DESCRIPTION OF THE QUALITY OF PHARMACY STUDENT SLEEP IN THE PANDEMIC PERIOD OF CORONA VIRUS DISEASE (COVID-19)

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ABSTRACT

Sleep is one of the basic human needs that important to support health. The existence of problems in the sleep phase can be the cause of various medical and psychological conditions. The existence of policy to online learning in Covid-19 pandemic can be one of the factors that can affect the quality of student sleep. This research aims to describe of the sleep quality description of pharmacy students during the pandemic. This research is use the Pittsburgh Sleep Quality Index (PSQI) questionnaire to assessment sleep quality of pharmacy student at the Universitas Muhammadiyah Kalimantan Timur from July to August 2020 and It was obtained as 140 respondents. The PSQI has seven components related to sleep habits including sleep duration, sleep disturbance, sleep latency time, sleep efficiency habits, daytime dysfunction, use of sleeping pills, and overall sleep quality. This research shown that 84.3% respondents is female sex. 42.1% of respondents needed more than 30 minutes to fall asleep. 81% of pharmacy students were classified in the poor sleepers group based on the PSQI scoring results. This shows that most pharmacy students had poor sleep quality during the Covid-19 pandemic.

Keywords: Covid-19 pandemic, Pharmacy student, Pittsburgh Sleep Quality Index (PSQI), Questionnaire, Sleep quality

INTRODUCTION

Sleep is part of the cycle live. This cycle consists of approximately 8 hours of sleep a night and 16 hours of waking during the day. Sleep is a phase for mental recovery and physical function. The sleep phase provides time to enter information into memory, which is obtained during the wakeful period. The sleep phase also the time to the body's systems restore energy and repair body tissues. Individuals with adequate quality sleep have more energy, better cognitive function, improved memory, and a stronger immune system[1]. Sleep is one of the basic human needs that important to support health[2]. Over the years, sleep disorders have become growing public health problem. Sleep disorders affect more than 45% of the world's population[3]. In Weaver's study, it was shown that sleep disturbances were associated with daytime sleepiness and reduced overall quality of life[4]. The existence of problems in the sleep phase can be the cause of various medical and psychological conditions[1].

Adolescent lifestyle can affect the decrease in sleep quality. Its due to academic demands and the influence of the use of electronic media[3]. The use of electronic media by Adolescent, especially students, has increased very rapidly during the corona virus pandemic (Covid-19). Covid-19 is a disease of the respiratory tract caused by severe acute respiratory syndrome coronavirus 2. This disease spreads between

individuals who have direct contact with infected individuals through respiratory droplets[5]. Therefore, since March 2020, to prevent the progression and spread of Covid-19, the Minister of Education and Culture of the Republic of Indonesia has implemented online learning from home[6].

Research related to sleep problems with the impact of online learning was conducted by Khare et al on medical college students during Covid-19 pandemic lockdown period. This study found that 56,6% of these students experienced at least one sleep-related problem. The duration of students staring at the electronic gazettes screen (mobile/tablet/laptop) increased rapidly during the lockdown period compared to before and was significantly different. Around 82,9% students have screen time more than 2 hours in a day. The reason for this change is the online lectures that have been scheduled by Madhya Pradesh Medical Science University. A total of 87,4% students faced difficulty asleep and 70,4% students experienced difficulty in maintaining sleep, where all of them were known have screen time more than 2 hours daily. Based on the analysis conducted, it was found that there was a significant relationship between student sleep problems and screen time they were exposed to during this lockdown period ($p < 0,05$)[7]. The prolonged exposure of artificial light from electronic gazettes can have deleterious effects on health. In another research was connected internet use time to sleep quality on academic performance show that reducing Internet use in adolescents could be an achievable intervention for improving sleep quality, with potentially positive effects on academic performance[8].

The existence of this policy can be one of the factors that can affect the quality of student sleep. Pharmacy students have high academic demands which include theoretical and practical learning, where the entire learning process uses online methods. This research aims to describe of the sleep quality description of pharmacy students during the pandemic and can be an input for lectures to design effective online learning methods without affecting the sleep quality of students.

