PSYCHIATRY NURSING JOURNAL
(Jurnal Keperawatan Jiwa)
Vol. 5, No.2, September 2023

Laman Jurnal: https://e-journal.unair.ac.id/PNJ
http://dx.doi.org/10.20473/pnj.v5.i2.44270

Original Research

CORRELATION BETWEEN OF GADGET USE TO SLEEP PATTERNS AND SOCIAL INTERACTION IN STUDENTS DURING COVID-19 PANDEMIC

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ARTICLE HISTORY
Received: March 20, 2023
Revised: April 08, 2023
Accepted: June 01, 2023
Available online: Sept 10, 2023

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ABSTRACT

Introduction: The shift to online learning methods during the COVID-19 pandemic has significantly impacted the duration of gadget use. This change has been associated with health issues, including disrupted sleep patterns and altered student social interactions. This study explores the relationship between gadget use sleep patterns and social interactions among nursing students at Airlangga University during the pandemic.
Methods: This research was conducted from January 21 to 23, 2022, using a correlational descriptive design with a cross-sectional approach. The population consisted of nursing students from the regular class of 2020 and B23 at Airlangga University, with a sample size of 164 respondents selected through simple random sampling. The independent variable was the use of gadgets, while the dependent variables were changes in sleep patterns and social interactions. The instruments used for this study included the Smartphone Addiction Scale (SAS), the Pittsburgh Sleep Quality Index (PSQI), and the Social Interaction Anxiety Scale (SIAS). Data were collected via a questionnaire and analyzed using Spearman's rho test, with a significance level set at <0.05.
Result : Based on the results study, there was significant a relationship between gadget use and sleep patterns (p = 0.037, r = -0.163) and social interaction with results (p = 0.002, r = -236).
Conclusion: Excessive use of gadgets, coupled with poor time management, can lead to social dysfunction in students, making them apathetic and less aware of their surroundings. Increased gadget usage correlates with reduced sleep quality and diminished social interaction. This research will serve as a valuable source of information and a reference for promoting health education and counseling related to gadget usage.

Keywords: gadgets; sleep patterns; social interaction; students; COVID-19

Cite this as:
Wulandari, W., Fitryasari, R., Harmayetty, H. (2023). Correlation Between of Gadget Use to Sleep Patterns and Social Interaction in Students During COVID-19 Pandemic. *Psych. Nurs. J.*, 5(2). 75-81. doi.org/ 10.20473/pnj.v5.i2.44270

1. INTRODUCTION

Prolonged COVID-19 pandemic has forced students to spend more time at home due to changes in the learning system (Rajkumar, 2020). Need for adequate sleep will certainly maintain health and balance of the systems in the body. Need for sleep over 18 years for 7-9 hours (Kolhar et al, 2021). Many people do not realize that a healthy body can have an impact on good sleep patterns. Many aspects are the cause of changes in a person's sleep patterns (Widiyanto, 2016). Change in learning method from offline to online had an impact on the duration of gadget use for students, so it has the potential to cause health problems such as sleep patterns and changes in student interaction patterns (Fathimahhayati, et al 2020). Causes of changes in sleep patterns include: age, exercise habits, stress, environmental conditions, activity and busyness (Ambarwati, 2017).

Based on the results of filling out an online survey conducted in class 2020 Airlangga University on June 10, 2021 which consisted of regular classes and B23 type transfers with a total of 110 respondents participating, several important points were obtained. Use of gadgets was considered to have increased during the pandemic reaching 92.3% which had an impact on changing sleep patterns of 81.9% such as experiencing a delay in sleeping time which

resulted in the need for student sleep patterns not being properly met. This change in sleep patterns can be seen from their sleeping hours which are classified as late at night. Results obtained were that on average 36.9% of students slept after 22.00 WIB and as many as 41.4% said they slept after 23.00 WIB and other results found that erratic sleeping hours for students were caused by working conditions. Problems arising from changes in sleep patterns felt by students during the day such as experiencing fatigue 72.4%, drowsiness during the day 67.6%, lack of focus 69.5%, to be lazy to do activities 61% such as; lazy to learn and lazy in following the lecture process so that it can have an impact on academic grades. Survey results also found that the increased use of gadgets also had an impact on the process of social interaction carried out online through gadget intermediaries, 98.2%. Students who previously used to interact directly without going through intermediaries are now switching to the interaction process using gadgets. Impact experienced by students who are accustomed to interacting online causes that when invited to interact directly students are still focused on their respective gadgets at 23.4%.

