

The Relationship Between Stress Level and Sleep Paralysis During COVID-19 among Final-Year Nursing Students

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Abstract : World Health Organization warns that stress will increase due to the COVID-19 pandemic situation. Stress can disrupt sleep quality, and the potential for experiencing sleep paralysis is most common in students, which can reduce students' academic abilities. This study aimed to identify the correlation between stress levels and sleep paralysis in final-year nursing students during COVID-19.; The research design describes the correlation with a Cross-Sectional approach with a total sampling technique of 238 final-year nursing students. Data were analyzed using a chi-square test; Results: with Asymp.Sig 0.012<0.05, there is a correlation between stress levels and sleep paralysis. More than half of 152 students (63.9%) with moderate stress levels experienced sleep paralysis, a small portion of 41 (17.2%) students with severe stress levels experienced sleep paralysis and students with mild stress levels 15 (6.3%) experienced sleep paralysis; Conclusions: in this study indicate that the highest stress level experiences sleep paralysis at moderate stress levels. Students are expected to optimize further the counseling activities held by the institution, and the institution can provide interventions such as progressive muscle relaxation therapy to reduce stress levels and sleep disturbances.

Keyword : COVID-19, nursing student, sleep paralysis, stress level

INTRODUCTION

During the COVID-19 pandemic, all learning activities, both at school and in tertiary institutions, used online methods to prevent the development and transmission of COVID-19. Students are among the more numerous individuals in educational institutions who certainly feel the effects of the COVID-19 pandemic; for example, learning which is generally carried out face-to-face, changing to online (Livana, Mubin, 2020). The World Health Organization warns that stress, anxiety and fear will increase during the COVID-19 pandemic (World Health Organization, 2020). The COVID-19 pandemic can affect students physically, academically, financially and psychologically. One of the psychological impacts on students during the COVID-19 pandemic is stress. There was a significant increase in psychological disorders such as anxiety, depression and stress among students compared to the normal period (before the COVID-19 pandemic) (Maia & Dias, 2020). Based on study by Wang et al. the University of Texas, it was found that around 71.26% (n = 1443) of students experienced increased stress during the COVID-19 pandemic (Wang et al., 2020).

In Indonesia, during the COVID-19 pandemic with the result that 55.8% of nursing student felt stressed because the online learning process was getting boring (Livana, Mubin, 2020). Students majoring in nursing have a higher stress level because they often get various demands, especially in academics, such as difficulty studying lecture material, practicum, parental pressure, and student pressure in facing SOCA and OSCE exams. This is evidenced by research Hasanah et al. (2020) at the

Dharma Wacana Academy of Sciences, nursing students, with a result of 12.11%, experienced stress during the COVID-19 pandemic. Final-year nursing students have a higher stress level. In addition to doing other course assignments, they are also required to do a final project, namely a thesis. Sources of stress for students who are working on their thesis during the COVID-19 pandemic, such as guidance that should be done face-to-face becomes online; it is difficult to find topics or titles (Permatasari, Arifin, 2020).

The occurrence of an increase in stress compared to normal periods can cause poor sleep quality, which can increase the risk of experiencing sleep (Potter, Perry, Stockert, & Hall, 2017). Resna Junjunan (2021) regarding the sleep quality among nursing students who are preparing their thesis, it was found that 98 students (68.5%) had poor sleep quality, and 46 (32.2%) experienced sleep disturbances. The ICSD-2 lists the 81 major sleep disorders in 8 major categories: insomnias, sleep-related breathing disorders, hypersomnias of central origin, circadian rhythm sleep disorders, parasomnias, and sleep-related movement disorders. Sleep paralysis itself is part of the type of sleep disorder parasomnias (Thorpy, 2012).

Sleep Paralysis is a temporary period of paralysis experienced before falling asleep or waking associated with rapid eye movement (REM). In the REM sleep phase, the muscles will experience maximum relaxation or paralysis. If a person experiences stress, the production of norepinephrine levels in the body will increase. High production of norepinephrine hormone can disrupt a person's NREM and REM sleep phases. As a result, someone experiencing stress can enter the NREM sleep phase 1 or 2 when they are suddenly in the REM phase. This is what can cause a person to experience sleep paralysis (Ramos, Magalhães, Santos, Vale, & Santos, 2020)

Sleep paralysis is more prone to occur in students, as evidenced by research conducted by Sharpless obtained results from all English and Spanish-language studies in Asia, Africa and America (total N = 36533) that sleep paralysis occurs in 7.6% of the general population and 28.3% in university students (Sharpless & Barber, 2012). The average prevalence rate of sleep paralysis worldwide is estimated at 28.3%. In Indonesia alone, 91.6% of students have experienced sleep paralysis (Kadek et al., 2019). Students at Lubin University with a result of 77% experiencing sleep paralysis at least once in the last month (Wr et al., 2020). In Italy, in 67 respondents who experienced sleep paralysis, it was found that 16% of respondents had experienced sleep paralysis in the past month (Jalal, Romanelli, & Hinton, 2020).