MATERIAL AND METHOD

Material

In this research, the assessment of students' sleep quality used a questionnaire. The questionnaire used was the Pittsburgh Sleep Quality Index (PSQI). The PSQI has 19 question items that evaluate sleep quality in the past month. The PSQI has seven components related to sleep habits including sleep duration, sleep disturbance, sleep latency time, sleep efficiency habits, daytime dysfunction, use of sleeping pills, and overall sleep quality. This component has a score of 0 to 3, the higher the score describes the worse sleep disturbance. The overall sleep quality seen from the global PSQI score is a combination of all component scores in the questionnaire, where respondents who have a score of more than 5 were classified as poor sleepers and a score of 5 or less is classified as good sleepers. The PSQI was developed in order to assess an array of sleep disturbances that might affect sleep quality and to distinguish between those with good sleep quality and those with poor sleep quality.

General Procedure

The PSQI questionnaire was distributed to pharmacy students using the google form link and filling it out online. The results of filling out the questionnaires were exported in excel form. Data for each question items were grouped according to the PSQI component. All components were scored and added to get a PSQI global score. The PSQI global scores were analyzed to find groups of students who had good sleepers and poor sleepers.

Detection Method

This research was a descriptive observational study with a cross sectional research design. The research was conducted by distributing questionnaires using google form to Pharmacy students at the Universitas Muhammadiyah Kalimantan Timur from July to August 2020. It was obtained as 140 pharmacy students with a sampling technique using the random sampling method. Students who became respondents were pharmacy students with active status and participated in online learning from March - July 2020.

Analytical Discussion

The statistical analysis used was descriptive analyze with the Statistical Package for the Social Sciences (SPSS) application version 21. Descriptive statistical analysis was the basis for statistical analytical. One of the uses of descriptive statistics was knowing or describing the characteristics of research data[9].

RESULT AND DISCUSSION

This research describes the sleep quality of pharmacy students who participated in online learning during the Covid-19 pandemic. This research respondents were 140 people. Respondent characteristics include age, gender, work status, and year of study. Based on the age standard of the world health organization, those over 19 were grouped into adults. The pharmacy students who became respondents in this study were 55.6% who were grouped adults. Female sex was more than male in the Department of Pharmacy at Universitas Muhammadiyah Kalimantan Timur (84.3%). Apart from studying, some pharmacy students work in pharmaceutical services such as pharmacies. In this research, 12.9% of students who continued to work during the Covid-19 pandemic. Research respondents were students in the first, second and third year of study. The characteristics of the respondents in this study could be seen in table 1.

Table 1. Characteristics of Pharmacy Students in Research

Characteristics	Total (N = 140) n (%)
Age	
≤ 19 year	62 (44.3%)
> 19 year	78 (55.7%)
Gender	
Male	22 (15.7%)
Female	118 (84.3%)
Work status	
Work	18 (12.9%)
Doesn't work	122 (87.1%)
Year of study	
1st	51 (36.4%)
2nd	73 (52.2%)
3rd	16 (11.4%)

In evaluating sleep quality, the Pittsburgh Sleep Quality Index (PSQI) questionnaire was used which was given to students who were respondents in the study. The PSQI measures seven

components or parameters of sleep quality, including sleep duration, sleep latency, daytime dysfunction, sleep efficiency habits, subjective sleep quality, sleep disturbances, and use of sleeping pills. The PSQI was an effective instrument used to measure sleep quality and patterns by people[1].

The results of the measurement of the seven components of the PSQI could be seen in table 2. 58.6% of respondents had a sleep time of more than or equal to seven hours, and the average sleep duration of all respondents was seven hours. Sleep duration associated with the risk of death and various diseases including cardiovascular disease, cerebrovascular disease, obesity and depression. In a consensus held by the American Academy of Sleep Medicine and Sleep Research Society, the recommended sleep duration at ages 18-60 years is seven hours. Sleep duration that is too short or too long can have a negative impact on health[10].