Research results Paridawati et al (2021) significant increase occurred in 2020 as many as 272.1 million citizens with connected gadget user data reaching 338.2 million units, which means that most Indonesians have more than one gadget. Most social media users are between 18-24 years and 25-34 years old (Wulandari et al., 2021). Based on the results of a preliminary study conducted by researchers on June 10, 2021 for regular and B23 nursing students at Airlangga University, it was stated that using gadgets that exceed normal limits at night, which is around 6-8 hours, causes students to experience sleep pattern disturbances.

Use of massive communication technology can be found in various places and situations where we can easily meet people interacting connected through their devices (Nugraheni & Widyaningrum, 2018). Majority of them spend time using social media for 2 hours 52 minutes (Nugraheni dan Anastasia Yuni, 2017).

This study uses the application of the Stressor-Strain-Outcame (SSO) theory associating work stressors with outcomes and conceptualizing them and saying that tension is a mediator. It is also associated with environmental stimuli in which individuals feel problematic or destructive (Cheung & Cheung, 2013).

2. MATERIALS AND METHODS

2.1 Design

This study used a non-experimental quantitative design using a correlational descriptive research design through a cross sectional approach (Nursalam, 2015).

2.2 Population and sampling

Population in this study were nursing students class of 2020 at Airlangga University. In 2020 the target population was 284 students. The research was conducted from 21-23 January 2022 still in a pandemic with a total sample of 164 respondents who were obtained using the Slovin formula (Nugraha dan Setiyorini, 2016).

2.3 Variable

Independent variable in study was use of gadgets and the dependent variable was changes in sleep patterns and social interaction among nursing students.

2.4 Instrument

The research instrument is a measuring tool used in the search and consists of 5 parts, namely biophysiological measurements, observations, interviews and scales. (Nursalam, 2015). There are several questionnaires used, namely: The Demographic Data Instrument, the Gadget Use Instrument used the SAS (Smartphone Addiction Scale) questionnaire, the Sleep Pattern Questionnaire used the PSQI (Pittsburgh Sleep Quality Index) questionnaire, and Social Interaction Questionnaire used the SIAS (Social Interaction Anxiety Scale) questionnaire.

2.5 Procedure

Application of the simple random sampling technique was carried out using lottery paper containing the attendance and class numbers of all students, then 164 respondents were randomly selected, then the selected respondents were given a Google form containing informed consent, demographic data, and the questionnaire used. Then it was distributed to various 2020 regular force groups and over the 2020 B23 type.

Furthermore, researchers conducted studies and processed data to see if there was a relationship between the use of gadgets and changes in sleep patterns and social interaction in students. Process of collecting data in this study uses a Google form which consists of 6 sections/slides, namely; Explanation of the research, informed consent signed by the respondent and given at the start of the study on January 21, 2022, demographic data containing name (initials), age, gender, class, address, and frequently used applications, independent variable, namely gadgets using a gadget use questionnaire (SAS) from Kwon (2013) as many as 21 questions in the form of positive and negative connotations with a comparison of 14 favorable (positive) items and 7 unfavorable (negative) items. calculation results, there are four possible answers with a score of 1-4. Questions with a positive connotation, namely strongly agree with a value of 4, agree with a value of 3, disagree with a value of 2 and strongly disagree with a value of 1. Negative questions have a value: strongly agree

with a value of 1, agree with a value of 2, disagree with a value of 3 and strongly disagree is given a value of 4 (Saifullah, 2017).Then for the independent variables of sleep patterns and social interaction, namely using the sleep pattern questionnaire (PSQI) developed by Buysse (1988) as many as 18 questions consisting of 4 open questions and 15 using the Ordinal scale. These 18 items consist of 7 components: sleep quality is calculated according to question number 6, sleep latency is calculated according to the sum of the scores of questions number 2 and 5a, sleep duration is number 4, sleep habit efficiency is measured by questions number 1, 3, 4, sleep disturbance is measured using questions number 5b-5j, excessive use of sleeping pills according to question number 7, impaired body function during the day (concentration) on questions no. 8 and 9. Sleep quality is said to be good if a score is > 5 and is said to be poor if a score is ≤ 5. Furthermore, the social interaction questionnaire (SIAS) from Mattick & Clarke (1998)consisted of 20 question items, of which 17 items were positive and the remaining items were negative. The score is considered good if the score is > 35 and is considered not good if the score is ≤ 35. Assessment for a positive score: never = 0, almost never = 1, sometimes = 2, often = 3, always 4. and Ratings for negative scores: never = 4, almost never = 3, sometimes = 2, often = 1, always 0

