The Correlation of Anxiety, Stress, And Depression Level with Insomnia Level On Wanderer Student During The Covid-19 Pandemic

Dessy Wahyuni1, Sulistyani2, Erna Herawati3 and Retno Sintowati4

1 *Faculty of Medicine, University of Muhammadiyah Surakarta,* Central Java, Indonesia

2 *Dept. of Biokimia & Field Lab, Faculty of Medicine, University of Muhammadiyah Surakarta,* Central Java, Indonesia

E-mail: rs160@ums.ac.id

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Abstract

Various conditions that occurred during the COVID-19 pandemic in Indonesia had a psychological effect on the community. This is because the COVID-19 pandemic has become a heavy stressor. The prevalence rate of insomniacs is estimated at 10%, which means that from a total of 238 million Indonesians, about 23 million people suffer from insomnia. The results of the study during the COVID-19 pandemic due to online learning showed that students’ anxiety levels were 41,58% mild and 16,84% moderate, mild stress 12,11%, and mild depression 3,68%.This research aims to determine the correlation between levels of anxiety, stress, and depression with the degree of insomnia in wanderer students during the COVID-19 pandemic. This study used an observational analytical method with a cross-sectional approach conducted in Yogyakarta, namely overseas students who are members of IPMKH with a sample size of 97 out of 125 samples using a probability sampling technique. Data analysis used the chi-square test and logistic regression test with the SPSS program. Based on the chi-square test, there is a correlation between anxiety and insomnia with p-value = 0,012, there is a relationship between stress and insomnia with p-value = 0,001, and there is a relationship between depression and insomnia with p-value = 0,000. Based on the logistic regression test, there is a relationship between the level of anxiety, stress and depression on the degree of insomnia of overseas students during the COVID-19 pandemic with an R-Square Value of 0,455. There is a relationship between the level of anxiety, stress, and depression on the degree of insomnia with a value of R-Square 0,455, It means that the variables of anxiety, stress, and depression have an effect of 45.5% on insomnia.

Keywords: anxiety, stress, depression, insomnia

1. Introduction

The WHO (World Health Organization) declared the COVID-19 disease (Corona Virus Disease 2019) as a global pandemic in March 2020. COVID-19 was caused by the SARS-CoV-2 (Severe Acute Respiratory Syndrome-Related Corona Virus) variant of the coronavirus. More than 38,317,777 cases have been diagnosed globally, with more than 1,088,704 deaths recorded as of October 13, 2020 (Johns Hopkins, 2020).  In Indonesia, from January 3, 2020, to March 11, 2021, there have been 1,398,578 confirmed cases of COVID-19 with 37,932 deaths, reported to WHO. The total dose of vaccine given on March 8, 2021 was 4,534,798 (WHO, 2021). The COVID-19 pandemic has become a severe stressor. Anxiety is a common condition of fear or feeling uncomfortable (Nevid, et al., 2018). Several factors including demographics, can influence pandemic anxiety(Goodwin, et al., 2011). The prevalence of anxiety disorders according to the results of Riskesdas (Riset Kesehatan Dasar) in 2018 showed that 9.8% of those aged 15 years and over, or around 14 million people in Indonesia, experienced mental disorders as indicated by symptoms of anxiety and depression (Riskesdas, 2018 ).

The prevalence of depression according to the results of Riskesdas in the same year showed that it was below 6.1% in the population aged 15 years and only 9% of people with depression were taking medication or undergoing medical treatment (Riskesdas, 2018). According to Cure Research 2017, 30% of people worldwide typically endure chronic insomnia. 10% of Indonesia's population, or approximately 28 million individuals, suffer from insomnia, which is a common condition. The prevalence of insomnia is exacerbated by the growing amount of difficulties that people face in life, including depression and anxiety (Havens, et al., 2017).

Research conducted by Martaria & Reni (2020), showed that personal risk related to COVID-19 was significantly positively related to anxiety levels. The higher the personal assessment of COVID-19, the higher the anxiety. The results of this study are consistent with previous studies which reported that women showed higher anxiety symptoms than men when using the total score from the BAI (Beck Anxiety Inventory). In this study, the results of a personal assessment related to COVID-19 showed that there were still many other factors that influenced the anxiety of the Indonesian people during the COVID-19 pandemic (Martaria & Reni, 2020).