In the sleep latency parameter, it could be seen that the percentage score 2 and score 3 were more than the percentage of respondents who have a lower score. The higher the score on this parameter, the longer the sleep latency of the respondent and it often occurs in the past month. Latent sleep time was the time it takes for a person to fall asleep. 42.1% of respondents needed more than 30 minutes to fall asleep. Sleep latency of more than 30 minutes was one of the symptoms that lead to insomnia. Insomnia was the most common sleep disorder. Insomnia was defined as a subjective perception of difficulty starting to sleep despite sufficient opportunities to sleep, and results in some form of disturbance during the day[11]. Disturbance during the day was seen in the parameters of dysfunction or reduced activity during the day. It could be seen that the percentage of respondents who have a score of 2 and a score of 3 was more than the lower scores. This shows that most respondents also experience dysfunction during the day.

In Nilifida's study, it was shown that almost all students (97%) had good sleep efficiency because the feeling of tiredness experienced by students made the body need adequate rest time in bed[12]. These results were in line with the results of the current study, where as many as 82.1% of respondents had good sleep efficiency (≥ 85%). Other sleep quality parameters, namely disturbances during sleep and the use of sleeping pills, showed good results. Most of the respondents experienced only a few disturbances during sleep and as many as 98.6% of respondents did not take sleeping pills to overcome their sleep problems.

The effects of lockdown on sleep disorders are not yet very well understood, but we know that the population spent time more time in bed, spent more time on digital devices close to bedtime, went to bed and got up later, and their sleep quality worsened. In the first study conducted in Spain by Romero-Blanco et al., it was found that three main components related to sleep quality changed significantly from before and after nursing students underwent theory classes were being held virtually during pandemic. First component is sleep duration, student slept more hours during lockdown (8,5 hours vs 7,6 hours). The biggest difference in the second is sleep latency. In university students, this parameter is related to internet addiction. There is an increase in the use of technology before going to bed during lockdown, thus increasing the sleep latency score compared before the pandemic situation. Sleep efficiency is the third one, that

sleep efficiency (the ratio between time in bed and actual sleep time) declined during the lockdown (86,19% vs 89,57%). In other words, even though students spent more hours in bed, they took longer to fall asleep[13]. The another research showed that happened social jetlag, i.e., the mismatch in sleep midpoint between work and free days, was reduced by about 17 min during the pandemic compared with the pre-pandemic state (p < 0.001). Respondents' sleep midpoint was shifted toward morning hours during workdays (p < 0.001)[14]. Beside that, there was too a shift to a later bedtime and waking time, with a reduction in night-time sleep and an increase in day-time napping. Reductions in sleep duration were associated with depressive symptoms[15,16].

Table 2. Pittsburgh Sleep Quality Index Components

Components	Score	Total (N = 140)	Percentage (%)
Sleep duration (hour)	< 5	4	2.9%
	5 – 5.9	20	14.3%
	6 – 6.9	34	24.3%
	≥ 7	82	58.6%
Sleep latency time	0	19	13.6%
	1	37	26.4%
	2	46	32.9%
	3	38	27.1%
Daytime dysfunction	0	1	0.7%
	1	12	8.6%
	2	69	49.3%
	3	58	41.4%
Sleep efficiency habits (%)	≥ 85	115	82.1%
	75 – 84	14	10.0%
	65 – 74	8	5.7%
	< 65	3	2.1%
Overall sleep quality	Very good	13	9.3%
	Good	45	32.1%
	Poor	65	46.4%
	Very poor	17	12.1%
Sleep disturbance	0	2	1.4%
	1	82	58.6%
	2	51	36.4%
	3	5	3.6%
Use of sleeping pill	Never	138	98.6%
	< 1 time a week	1	0.7%
	1 – 2 times a week	1	0.7%
	≥ 3 times a week	0	0%
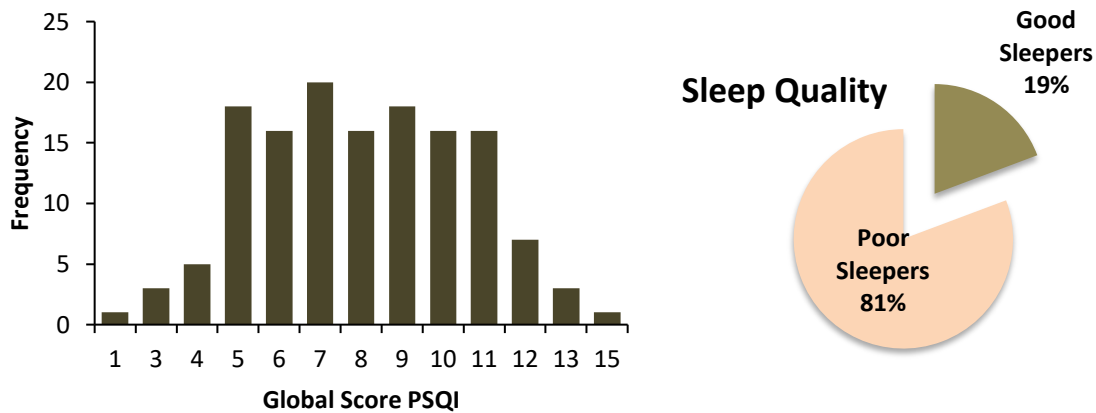
Figure 1. Sleep quality based on the global PSQI score

