

The Effect of Smartphone Addiction on Quality of Sleep Among Nursing Students in Medical Faculty Udayana University

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Abstract Sleep quality is a complex phenomenon that is difficult to measure objectively in individuals. Nursing students become one of the groups that are susceptible to decreased sleep quality. This is due to the many demands that students must do in their daily lives. Nowadays, changes in students lifestyles that lead to the use of massive technology, such as smartphones can have an impact on the quality of sleep. Indirectly, the convenience provided by smartphones gives an addiction effect to users. The purpose of this study was to determine the differences between quality of sleep in nursing students at Medical Faculty, Udayana University based on the level of smartphone addiction. This research is a descriptive study with a cross-sectional approach. The sample size was 123 students obtained from the use of sampling techniques of proportionate stratified random sampling. The results of this study indicate that as many as 51.2% of students are at a high smartphone addiction level. Also, 84.6% of students have poor sleep quality. The Mann Whitney statistical test results obtained p-value 0.01 <0.05, which means that there is a significant difference between the quality of sleep in nursing students at Faculty of Medicine Udayana University based on the level of smartphone addiction. This study suggest that students will be able to be wiser and more self-controlled in smartphone use on their daily lives to minimize the impact of smartphone addiction.

Index Terms— nursing student, sleep quality, smartphone addiction

I. INTRODUCTION

Sleep is a physiological need that provides some benefits such as facilitating growth and development, providing the environment for cell recovery, keeping the good mood, memory, and cognitive function, also maintaining the normal function of the endocrine and immunity system [1]. Adequate sleep is needed for health and wellbeing in life. Unfortunately, the young adult group is prone to poor quality of sleep [2].

The nursing student can be categorized as the young adult group which is at high risk of sleeping disorder [3]. The high demands of their lives as a nursing student assumed as factors affected this condition. Nursing students should understand a wide range of nursing care from some aspects (cognitive, affective, general skill, and some specific skills) [4]. The nursing student also supposed to participate in

some organizational activities as other requirements needed for being a professional nurse.

These high demands affected nursing students' sleep duration and quality of sleep. This condition also impacted nursing students' life in various domains. On the physical domain, poor sleep duration and quality of sleep lead to the increased of heartbeat, blood pressure, and blood sugar. Increased food consumption, immunology disorder and severe fatigue also could happen in the physical domain [5,6,7]. On the psychological domain some disorders such as mood disorder, lack of motivation, anxiety, and depression also possibly to happen [5,8,9]. The poor quality of sleep also causes difficulty in concentrating, coordination disorder, and poor academic performance [5,9].

Quality of sleep could be affected by some factors. Lifestyle is a factor that could affect the quality of sleep [6]. The smartphone is a device that already engaged with our daily activities and becomes one of our lifestyles. The

smartphone is used to communicate, access information, and sometimes for the entertaining purpose [10].

The smartphone also being one important device for the nursing student. It could increase the student sensitivity to the education information, for example on finding study materials [11]. Smartphones also made the students easier in making their daily tasks. The student doesn't need to go to the internet cafe to do their tasks. The camera feature on the smartphone helping the students to capture information on the books or other information sources. This feature made the students could read the information easily whenever and wherever they want without paying the expensive book [12].

On the other side, the smartphone also can cause many problems due to excessive use. Four from five persons always checking their smartphones before starting their activity on the day [13]. The smartphone's features make the user are more focus on the smartphone rather than the environment around them. This condition slowly affects the smartphone user's behavior. One of them is smartphone addiction [14,15].

Smartphone addiction is an addiction behavior due to the excessive smartphone use which possible causing social problems, such as social isolation and difficulties in running activities in daily life [16]. On the physical domain, the excessive smartphone used can cause difficulty in concentrating, headache, blurred vision, and pain on the wrist and the neck [17]. While psychologically, smartphone addiction can lead to stress, anxiety, depression, sleep disorder, poor quality of sleep [17,18,19,20].

A study found that participants with a high level of smartphone addiction experienced poor quality of sleep. This study also found a significant relationship between smartphone addiction and the quality of sleep [21,22]. This study assumed that the smartphone excessive used can disturb the biological and circadian rhythm [23].

A pilot study that also conducted prior to the study on the nursing student in Nursing Study Program, Faculty of Medicine, at Udayana University. This pilot study showed that most students have a high risk of poor quality of sleep. The participant was an active smartphone user since being a student in Junior High School. All participants stated that they usually delay their studying time to play smartphone. This caused they have to delay their sleeping time to study. Based on this data, we interested to investigate the quality of sleep differences based on the level of the smartphone addiction on the nursing student in Nursing Study Program, Faculty of Medicine, at Udayana University.

II. METHOD

This research was a comparative analytic study with a cross-sectional approach. The population in this study was all nursing students in Medical Faculty Udayana University, from the year of academic 2016, 2017, and 2018 which according to academic data were active student. The sample was chosen using probability sampling (proportionate stratified random sampling) and calculated using Slovin formula. One hundred and twenty-three students who met

the inclusion criteria finally participated in this study. This study was conducted on May 7th until 21st 2019.

Data were collected by a self-administered questionnaire filled by the participants in 30 minutes. There were two instruments used in this study: (1) *Smartphone Addiction Scale* (SAS) and (2) *Pittsburgh Sleep Quality Index* (PSQI) questionnaire.

The data were analyzed by univariate and bivariate analysis. The univariate analysis was used to describe the study variables. The bivariate analysis was used to know the differences between the effects happened on the dependent variable. Mann-Whitney test was used because the data were not distributed normally.

III. RESULT

The analysis was done on 123 participants. The univariate analysis showed that 110 participants (89.4%) that could be classified into a young adult group. The participants are dominantly female (84.6%). There are 88 participants (71.5%) were having a normal BMI. Forty-two (34.1%) participants were joining in at least two organizational activities, and 63 participants (51.2%) were spending 8 hours on the campus every day. In this study, 66 (53.7%) students were taking 19 number of credits during the study.

Quality of sleep is affected by internal and external factors. The external factor consists of the condition of the bedroom (lamp, window, and temperature) and alcohol consumption habit. Ninety one participants (74%) never consumed alcohol. Also, 88 participants (72.4%) turned the lamp off during sleeping, 118 participants (95.9%) sleeping with closed window for maintaining the room temperature and 84 participants (68.3%) were having the habit to turn the fan on during sleeping.

Based on data collected by SAS questionnaire, the result showed that the lowest score was 68 and the highest score was 163. Participants' categorization of smartphone addiction showed that 63 nursing students (51.2%) experienced high level of smartphone addiction.

Data collected by PSQI questionnaire showed that the lowest score of participants was 2 and highest score was 13. Participants' categorization of sleep quality showed 84.6% (104 participants) participants' quality of sleep categorized into poor quality of sleep.

The bivariate analysis showed that there was a significant difference in the quality of sleep based on the smartphone addiction level ($p\text{-value} = 0.01$; $\alpha = 0.05$). Because of the $p\text{-value} < \alpha$, we concluded that the H_0 is refused and H_a is accepted.

IV. CONCLUSION

This result showed that the majority of the students are having a high level of smartphone addiction and poor quality of sleep. We also found a significant difference in the quality of sleep based on the level of smartphone addiction. We suggest that the student should be used the smartphone wisely. Self-control is needed to decrease the risk of the smartphone level of addiction. The future study

needs to control the other factors which affected the quality of sleep.

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