The pandemic COVID-19 influenced society including students. Most of the students are indicating anxiety, depression, and stress because of the pandemic COVID-19. The results of the study during the COVID-9 pandemic showed that the highest level of student anxiety was mild anxiety with 79 students (41.58%) and moderate anxiety were 32 students (16.84%) with online learning. The results of research related to stress levels showed that there were several students who experienced mild stress, 23 students (12.11%) due to online learning. The results of the study for depression showed that 7 (3.68%) students had mild depression (Uswatun, et al., 2020).

Based on the data above, the researcher is interested in taking the title Relationship of Anxiety, Stress, and Depression Levels with Degrees of Insomnia in Overseas Students during the COVID-19 Pandemic.

1. Method

This study used an observational (non-experimental) quantitative analytical research design with a cross-sectional study approach. This method is used to determine the relationship between levels of anxiety, stress, and depression with the degree of insomnia in overseas students during the COVID-19 pandemic. The sample of this study amounted to 125 samples which were collected using a google form questionnaire from May 2021 to September 2021. The sampling technique used in this study was probability sampling with simple random sampling.

The data used SPSS software program (statistical product and service solution) version 25.0. Univariate analysis was used to see the percentage levels of anxiety, stress, and depression with the degree of insomnia in overseas students during the COVID-19 pandemic. Bivariate analysis using Chi-Square test serves to analyze the relationship between the independent variable and the dependent variable. Multivariate analysis used a logistic regression test to connect 2 independent variables and 1 dependent variable.

1. Result

**Univariate analysis**

Table 1. Frequency distribution level of anxiety, stress, depression, and insomnia

|  |  |  |  |
| --- | --- | --- | --- |
| Variable |  | Frequency | Percentage(%) |
| Anxiety | Normal | 62 | 63.9% |
|  | anxious | 35 | 36.1% |
| Stress | Normal | 60 | 61.9% |
|  | Stress | 37 | 38.1% |
| Depression | Normal | 65 | 67.0% |
|  | depress | 32 | 33.0% |
| Insomnia | Non-Insomnia | 47 | 48.5% |
|  | Insomnia | 50 | 51.5% |

Table 1 showed each number of respondents from all research variables. Based on univariate analysis of independent variables, 35 (36.1%). While the analysis of univariate variables, respondents who experienced insomnia were 50 (51.5%).

**Bivariate analysis**

1. Bivariate analysis of anxiety level with insomnia

Table 2. Frequency distribution level of anxiety with insomnia

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Insomnia | | Non-Insomnia | | p-value | OR value |
|  | N | % | N | % |  |  |
| Anxiety |  |  |  |  |  |  |
| Normal | 26 | 26.8% | 36 | 37.1% | 0.012 | 3.021 |
| Anxious | 24 | 24.7% | 11 | 11.3% |  |  |

Based on the data analysis in Table 2 using the chi-square test, the results showed that respondents were not anxious (normal-mild) and experienced insomnia when returning 26 (26.8%), respondents were not anxious (normal-mild) and did not experience insomnia. when found 36 (37.1%), respondents were anxious (moderate-very severe) and experienced insomnia was 24 (24.7%), and respondents who were anxious (moderate-very severe) and no longer had insomnia were 11 respondents (11, 3%) .

The results of the bivariate analysis of anxiety on insomnia obtained a p-value of 0.012 (<0.05), this means that a person's anxiety has a significant relationship with insomnia. Then the OR value is 3,021, which means that if someone experiences anxiety, there will be 3,021 times the risk of experiencing insomnia.

1. Bivariate analysis of stress level with insomnia

Table 3. Frequency distribution level of stress with insomnia

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Insomnia | | Non-Insomnia | | p-value | OR value |
|  | N | % | N | % |  |  |
| Stress |  |  |  |  |  |  |
| Normal | 23 | 23.7% | 37 | 38.1% | 0.01 | 4.343 |
| Stress | 27 | 27.8% | 10 | 10.3% |  |  |

Based on the analysis of the data in Table 3 using the chi-square test, it was found that respondents who were normal (normal-mild) and experienced insomnia found 23 (23.7%), respondents who were normal (normal-mild) and did not experience insomnia. revealed 37 (38.1%), respondents who experienced stress (moderate-very severe) and experienced insomnia again 27 (27.8%), and respondents who experienced stress (moderate-very severe) and did not experience insomnia repeated 10 (10, 3%).

The results of the bivariate stress analysis on insomnia obtained a p-value of 0.001 (<0.05), this means that a person's stress level has a significant relationship with insomnia. Then the OR value is 4,343, which means that if a person experiences stress (moderate-very severe), there will be 3,021 times the risk of experiencing insomnia.