Based on the results of the PSQI global score, which was the total of all scores on the seven PSQI components, the minimum score was 1 and the maximum score was 15 with the frequency distribution of each global score as shown in Figure 1. Respondents who have a global PSQI score less than or equal to 5 could be classified as good sleepers, which means that they have good sleep quality, and conversely, respondents who have a score of more than 5 were classified as poor sleepers who have poor sleep quality. In this study as many as 81% of respondents were poor sleepers based on the global PSQI score. Several studies also shown more students with poor sleep quality than students who had good sleep quality. The same results were obtained in the study of Lund et al., that shown 60% of all students in an urban Midwestern University had poor sleep quality[17]. Gaultney states that 27% of students have at least one type of sleep disorder[18]. Research by Schalrb et al., shown 55.6% of students had very disturbed sleep quality (global PSQI score > 10)[19]. The decrease of sleep quality or poor sleep could affect the learning process and decrease the GPA score[20].

During the Covid-19 pandemic, students were required to study online to prevent the spread of the virus that causes Covid-19. Learning using electronic media and learning methods that were more complex than face-to-face learning, such as more tasks during online learning, was likely to affect the quality of student sleep. Research by Manalu et al., states that disturbed sleep-wake cycles were influenced by the learning process and social factors such as electronic equipment, internet access and handphone to keep students awake at night such as browsing and chatting, which makes students forget time[21]. Complex lecture activities cause student fatigue to load. This was also the reason why students often sleep late and feel sleepy the next day[22]. Sleep disturbances could interfere with student academic success. Research conducted by Buboltz et al., shown 31% of students experienced fatigue in the morning. Shorter sleep duration and irregular sleep-wake schedules correlated significantly with a lower academic achievement index[23]. In a clinical review, it was shown that sleep problems correlate with learning, neurocognitive performance, and inhibited academic success[24].

The negative impact of sleep disorders, in addition to decreasing academic achievement in students was health disruption such as the immune system, which was very important to be maintained during the Covid 19 pandemic. Decreased sleep quality was associated with immunodeficiency. The immune response to influenza virus vaccination was reduced after six days in sleep-deprived individuals. Susceptibility to flu increases due to poor sleep efficiency. Research by Everson has shown that immune defense disorders occur in mice that experience excessive sleep deprivation. The mice's immune system was unable to fight bacterial attack, leading to death from bacteremia[25]. Its because the sleep-wake cycle was a strong regulator of the immunological process[26]. In future research, it is expected to further observe the factors that affect sleep quality and the interventions that can be given in improving the quality of sleep in students.

CONCLUSION

The results of this research showed that 81% of pharmacy students were classified in the poor sleepers group based on the PSQI scoring results. This shows that most pharmacy students had poor sleep quality during the Covid-19 pandemic. This research shows the need for further evaluation of learning methods during the Covid-19 pandemic to solve poor sleep quality among pharmacy students.

ACKNOWLEDGMENT

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