2.6 Analysis

Data analysis is a very important part of realizing the main research objective, which is to answer research questions that reveal phenomena. The raw data obtained cannot describe the information needed to answer research questions (Nursalam, 2015). Determination of research data analysis, namely: first, Univariate analysis is an analysis of each research variable to produce frequencies and percentages in each variable (Notoadmodjo, 2012). This univariate analysis makes it easier for researchers to see wrong coding/data entry. Second, bivariate analysis is used to analyze the relationship between two variables that have symmetrical properties, both influencing and not influencing each other and one variable that can affect other variables. The analysis in this study aims to analyze the relationship between the independent and dependent variables, namely the use of gadgets with changes in sleep patterns and social interaction among students (Aulia, 2015)

2.7 Ethical Clearance

Before conducting the research, the researchers conducted an ethical test at the Faculty of Nursing, Airlangga University and obtained an ethical review pass No: 2420-KEPK. Furthermore, the process of filling out the questionnaire takes 10-15 minutes to work on using each gadget by opening the Google form link that has been shared by researchers

3. RESULTS

Based on table 1 shows the data distribution of respondents based on demographic characteristics of 164 students. The gender distribution is dominated by female sex with a total of 146 respondents, of which there are 101 regular students (61.6%) with the age range of regular students being 15 to 20 years and in class B23 transfer students the total number of respondents is only 55 people (33.5%) and also dominated by women as many as 45 people (27.4%). There are significant differences in respondent data in the age group between regular and B23. The regular batch is dominated by fresh graduate students from high school or equivalent, while the B23 batch is a type transfer program from D3 to S1, both fresh graduates from Diploma education and those who are already working. So that the B23 age range is dominated by 21 to 30 years by 47 respondents (28.7%). The use of gadgets from both generations was dominated by social media with a total of 148 respondents, of which regular students were 97 (59.1%) and B23 with a total of 51 (31.3%) respondents. Social media itself has various features and attracts the attention of its users so that it often makes users feel happy when using gadgets for a long duration. The use of gadgets in social media such as chatting, Google, Instagram, YouTube and others has increased during the COVID-19 pandemic, especially in the process of learning and communicating with the environment. But apart from being used for social media, there are some respondents who use gadgets for online games 16 (9.8%).

Furthermore, the table also explains illustrates the level of gadget use for B23 and regular batches. It was found that from the two generations the use of gadgets was in the medium category with regular data of 91 respondents and 42 respondents of B23.

Next, illustrates the level of student sleep patterns and the finding that the sleep patterns of Airlangga University regular and B23 students are mostly in the good category of 119 respondents with as many as 80 respondents for regular and 39 respondents for B23, and the others are in poor category.

Next, describes social interaction and it was found that most of the respondents' social interaction was in the good category with a total of 117 respondents with a comparison to regular reaching 80 respondents (48.8) and B23 reaching 37 respondents (22.6). As for the remaining 47 respondents, it is known that the results have an unfavorable level of social interaction.

Table 2. describes the relationship between gadget use and sleep patterns. In the table it can be seen that the highest number of respondents was found in respondents with sleep pattern problems in the good category and the use of gadgets at a moderate level, namely 99 respondents (60.4%).

Table 1. Demographic Characteristics of Research Respondents

No	Characteristics	Category	Frequency	Percentage (%)
1.	Gender	male	18	11
		Female	146	89
		Amount	**164**	**100**
2.	Age	15-20 year old	102	62,2
		21-30 year old	54	32,9
		31-40 year old	4	2,4
		41-50 year old	4	2,4
		Amount	**164**	**100**
4	Level of class	Class A Reguler	109	66,5
		Class B of B23	55	33,5
		Amount	**164**	**100**
5	Frequently used applications	*social media*	148	90,3
		Game online	16	9,8
		Amount	**164**	**100**

Levels of Use Of Gadget in Nursing Students during COVID-19 Pandemic in 2022

Category	Use Of Gadget	
	f	**%**
Low	12	7,3
Medium	133	81,1
High	19	11,6
Amount	164	100

Levels of Sleep Patterns in Nursing Students during COVID-19 Pandemic in 2022

Category	Sleep Patterns	
	F	**%**
Not good	45	27,4
Good	119	72,6
Amount	164	100

Level of Social Interaction among Nursing Students during the 2022 COVID-19 Pandemic

Category	Social Interaction	
	f	**%**
Not good	47	28,7
Good	117	71,3
Amount	164	100

