%

Cross-tabulation between the duration of gadget use and the incidence of insomnia at teenagers in Semambung Village, Kanor Sub District, Bojonegoro District, it was found that from 143 teenagers who used gadgets for a long time, namely 5-≥7 hours/day experienced insomnia as many as 90 respondents (79.6%), using gadgets for a moderate time. ie 3-4 hours/day who experienced insomnia as many as 9 respondents (36%), more than those who used gadgets for a short time <1-2 hours/day and experienced insomnia as many as 3 respondents (60%). Meanwhile, respondents who use gadgets for a long time do not experience insomnia as many as 23 respondents (20.4%), respondents who use gadgets for a moderate time and do not experience insomnia as many as 16 respondents (64%), more than those who use gadgets in a short time who do not experience insomnia as many as 2 respondents (40%). So it was found that the majority of respondents who used gadgets for a long time experienced insomnia as many as 102 (71.3%).

D. Statistical Test Results

Tabel 4. The results of statistical tests between the use of gadgets and the incidence of insomnia at teenagers in Semambung Village, Kanor Sub District, Bojonegoro District in 2021

Statistical test results with rank speraman rho

			GADGET	INSOMNIA
Spearman's rho	GADGET	Correlation Coefficient	1.000	-.348**
		Sig. (2-tailed)	.	.000
		N	143	143
	INSOMNIA	Correlation Coefficient	-.348**	1.000
		Sig. (2-tailed)	.000	.
		N	143	143

**. Correlation is significant at the 0.01 level (2-tailed).

The test results show that it is proven that using gadgets for a long time can cause insomnia in Semambung Village, Kanor Sub District, Bojonegoro District, namely the longer the time in using gadgets, the higher the risk of experiencing insomnia with sig. of 0.000 is less than 0.05. These results indicate a correlation between the two variables.

DISCUSSION

A. The use of gadgets at teenagers in Semambung Village, Kanor Sub District, Bojonegoro District

In this study, researchers researched teenagers in Semambung Village, Kanor Sub District, Bojonegoro District. The sample of this study was 143 respondents, consisting of 81 men and 62 women and aged 10-24 years. Based on the results of research obtained in Semambung Village, Kanor Sub District, Bojonegoro District, it shows that of 143 respondents, the majority of respondents, namely 113 respondents (79%) use gadgets between 5-≥7 hours per day or use gadgets for a long time.

Gadgets are sophisticated goods created with various applications that can present various news media, social networks, hobbies, and even entertainment. Gadgets themselves can be computers or laptops, tablet PCs, video games, and also cell phones or smartphones (Nafiah Nurniati, 2018). Gadgets/Smartphones are telephones that are equipped with an internet connection and provide Personal Digital Assistant (PDA) functions such as calendars, agenda books, calculators, notes, and various advanced applications to assist daily activities. The sophistication and convenience provided by smartphones today cause many people to be trapped in always doing their activities using smartphones (Mashabel, 2013 in Lakshono, 2018). Most internet users are teenagers to adults. Teenagers are individuals who are in the transition stage between children and adults. Adolescence is accompanied by changes in aspects such as psychological, physical, social, and emotional (Ali & Ansori, 2012). One of the effects of the Covid 19 pandemic is where teenagers/students carry out learning online. Frequency is one of the important indicators in the use of gadgets. This is due to the many negative effects that device users experience from using the device too often, especially from the point of view of their health. Due to radiation exposure from the device, users may experience various types of health problems. During the pandemic, the use of gadgets increased dramatically. This can be caused by several factors. Teenagers/students who should be studying at school are encouraged to learn from home with gadgets. Teenagers/students spend a lot of time playing with gadgets and applying social boundaries for fun. Be it games, social networking, or interacting with friends. As a result, these teenagers/students have long been exposed to frequently used devices whether they realize it or not (Humirah, et al. 2021).