1. Bivariate analysis of depression level with insomnia

Table 4. Frequency distribution level of depression with insomnia

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Insomnia | | Non-Insomnia | | p-value | OR value |
|  | N | % | N | % |  |  |
| Depression |  |  |  |  |  |  |
| Normal | 24 | 24.7% | 41 | 42.3% | 0.000 | 7.403 |
| Depress | 26 | 26.8% | 6 | 6.2% |  |  |

Based on the analysis of the data in Table 4 using the chi-square test, the results obtained that respondents who were normal (normal-mild) and experienced insomnia returned 24 (24.7%), respondents who were normal (normal-mild) and did not experience insomnia again 41 (42.3%), respondents who experienced depression (moderate-very severe) and experienced insomnia as many as 26 (28.8%) and respondents who experienced depression (moderate-very severe) and did not experience insomnia as many as 6 (6.2 ). %).

The results of the bivariate analysis of depression on insomnia obtained a p-value of 0.000 (<0.05), this means that a person's level of depression has a significant relationship with insomnia. Then the OR value is 7,403, which means that if someone is depressed, then there will be 7,403 times the risk of experiencing insomnia.

**Multivariate analysis**

Table 5. Frequency distribution level of depression with insomnia

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | B | OR (ExpB) | IK 95% | | p-value | R-square |
| Min | Max |
| Anxiety | 2.317 | **10.140** | 2.290 | 35.219 | 0.00 | 0.455 |
| Stress | 1.899 | **6.679** | 2.021 | 22.079 | 0.02 |
| Depression | 2.351 | **10.501** | 3.014 | 36.584 | 0.00 |
| Constant | -2.167 |  |  |  |  |

Analysis of the data in Table 5 using logistic analysis, the R-square value by Nagelkerke obtained results of 0.455 (0.455 x 100% = 45.5%), so it means that the variables of anxiety, stress, and depression have an effect of 45.5% with insomnia.

The logistic regression hypothesis test of the anxiety variable got an OR (ExpB) of 10,140 with a p-value of 0.00 (P<0.05), so that partially anxiety has a significant relationship with insomnia, if someone experiences anxiety, there will be a risk of 10,140 times experiencing anxiety. insomnia. The stress variable obtained a p-value of 0.02 (P<0.05) and an OR (ExpB) of 6.679, so partially that stress has a significant relationship with insomnia, if someone experiences stress, there will be a risk of 6.679 times experiencing insomnia. The depression variable has a p-value of 0.0 (P<0.05) and an OR (ExpB) of 10.501, so it partially means that depression has a significant relationship with insomnia, if someone is depressed, there will be a risk of 10,501 times experiencing insomnia.

1. Discussion

This study used a descriptive analysis design with a cross-sectional approach, namely making observations at one time to determine the relationship between independent variables and monitoring variables. Data were taken from May 2021 to September 2021. The sample was determined using a simple random sampling technique and this study was conducted on 125 respondents who were overseas students who were members of the IPMKH (Kapuas Hulu Student Association) Yogyakarta. This study got 97 respondents with anxiety distribution 35 (36.1%), stress distribution 37 (38.1%), depression distribution 32 (33%) and insomnia distribution 50 (51.5).

Based on the results of data analysis, obtained a positive and significant relationship between the variables of anxiety, stress, and depression with the degree of insomnia. In general, theoretically, insomnia is a complaint of difficulty initiating or maintaining sleep or non-restorative sleep that lasts at least one month and causes significant impairment or impairment in individual functioning (Sadock, et al., 2009). In insomniacs, difficulty sleeping most nights is accompanied by discomfort after the episode. Insomnia is not a disease, but a symptom. There are several factors that influence insomnia, namely emotional disorders such as anxiety, stress, and depression (APA, 2000).

The results of the bivariate analysis of anxiety levels with insomnia obtained a p-value of 0.012 (<0.05) and an OR value of 3.021, this means that a person's level of anxiety has a significant relationship with insomnia and means that if a person experiences anxiety, there will be a risk of 3,021 times experiencing insomnia. This is in accordance with the results of research conducted by Setiadi and Larasuci (2021) who said that the psychological impacts during a pandemic include post-traumatic stress disorder, confusion, anxiety, frustration, fear of infection, insomnia, and feeling helpless. Anxiety during a pandemic can happen to a person due to predisposing factors including the COVID-19 pandemic, lasting >9 hours at home, excessive online information search, more women, the economy, having a baby, marital status, student status, and learning environment from Internet Network. The percentage of students who have low levels of anxiety is much greater than those who have moderate and high levels of anxiety. This shows that anxiety is a common thing that will be experienced by everyone, it's just that anxiety at a more severe level will not be experienced by many people (Syarli & Arini, 2021).