Table 2. Cross Tabulation Analysis Of The Relationship Between Use Of Gadgets And Sleep Patterns And Relationship Between Use Gadget And Social Interaction In Nursing Students During The COVID-19

Use Of Gadgets	Sleep Patterns				Amount	
	Not Good		Good			
	F	**%**	**F**	**%**	**F**	**%**
Low	3	1,8	9	5,5	12	7,3
Medium	34	20,7	99	60,4	133	81,1
High	8	4,9	11	6,7	19	11,6
Total	**45**	**27,4**	**119**	**72,6**	**164**	**100**

***Statistic test Spearman Rho Test* p=0,037, r= -0,163**

Use of Gadgets	Social Interaction				Amount	
	Not Good		Good			
	F	**%**	**f**	**%**	**F**	**%**
Low	2	1,2	10	8,5	12	7,3
Medium	29	17,7	104	63,4	133	81,1
high	16	9,8	3	1,8	19	11,6
Amount	47	28,7	117	71,3	164	100

***Statistic test Spearman Rho Test* p= 0,002, r= -236**

Results of tests that have been carried out using the Spearman Rank Test Correlation statistical method show that the problem of using gadgets has a significant relationship with sleep patterns with statistical results obtained (p=0.037) provided that the degree of significance is if p=0.05 then H0 is rejected and H1 accepted. The strength of the correlation is obtained with a value of r = -0.163 which indicates that the strength of the correlation is very weak with a negative relationship. This shows that the higher the level of gadget use in students, the sleep pattern becomes increasingly unfavorable.

Results of the study also found that several students were included in the category of high gadget use, 8 respondents (4.9%) but sleep patterns were still in the good category. Sleep. This is consistent with the journal Saxena et *al.*, (2021) explained that the use of gadgets carried out at night has a high potential for changes in sleep patterns compared to the use of gadgets during the day because use at night affects the performance of the hormone melatonin which functions to regulate sleep patterns.

Next, in the table describes the relationship between gadget use and social interaction. In the table it can be seen that the highest number of relationships between the use of gadgets and social interaction is 104 respondents (63.4%) with moderate levels of gadget use and social interaction in the good category. The results of tests that have been carried out using the Spearman-Rho statistical method show that the p-value: 0.002 (α <0.05). This shows that there is a relationship between the use of gadgets and social interaction among B23 and regular 2020 nursing students with the strength of the correlation obtained with a value of r = -236 which indicates that the strength of the correlation is weak with a negative relationship. This shows that the higher the use of gadgets, the level of social interaction among respondents is getting worse.

4. DISCUSSION

Relationship between Use of Gadget and Sleep Patterns

Results the research above show that there is a relationship between the use of gadgets and sleep patterns in college students during the COVID-19 pandemic. This has been tested using the Spearman Rho Test statistical test, it was found that the higher the use of gadgets, the worse sleep patterns and vice versa if the use of gadgets is low, sleep patterns will improve. The use of gadgets among students is also dominated by women with the highest application usage being social media.

According to Prayitno (2002) in journal Widiyanto (2016) states that sleep patterns are patterns, forms, or sleep habits over a relatively stable period of time and include sleep initiation and wake schedules, sleep rhythms, sleep frequency in a day, maintaining sleep conditions, and sleep satisfaction.

Research using application of SSO theory consists of three main components, namely stressors, strains, and outcomes (Dhir et al., 2018). SSO model links work stressors (cause and effect) with outcomes and conceptualizes tension as a mediating factor. The stressors component consists of two parts . The first is Compulsive SNS Use which is directed at the excessive use of gadgets both internally and externally use of social media so that without realizing it, they have spent hours playing gadgets (Cheung & Cheung, 2013). Based on the theory from SSO, namely with stressor strain and outcome components, it is proven that use of gadgets can cause changes in sleep patterns, as evidenced by the highest total entered into filling out gadget questionnaires and sleep patterns (Dhir et al., 2018)

Respondents' sleep patterns were in the good category with moderate gadget use and the highest use of social media applications. These results are in accordance with research by Levenson *et al.*, (2016) explaining how social media can explain the causes of sleep pattern disturbances. The use of gadgets when going to bed will interfere with melatonin production through digital screen images from gadgets before going to bed. When the hormone melatonin in the body is disrupted, it will interfere with the process and quality of sleep. This causes a person to stay awake or experience sleep pattern disturbances (Munezawa et al., 2011)