This study is in line with research conducted by Kiayi in 2015 on "The relationship between the intensity of the use of social networking sites with insomnia in teenagers" which states that out of 120 respondents, there are 79 respondents who are quite intense in the use of social media. Teenagers who use social media intensely are teenagers who use social media every day, use it all the time or more than 12 hours/day, use social media before going to bed, feel anxious if they don't access social media, and often forget to sleep on social media. This study is also supported by Humirah, L. A (2021) that continuous or inappropriate use of devices can affect the development of insomnia in these teenagers. Some teens even say they often skip bedtime just to play with gadgets. Many of these students say the only entertainment they can get during this pandemic is internet access. Good for chatting with friends and following community activities through social media. The intensity of device use has increased during the Covid-19 pandemic, forcing teens to be exposed to radiation and blue light from devices. This has the effect of inhibiting the production of the hormone melatonin, making it difficult for teens to start sleeping, sleep with poor quality, and lack of sleep (insomnia). A study done in Japan by Ikeda and Nakamura (2014) evidenced that among Japanese high school students, it was found that long hours of mobile phone use were associated with short sleep time and fatigue. A study in South Korea found that nearly 72% of South Korean children aged 11-12 years spend 5.4 hours a day on mobile phones, 25% of those children were considered addicts to smartphones (Jeong et al 2016).

This research involving teenagers in Semambung Village, Kanor Sub District, Bojonegoro District, resulted in data that continuous or inappropriate use of gadgets can affect the occurrence of insomnia in these teenagers. Even some of the teenagers stated that they often missed bedtime just to play with gadgets. Many of these teenagers said that the only entertainment they could get during this pandemic was accessing the internet. Good for chatting with friends about learning problems at school and following community activities through social media. The intensity of device use has increased during the Covid-19 pandemic, forcing teens to be exposed to radiation and blue light from devices. This has the effect of disrupting the production of the hormone melatonin which makes it difficult for teenagers to start sleeping, sleep with poor quality or maintain sleep, resulting in insomnia. In the opinion of the researcher, prolonged use of gadgets is influenced by gender where most of the respondents are male and also the effects of this pandemic so that learning is carried out online where the time spent playing gadgets becomes longer. Men tend to use gadgets for a long time probably because a lot of work is done in social media and gaming. This result is in line with previous research which observed that men tend to play games for 2-3 hours after completing their homework. The pandemic period also affects the use of gadgets for a long time, because online learning makes teenagers more at home and use gadgets for a long time. Several other studies examining gender differences in playing online games before bed and their relationship with sleep disorders found that men use smartphones more often to play online games than women. While some studies show that female gamers have a shorter duration of online gaming, research also reveals that women are 1.28 times more likely than men to have sleep problems (Gandaputra, et al. 2021).

B. The incidence of insomnia at teenagers in Semambung Village, Kanor Sub District, Bojonegoro District

The results of the study indicate that more than 102 respondents (71.3%) experienced insomnia. In this study, researchers researched teenagers from Semambung Village, Kanor Sub District, Bojonegoro District. The sample of this study was 143 respondents, consisting of 81 men and 62 women and aged 10-24 years. Based on the research results obtained in Semambung Village, Kanor Sub District, Bojonegoro District. shows that out of 143 respondents, more than some of the respondents, namely 102 respondents (71.3%)

experienced insomnia.

People can't always enjoy good sleep. The average sleep time needed by humans per day at the age of 12-18 years old requires 8.5 hours of sleep per day (Probowani & Lela. 2018). Insomnia is a sleep disorder that includes every system, disturbances in every function, in the dark, in silence, and alone at night, all of these are caused by anxiety problems, arise along with excessive energy, and are haunted by feelings of lack of enthusiasm (Ramadhani, 2014). Insomnia itself is defined as difficulty falling asleep, difficulty staying asleep, waking up too early, or not sleeping well even though there is enough time and opportunity. However, it can further be categorized as a short-term or long-term condition, either primary or secondary. complicated, some people with early-stage insomnia simply have trouble falling asleep, whereas others can't fall asleep once their head hits the pillow and wake up very early and can't go back to sleep. Unfortunately, there is also a combination of the two (Atkins, 2014).