Increased stress on students will also reduce their academic ability, affecting their grade point average. In the preliminary study that was carried out, 14 students felt that the lecture load was so heavy, felt pressured because of the large number of course assignments that had to be completed, complained that weekend time was used to do assignments coupled with the COVID-19 pandemic which required students to stay at home, and changed sleep patterns change due to the demands of the tasks given. When students experience stress, it will cause students to think more about the problems they are experiencing so that a feeling of not being relaxed arises, then disrupts the sleep cycle and makes a person aware suddenly before the REM cycle ends resulting in difficulty moving and speaking. Researchers realize it is important to identify sleep disturbances and stress in college students as early as possible to prevent the adverse effects of sleep disturbances experienced. This study aimed to identify the correlation between stress levels and sleep paralysis in final-year nursing students during COVID-19

METHODS

This type of research described the correlation between the occurrence of sleep paralysis in final-year undergraduate nursing students and the correlation between stress. This research design was cross-sectional. The participants in this research inclusion criteria were final-year undergraduate nursing students at Universitas Padjadjaran. Sampling used a total sampling technique, meaning the entire final year undergraduate student population totalling 238 students, was included.

Data was collected online in April-May 2021. Collecting data was done distributed online because when data is collected, it is pandemic COVID-19, so the government has given rules for social distancing. The author sent informed consent and instruments via Google form to each respondent.

This research used the Perceived Stress Scale (PSS) to measure stress levels (Program State of New Hampshire Employee Assistance, 2020) and Sleep Paralysis as an instrument to measure the incidence of sleep paralysis (Amanda & Nugrahaeni, 2019; J. A. Cheyne, 2005). The PSS consist 10 questions and Sleep Paralysis Instrument consist 7 questions. PSS used as a stress measuring tool with a validity test obtained 0.537 r table used 0.514, which means valid and obtained reliability with results ($\alpha = 0.960$). The sleep paralysis instrument Valid items had item-total correlation coefficient values ranging from 0.494 to 0.776. r table used is 0.254, the result of rxy count is greater than r table, which means that the variable is valid with a total of 8 statements and the reliability of the sleep paralysis scale obtained Alpha coefficient (α) is 0.887.

This research has obtained ethical consideration with the approval of the Research Ethics Commission by Research Ethics at Padjadjaran University with ethical number 333/UN6/KEP.EC/202. This research used bivariate and univariate analysis. Bivariate analysis was performed to determine each respondent's characteristics, and then bivariate analysis was performed. Bivariate analysis was performed on two variables that were suspected to be correlated. Using a non-parametric test because after the data normality test was carried out with Kolmogorov Smirnov. The data was not normally distributed, so it used a non-parametric test, the chi-square test.

RESULTS

This research was conducted at Faculty of Nursing, Universitas Padjadjaran. Data collection was carried out on April-Mei 2021. The samples used as respondents were all undergraduate nursing students currently working on their thesis, with a total of 238 respondents. The average age of respondents is in early adulthood, with a minimum age of 20 and a maximum age of 24

Tabel 1. Frequency Distribution of Respondent Characteristics (n=238)

Characteristics	Frequency	Percentage (%)
Age	6	2.5
20 years	106	44.5
21 years	114	47.9
22 years	11	4.6
23 years	1	0.4
24 years	6	2.5
Gender		
Female	208	87,4
Male	30	12,6
Stress Level		
Mild	22	9,2
Moderate	172	72,3
Severe	44	18,5
Sleep Paralysis		
Yes	208	87,4
No	30	12,6

Based on the results of Table 1, out of a total of 238 final-year nursing student respondents, most of the 208 respondents (87.4%) are female. It was found that out of 238 respondents, that is, more than half of the 172 students (72.3%) had moderate stress levels and the majority of students (87.4%) experienced sleep paralysis.