According the journal Krisnana *et al* (2020) mentions several factors that can affect the quality of a person's sleep such as: environmental conditions, physical activity and lifestyle. Psychological conditions occur when a person can experience psychological tension. This is seen when people with psychological health problems suffer from anxiety which makes it difficult to fall asleep (Hidayat, 2009)

Results of filling out the questionnaire found that there were some respondents who tended to use gadgets high but their sleep quality was still in the category of good sleep patterns and there were also those who used gadgets low but were in the category of poor sleep patterns. Caused by several things such as the time spent using gadgets either during the day or at night. This is in line with the results of the journal Jarmi & Rahayuningsih (2017) said that sleep at night is not optimal caused by the use of gadgets. The use of gadgets student is high but the quality of sleep is in the good category, dominated by time spent using these gadgets during the day and short use at night, so that sleep time is not delayed and remains optimal at night. Vice versa, from the results of filling out the questionnaire it was found that the use of gadgets was low but poor sleep patterns were also dominated by the time and duration of using gadgets. The use of gadgets at night before going to bed will affect the quality of sleep, because it causes students to delay bedtime and find it difficult to get to sleep.

At the time of going to sleep a person needs time to pre-sleep for 10 to 30 minutes. If the pre-sleep time is used for activities using gadgets, the time for

pre-sleep will be more than 30 minutes so it takes longer to get back to sleep (Jarmi & Rahayuningsih, 2017). The use of gadgets also requires awareness of the importance of good sleep. This is consistent with the journal Zakso et al., (2021) explained the importance of self-awareness in students regarding sleep patterns in order to be able to manage the time for using gadgets so that it is expected that sleep needs are fulfilled properly.

The Relationship between Use of Gadget and Social Interaction

Results of the research above show that there is a relationship between the use of gadgets and social interaction among nursing students during the COVID-19 pandemic. After the Spearman Rho statistical test was carried out, the data obtained was p = 0.002 r = -236 with a weak correlation strength and a negative correlation direction. These results mean that if the use of gadgets by students is high, social interaction will be low and vice versa if the use of gadgets by students is low, the level of social interaction will be better.

According to the journal Yang *et al.*, (2020) frequency of using gadgets is increasing because gadgets can be accessed anytime, anywhere. This makes a person prefer to spend his time in cyberspace and has taken time to do other activities. This explanation is in accordance with the fifth point of the SAS questionnaire which explains about someone spending more on activities using gadgets.

Results of the research from answers of respondents, majority respondents said that their daily lives, including in the process of social interaction, are mostly carried out using gadgets, as evidenced by the answers to the SAS questionnaire at number 2, 5, 9, and 19. Respondents prefer to interact either just chatting, confiding with friends peers or even seeing group replies all feel happier and easier when done with gadgets.

SSO theory which states that the use of gadgets can have an impact on social interaction which is characterized by a lack of interaction between individuals when an assessment is carried out with a questionnaire. This is in accordance with the results of a research journal from (Woods, 2014) which says that excessive use of gadgets can cause addiction which can affect a person's behavior in interactions, individuals will prefer to interact with their co-workers through social media, which can lead to addiction gadgets. Journal Cahyaningsih et al., (2019) Changes in student behavior patterns also occur due to the presence of gadgets, including their relevance to social behavior.

Results of the study as a whole found that there was a relationship between the use of gadgets and social interaction. This is consistent with journal Cahyaningsih et al., (2019) mentions importance of good time management and critical and wise thinking patterns in using the facilities in the gadget. During the COVID-19 pandemic, students can carry out social interaction with the surrounding environment such as the home environment so that the intensity in using gadgets can be reduced.

5. CONCLUSSION

Based on the results of this study, it can be concluded about the relationship between gadget use among students during the Covid pandemic. The higher the use of gadgets, the poorer sleep patterns and social interactions. In the influence of changes in sleep patterns, the time spent using the gadget is more dominated at night, especially before going to bed, which can affect sleep quality, because it causes students to delay bedtime and it is difficult to start sleeping so that sleep time is not optimal. . If this goes on for a long time, it can cause changes in sleep patterns in students. As for the problem of social interaction, gadgets make a person prefer to spend time in cyberspace and take time to do other activities. Students will prefer to interact with other people through social media and assume that interactions carried out in the immediate environment become saturated if they do not use gadgets. This has an impact on changing patterns of social interaction and makes students apathetic towards the surrounding environment. In this problem, the right step to take is good time management for each student in using gadgets to minimize and prevent the negative impacts caused by gadgets.

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