According to Patel, D. (2018) Insomnia is broadly defined as dissatisfaction with sleep both qualitatively and quantitatively. It is usually associated with one or more of the following: difficulty initiating sleep, difficulty maintaining sleep, characterized by frequent awakenings or problems returning to sleep after awakening, and early morning awakening with an inability to return to sleep. Insomnia is not a disease but a symptom of a disorder that is acquired during sleep, difficulty, or sleep disturbance (Luas, Maramis, and Wowor, 2019). Using a smartphone for a long time causes a person to take a slower time to fall asleep, which is about 60 minutes (Mawitjere et al, 2017). Exposure to blue light from a smartphone screen has similarities with light during the day so that it results in a person being stable in an awake state. Meanwhile, a person will easily fall asleep when in low light or dim light conditions (Keswara UR, 2019). This can be caused by the hormone melatonin. Melatonin is a hormone produced by the pineal gland. This hormone functions to make a person fall asleep and restore physical energy during sleep. Then, the production of the hormone melatonin is supported by darkness and silence and inhibited by bright light and electromagnetic fields. Melatonin is the body depends on the amount of light received by the eye, Lack of light will increase the amount of melatonin which causes drowsiness, on the contrary, if there is a lot of light it can slow down the mechanism in forming the hormone melatonin (Siregar MH, 2011). Thus, this can trigger a person to tend to sleep later than usual. The use of gadgets to play online games can reduce the amount of time to sleep and rest. Teenagers with insomnia may experience side effects, such as difficulty concentrating at school, and may experience metabolic dysfunction.

The negative impact of insomnia is the tendency to feel tired and sleepy while attending school, lack of concentration, and the inability to work productively. If this continues, academic achievement will decline. According to Natalia's research (2016), The prevalence of sleep disorders in teenagers reaches 62.5, of which sleep-wake transition disorder is the most common disorder. The impact of lack of sleep or insomnia is feeling tired, tired, lethargic, and losing focus while studying, thereby reducing work productivity. If insomnia continues, report cards and school grades can drop. According to Desriyanti (2018), addiction to online or internet games carries many risks, one of which can cause sleep deprivation or insomnia. The cause of insomnia is not always due to the use of gadgets but there are several other factors such as environment, illness, fatigue, medication, and lifestyle, which can cause people to experience insomnia. However, according to Iswidaramanja & Agency (2012), gadgets are a major factor in someone experiencing insomnia. There are several reasons why someone becomes addicted to using gadgets, namely because it is more visually and audio-friendly, does not pose too much physical risk, is easier to use, can be used anywhere, is curious about technological developments such as the internet, online games, and others.

This research is in line with what was conducted in 2017, researcher Dewi on "The relationship between the intensity of social networking sites and insomnia in teenagers" showed that out of 134 respondents, there were 77 respondents who experienced insomnia. And the proportion of insomnia is higher in respondents who use social media intensely. This research is also supported by research from the Case Western Reserve School of Medicine, Cleveland (in Udin, NF, & Riyadi, S., 2019) involving 238 teenagers with an age range of 13-16 years, access to social media on the internet via cell phones and computers can affect sleep quality in teenagers. The results of the research that have been carried out show that respondents experience insomnia caused by factors such as psychological factors, environmental factors, pressure, internet or online, sleeping room, smoking. Insomnia in teenagers can have a negative impact on teenagers such as disturbed teenager health, disruption of daily activities, teenagers have difficulty concentrating in learning, anxiety, and decreased cognitive function in students (Zahara, Sofiana, Rismadefi, 2018). The results of the research that have been carried out show that respondents experience insomnia caused by factors such as psychological factors, environmental factors, pressure, internet or online, sleeping room, smoking. Insomnia in teenagers can have a negative impact on teenagers such as disturbed teenager health, disruption of daily activities, teenagers have difficulty concentrating in learning, anxiety, and decreased cognitive function in students (Zahara, Sofiana, Rismadefi, 2018).