Tabel 2. Description of Sleep Paralysis based on Respondent Characteristics (n=238)

Characteristics	Sleep Paralysis						
	Not Experiencing Sleep Paralysis		Experiencing Sleep Paralysis		Total	%	
Age	20 years	0	0	6	2.5	6	2.5
	21 years	14	5.9	92	38.7	106	44.5
	22 years	15	6.3	99	41.6	114	47.9
	23 years	1	0.4	10	4.2	11	4.6
	24 years	0	0	1	0.4	1	0.4
Gender	Female	26	10.9	182	76.5	208	87.4
	Male	4	1.7	26	10.9	30	12.6

In an overview of sleep paralysis based on age, it was found that less than half of respondents (41.6%) aged 22 years experienced sleep paralysis. Based on gender, the majority of respondents, 182 (76.5%), were female, experiencing sleep paralysis.

Tabel 3. Stress Level Relationship with Sleep Paralysis Incidence (n=238)

		Sleep Paralysis						
		Not Experiencing Sleep Paralysis		Experiencing Sleep Paralysis		Total	%	Asymp. Sig
Stres Level	Mild	7	2.9	15	6.3	22	9.2	0,012
	Moderate	20	8.4	152	63.9	172	72.3	
	Severe	3	1.3	41	17.2	44	18.5	

Based on Table 3, cross tabulation results show that more than half of the 152 students (63.9%) with moderate stress levels experienced sleep paralysis, a small proportion of students with severe stress levels 41 (17.2%), experienced sleep paralysis and a small proportion of 15 (6.3%) students with mild stress levels experienced sleep paralysis. Result of the chi-square test with the Asymp.sig value obtained is $0.012 < 0.05$, so it can be concluded that H_a is accepted, meaning there is a relationship between stress levels and sleep paralysis..

DISCUSSION

The results of the research on the component characteristics of the respondents are described in Table 1, that the age of the respondents is from the range of 20-24 years, according to Hulukati (2018) This age range is categorized as early adulthood. Currently, students are faced with the COVID-19 pandemic, which will face unprecedented uncertainty and also experience increased stress (Gunawan Aditya, 2021). According to Dewi and Ardani the older a person is the higher the risk of experiencing sleep disorders (Dewi & Ardani, 2013).

Most of the respondents were female following research conducted by Brian A. Sharpless, which found that sleep paralysis occurred more frequently in women (18.9%) than men (15.9%) (Sharpless & Barber, 2012). Female students have high academic stress ranging from severe to very severe (Suwartika, 2014).

The results showed that more than half of 172 students (72.3%) had moderate stress levels, a small proportion of 44 students (18.5%) had severe stress levels, and 22 (9.2%) had mild stress levels. Similar to the research conducted by AlAteeq et al. more than half of 202 students (55%) experienced moderate stress during the COVID-19 pandemic (AlAteeq et al., 2020). Subsequent research

conducted by Aslan and Pekince at the University of Turkey on 662 nursing students during the COVID-19 pandemic resulted in an average PSS score of 31.69 ± 6.91 , indicating that respondents had moderate stress levels (Aslan & Pekince, 2020). Another research by Mardiana and Zelfino, mild stress is alertness and increased tension, which lasts longer, from several hours to several days (Mardiana & Zelfino, 2014). Moderate to severe stress levels can hinder learning, which can reduce student abilities, and causes students to be unable to pay attention or do something, such as lecture assignments (Suwartika, 2014).

There is research on the psychological picture of students during the COVID-19 pandemic at the Dharma Wacana Academy of Nursing students with the result that 12.11% experienced stress (Hasanah et al., 2020). Final-year Nursing students have a very busy lecture schedule, which often causes assignments to pile up. Final-year nursing students working on their thesis have a higher stress level. Research conducted by Permatasari, Arifin & Padilah at PGRI Banyuwangi University environmental factors in students who were working on their thesis during the COVID-19 pandemic, namely face-to-face guidance became online, it was difficult to find topics or titles, could not leave the house to make direct observations in the field, it was difficult to find relevant references and online guidance was felt to be less than optimal (Permatasari, Arifin, 2020).

The research results on the incidence of sleep paralysis stated that most of the 208 students (87.4%) of the 2017 Faculty of Nursing batch experienced sleep paralysis. This follows research conducted in Indonesia, where 91.6% of students have experienced sleep paralysis (Kadek et al., 2019). Research by Wr et al. at the University of Lublin of 439 students found that 140 (31.89%) experienced sleep paralysis (Wr et al., 2020). Research by Jalal et al. conducted research in Italy on 67 respondents who experienced sleep paralysis, it was found that 16% of respondents had experienced sleep paralysis in the past month (Jalal et al., 2020). Sleep paralysis can occur at least once in a lifetime and can also be repeated several times (James Allan Cheyne, Pennycook, Cheyne, & Pennycook, 2013).