Based on the results of research, theory, and related research, the researchers argue that what affects the incidence of insomnia in Semambung Village, Kanor Sub District, Bojonegoro District is the use of gadgets. Teenagers who are addicted to gadgets often forget bedtime. They will steal sleep time that should be used for rest. This can lead to changes in sleep patterns and eventually insomnia. Respondents are in their middle teens, at this age teenagers are more easily tired and have insomnia due to the use of gadgets. As a result of insomnia at night, teenagers often experience discomfort during the day, such as fatigue, lack of attention, lack of concentration, impaired social relations, mood swings or irritability, headaches, and indigestion. This of course will have a negative impact on the learning process of teenagers/students at school, namely learning concentration is reduced due to sleepiness when listening to teacher explanations in class, which will cause anxiety and fear of declining academic achievement. In general health problems, the immune system decreases, which causes cell damage and slows down the work of the brain because it can not meet the needs of sleep. From this point of view, to avoid the occurrence of insomnia among teenagers, it is necessary to control the use of gadgets for social networking and gaming at night and be able to divide the time for studying and meeting with family or friends. and fear of declining academic performance.

One of the factors that can affect sleep deprivation is playing online games for a long time. This game is very interesting because you can not only play with friends next door but also with many players in other parts of the world. Teenagers and school-age children often and are considered vulnerable to using online games (Manuputty, Sekeon, and Kandou, 2019).

C. **Analysis of the impact of using gadgets on the incidence of insomnia at teenagers in Semambung Village, Kanor Sub District, Bojonegoro District**.

In this study, researchers researched teenagers in Semambung Village, Kanor Sub District, Bojonegoro District. The sample of this study was 143 respondents, consisting of 81 men and 62 women and aged 10-24 years. Based on the results of research obtained in Semambung Village, Kanor Sub District, Bojonegoro District, it is known that teenagers who use gadgets for a long time, namely 5-≥7 hours/day experience insomnia as many as 90 respondents (79.6%), moderate use of gadgets is 3-4 hours/day. 9 respondents (36%), who

experienced insomnia, more than those who used gadgets for a short time <1-2 hours/day and experienced insomnia as many as 3 respondents (60%). While respondents who use gadgets for a long time do not experience insomnia as many as 23 respondents (20.4%), respondents who use gadgets for a moderate time and do not experience insomnia as many as 16 respondents (64%), more than those who use gadgets in a short time who do not experience insomnia as many as 2 respondents (40%). So it was found that the majority of respondents who used gadgets for a long time experienced insomnia as many as 102 (71.3%). Based on the SPSS rank spearman rho test results, it can be seen that the significance value obtained is 0.000. With a significance level of 5%, the calculated value is 0.000 <0.05 so that H1 is accepted and it is concluded that there is an impact between the use of gadgets and the incidence of insomnia in teenagers. The correlation between the two variables is -0.348. The negative sign indicates that the direction of the correlation is opposite, which means that the longer the use of gadgets, the worse the sleep disturbance/insomnia.

Teenagers who use the media excessively even to the point of sacrificing their night's sleep can affect psychological aspects, one of which is poor sleep quality in the form of insomnia. Poor sleep quality will have an impact on the first few factors, namely, it can interfere with growth hormone because the highest levels of growth hormone are released during sleep so that if teenagers lack poor sleep quality, it will interfere with growth hormone secretion. Second, it has an impact on development because adequate sleep can repair the body's cells, if the quality of sleep is poor, it will lead to a decreased immune system and susceptibility to disease. Third, the psychology of a person whose sleep quality is poor causes emotional disturbances, namely irritability, irritability, aggressiveness, and even stress. Fourth, cause drowsiness so that when doing a job or activity have difficulty concentrating. Fifth, poor sleep quality can also disrupt the body's rhythm and hinder the brain's work to learn new information. People in Indonesia still underestimate it because of the lack of public knowledge about sleep health. Suppose the view of sleep is reflecting lazy behavior. Many people underestimate sleep because they do not understand the consequences that occur if a person does not get enough sleep (Prasadja, 2019). One of the factors that affect sleep quality according to the results of research by Javaheri and Cleveland (2018), is internet use. At this time the use of electronic media and internet access and gadgets is no longer a new thing. Teenagers spend a lot of time doing activities on gadgets or in cyberspace (Nafiah Nurniati, 2018)

The era is increasingly modern and sophisticated. Various technologies were created to facilitate human affairs. But apparently, that goal has unfavorable side effects, such as making many people sleep-deprived. Russell Rosenberg, Ph.D., lead author of the study and director of The Atlanta School of Sleep Medicine and Technology, states that the use of cell phones, computers, and video games before bedtime and midnight, as is often done by today's teenagers and children has consumed a lot of money. rest, sleep, and technology do not mix (Huda, 2016)). Excessive use of social media can be one of the causes of insomnia. This is based on research conducted by Syamsoedin in 2015, that there is a relationship between the duration of social media use with the incidence of insomnia in teenagers. Suggestions from this study are to reduce the time of using social media and be able to manage sleep time. Lifestyle also makes it difficult for people to sleep, it can be during the day doing activities to feel tired and tired. But at night, which should be used for sleeping, it is fun to connect with people on social media to the point of forgetting to sleep (Huda, 2016).

The results of research from Northwestern University by Phyllis Zee (in Wydia, 2015) also revealed that electronic objects that shine brightly and directly shine on the eyes can interfere with brain work and damage the body's biological clock system, if someone often turns on a notebook or iPad and accesses social media before sleep, the light can trigger or stimulate the brain to make us wake up and delay the desire to sleep and interfere with the

regulation of the hormone melatonin which plays a role in regulating sleep hours so that later a person will experience sleep disorders (Insomnia). The results of this study are in line with previous research conducted by Mawitjere et al. (2017) on 39 samples of high school students, it was found that there was a significant relationship between the length of time using gadgets and the incidence of insomnia (p-value = 0.002). The same study was conducted by Syamsoedin, et al (2015), that the use of social media is associated with the incidence of insomnia with a p-value of 0.000. The same results were also obtained by Keswara, Syuhada, and Wahyudi (2019) explaining in their research results that there is a significant relationship between gadget use behavior in accessing social media with sleep quality in teenagers, even bad behavior in using gadgets has a four times greater risk cause sleep quality disturbance, with p-value = 0.000. In addition to research conducted domestically, there is also research abroad stated by Jenaro, et al (2007) on 337 students aged 18-32 years, stating that there is a relationship between excessive smartphone use and symptoms of insomnia (p-value = 0.001).

In another study conducted by Mohammed A Abdalqader, et al (2018), explaining a significant relationship between insomnia and the frequency of social media use and gadget use before bedtime in this study is similar to what was found in a Swiss study which found that excessive use of social media is a risk factor for insomnia in teenagers. The study concluded that electronic media use is positively associated with sleep difficulties (Lemola et al 2015). Reports suggest that the use of cell phones and computers while in bed is associated with delayed sleep time (Brunborg et al 2011). A study in Belgium found the same result. The use of mobile phones in bed at night negatively impacts sleep outcomes (Exelmans & Van 2016). a survey study by Nathan and Zeitzer (2013) in California also showed an association between cell phone use and daytime sleepiness in high school students in California.

But the results of this study are not in line with the results of research conducted by Brunborg, et al (2011), 816 samples were randomly assigned to Norwegians at the age of 18-40 years, the results showed that there was no relationship between computer and smartphone use before bedtime with the incidence of insomnia with p-value = 0.052. Differences in the results of Brunborg's research can be caused by various factors, including the year of research, the number of respondents, the background of the respondents, variables, and other factors. In addition, this study has several limitations, including the researcher did not see directly the use of gadgets by the people who were asked to be respondents. Due to the COVID-19 pandemic and filling out online questionnaires, researchers cannot guarantee that people who are asked to be respondents answer questions honestly. Because most teenagers aged 10-24 years are still in school starting from junior high, high school, and college, the use of gadgets depends on the need to access the Internet to find materials and references to complete academic assignments. Furthermore, due to the ongoing COVID-19 pandemic in Indonesia, the Ministry of Education and Culture decided to launch online learning. Therefore, especially teenagers from Semambung Village, Kanor Sub District, Bojonegoro District, should use devices (laptops, computers, smartphones) or other gadgets to help the teaching and learning process starting at 07.00 WIB until finished.