According to Marelli et al. by comparing sleep disturbances experienced before the pandemic and during the COVID-19 pandemic, it was found that before the pandemic, 40% of students experienced sleep disturbances, and during the COVID-19 pandemic, an increase of 55% of students experienced sleep disturbances (Marelli et al., 2020). The COVID-19 pandemic resulted in changes in life, such as lifestyle and social relations, which increased stress. This stress can disrupt sleep patterns and sleep quality, thereby increasing the number of sleep disturbances during COVID-19 (Bao, Sun, Meng, Shi, & Lu, 2020).

Based on the bivariate analysis test results using the chi-square test, the Asymp.Sig value obtained was $0.012 < 0.05$. It can be concluded that H_a is accepted, meaning that there is a relationship between stress levels and the occurrence of sleep paralysis. More than half of 152 students (63.9%) with moderate stress levels experienced sleep paralysis, a small proportion of 41 students (17.2%) with high-stress levels experienced sleep paralysis and 15 students (6.3%) with mild stress levels experienced sleep paralysis.

Stress during the COVID-19 pandemic has increased when someone with a high-stress level is more at risk of experiencing sleep problems, which will underlie the worsening of sleep quality (Marelli et al., 2020). Poor sleep quality is at risk of experiencing sleep disturbances. Research conducted by Resna on nursing students who were preparing their thesis showed that 98 students (68.5%) had poor sleep quality and 46 (32.2%) experienced sleep disturbances. Increased stress during COVID-19 increases the risk of sleep paralysis (Resna Junjuran, 2021).

Students are more susceptible to experiencing stress which can cause sleep disturbances due to the stressors they face. Stress can cause sleep paralysis due to the stressor you are facing (Wulandari, Hadiati, 2017). In research conducted by Brian A. Sharpless from 39 studies he obtained in Asia, Africa and America, stress was one of the predisposing factors that led to the occurrence of sleep paralysis (Sharpless & Barber, 2012). Sleep paralysis occurs due to several factors, one of which is stress (Wr et al., 2020). During the COVID-19 pandemic, several factors affected sleep disturbances, including increased concern related to COVID-19 for psychological disorders, one of which was stress

(Hartini et al., 2021). Likewise, Amanda & Nugrahaeni state that mental conditions such as stress can cause sleep paralysis (Amanda & Nugrahaeni, 2019).

For someone who experiences stress and also experiences sleep paralysis. Test statistics show that respondents who experience stress are a risk for experiencing sleep paralysis by 4.6 times when compared with respondents who did not experience stress (M. Arista & Tjang, 2017). When a person feels stressed, there will be an increase in several hormones, namely the hormones epinephrine, norepinephrine, and cortisol, which affect the entire nervous system in the human body and keep our bodies awake. The increase in these hormones affects the sleep cycle, so a person often wakes up from sleep (Sulana et al., 2020). If sleep disturbances occur continuously and are not resolved, they will cause changes in the sleep cycle, reducing the body's immunity and making it irritable. Mental health disorders such as depression, lack of concentration, and feeling tired can ultimately affect the safety of oneself or others (Y. S. T. Arista, 2017).

Based on the discussion above, more than half of the respondents experienced stress and sleep paralysis. Of course, it must be addressed immediately to overcome sleep disturbances that are experienced to overcome the cause first. According Gamayanti et al. told the causes of stress felt by people who were believed to be able to reduce the level of stress experienced, one of which was by doing counseling (Gamayanti et al., 2018). Counseling can reduce the stress felt by a person and exercising for 25 minutes will reduce stress; during a pandemic, sports are carried out, such as gymnastics at each other's homes or other sports (Asri, 2021; Nursalim, 2014). Can also do progressive muscle relaxation therapy; based on the research of Noor et al. there is a decrease in stress levels, especially moderate and severe stress after relaxation therapy is carried out (Noor et al., 2021). The limitation of this study is that researchers cannot control other factors, such as differences in sleep duration and quality in each respondent, which may affect the incidence of sleep paralysis.

CONCLUSION

This research shows that more than half of final-year nursing students have moderate stress levels, and most students experience sleep paralysis during the COVID-19 pandemic. In this study, it is also known that there is a relationship between stress levels and the incidence of sleep paralysis in final-year students during the COVID-19 pandemic. Researchers hope that there will be cooperation between several parties, such as nurses becoming educators carrying out health promotion regarding stress management and providing information about sleep paralysis and for institutions, it is hoped that they can further develop counseling programs for students..

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