Based on the results of the study, there were 3 respondents (60%) of 5 respondents who used gadgets in a short time but experienced insomnia, most of the respondents were male. This is because the majority of the youth of Semambung Village, Kanor Sub District, Bojonegoro District participated in Pencak silat training which was carried out at night. So that makes the teenagers lose their rest hours of sleep at night. There are 9 respondents (36%) out of 25 respondents who use gadgets when they are experiencing insomnia, this is probably because respondents can only use gadgets at night so they are willing to sacrifice their sleeping hours to play gadgets. On the use of gadgets for a long time, there are 23 respondents (20.4%) of 113 respondents who do not experience insomnia, This possibility is

because these respondents use gadgets during the day and can divide their time between playing and resting so that at night they will automatically fall asleep due to fatigue. And the remaining 90 respondents (79.6%) experienced insomnia.

Based on the results of research, theory, and related research, the researchers argue that the insomnia phenomenon that occurs at teenagers in Semambung Village, Kanor Sub District, Bojonegoro District is due to the duration of gadget use. The longer the duration of gadget use, the more likely it is for insomnia. This is because teenagers are familiar with technology and each has supporting facilities such as mobile phones, laptops, tablets, and other gadgets, so that activities using the internet to play online games, social media and access other online applications are inevitable. Teenagers who use gadgets excessively will cause poor sleep quality because sleep time will be reduced and the quality and quantity of sleep will be disturbed which causes insomnia. And other possible factors, as many as 113 respondents (79%) teenagers experience boredom, so they access their gadgets to play online games, find it difficult to control the time for applications that are on their gadgets, and carry their gadgets while sleeping. 102 respondents (71.3%) have excessive sleep habits and irregular sleep time which are factors that cause insomnia in teenagers. The habit of sleeping too much is usually a form of teenagers/students who do a lot of activities. Since this gadget is used most of the day, sleep time at night is disturbed and causes severe fatigue. So they can sleep from morning to evening to relieve fatigue. Too much sleep will relieve sleepiness at night, to relieve boredom at night, they start using their gadgets again.

According to Saputra (2013), each individual has different needs for sleep and rest, depending on the activities carried out. Most teens need 7-8 hours of sleep a night. This aims to prevent fatigue and susceptibility to infection. Meanwhile, according to Natalita et al (2011), teenager sleep patterns and times have a characteristic that teenagers experience hormonal changes and shifts in circadian rhythms. Teenagers start to feel sleepy in the middle of the night, while teenagers have to get up in the morning to go to school. Coupled with the influence of gadgets used at night. This causes teenagers to experience a lack of sleep every day. Reporting to the National Sleep Foundation by Dautovich, Smartphones, such as laptops, tablets, and televisions emit something called blue light, which is the kind of light the brain interprets as daylight. Blue light suppresses melatonin (a hormone that affects circadian rhythms and increases when you're getting ready for bed). As a result, the brain will feel stimulated. It's okay to use your smartphone during the day, but if you use it in the middle of the night, your brain will get confused and think it's still daytime, making it harder to fall asleep.

CONCLUSION

1. The majority of respondents, namely 113 respondents (79%) use gadgets for a long time.
2. More than some of the respondents, namely 102 respondents (71.3%) experienced insomnia.
3. The SPSS rank spearman rho test results can be seen that the significance value obtained is 0.000. With a significance level of 5%, the calculated value is 0.000 < 0.05 so that H1 is accepted and it is concluded that there is an impact between the use of gadgets and the incidence of insomnia in teenagers.

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