The results of the bivariate analysis of stress levels with insomnia obtained a p-value of 0.001 (<0.05) and an OR value of 4.343, this means that a person's stress level has a significant relationship with insomnia and means that if a person experiences stress, there will be a risk of 3,021 times experiencing insomnia. This is in accordance with the results of research conducted by Raudatul and Robita (2021) which said that the majority of respondents with severe stress levels had insomnia (54%). The results of this study, research conducted by Daton, et al, showed that the majority of respondents had insomnia as much as 60.74% (Pranata & Asfur, 2021).

The results of the bivariate analysis of the level of depression with insomnia obtained a p-value of 0.000 (<0.05) and an OR value of 7.403, this means that a person's level of depression has a significant relationship with insomnia and means that if a person is depressed, there will be a risk of 3,021 times experiencing insomnia. This is in accordance with the results of research conducted by Rosita (2001) which said that there was a significant relationship between depression and insomnia (Rosita, 2021).

The results of multivariate analysis using logistic regression analysis, the magnitude of the influence of anxiety, stress, and depression variables are 45.5% on insomnia disorders. Someone who experiences anxiety will have a risk of 10,140 times experiencing insomnia, someone who experiences stress will have a risk of 6,679 times experiencing insomnia and someone who has depression will have a risk of 10,501 times experiencing insomnia. Research conducted by Nida and Khatifah (2021) found a relationship between anxiety, depression, and stress with the sleep quality of UMS Medical Faculty students during the COVID-19 pandemic. The value of R = 0.463 in this study shows that the variables of anxiety, depression, and stress affect sleep quality by 46.3% and as much as 53.7% is influenced by other variables (Fauziyah & Aretha, 2021).

Anxiety that occurs in overseas students during the COVID-19 pandemic is generally caused by excessive fear of contracting the virus and fear of facing lectures during the COVID-19 pandemic. Excessive anxiety in overseas students can lead to generalized anxiety disorder (GAD, Generalized Anxiety Disorder) which is a disorder condition characterized by excessive and irrational events and may even be unrealistic to the events of daily life (Sullvian, et al., 2007). ). Anxiety disorders in students can also be caused by stress and depression. Excessive disturbances can cause insomnia symptoms in students because of excessive fear and worry that will occur throughout the day so students are unable to stop thinking and cause sleep disturbances (Syarli & Arini, 2021).

Stress levels for overseas students during the COVID-19 pandemic tend to be high due to the emergence of pressures that members attach to during the pandemic, such as feeling lonely or having difficulty actively studying. Overseas students who experience stress, in general, will feel an atmosphere that makes them feel uncomfortable such as irritability, feeling lonely, and losing interest in doing a job. High levels of stress on students during the COVID-19 pandemic can cause students to experience sleep disorders because stress can provoke the student's brain to continue working so students will find it difficult to sleep. This is in accordance with the results of research conducted by Raudatul and Robitah (2021), the chi-square test obtained in the research p-value of 0.000 (<0.05), so it can be said that there is a relationship between student stress during the pandemic and insomnia in college students. [Pranata & Asfur, 2021] [Pranata & Asfur, 2021].

Apart from stress levels, the degree of insomnia can also be caused by depression. Depression is a period of disruption of human function related to feelings of sadness and accompanying symptoms including changes in sleep patterns and appetite, psychomotor, concentration, anhedonia, fatigue, feelings of hopelessness and helplessness, and suicide (Kaplan, et al., 2010). The depression experienced by overseas students during the COVID-19 pandemic is a result of students not being able to deal with high levels of stress. Depression can cause insomnia or sleep disturbances because in the depressed phase students tend to experience changes in their minds, and students will often feel confused about situations that will cause difficulty sleeping (Fauziyah & Aretha, 2021).

Theoretically, the neurotransmitters associated with GAD (Generalized Anxiety Disorder) are GABA (Gamma Amino Butyric Acid), serotonin, norepinephrine, glutamate, and cholecystokinin which on PET examination (Positron Emission Tomography) patients with GAD found a decrease in the basal ganglia and white masses. brain (Howard, 2007). Stress causes an increase in ACTH (Adrenocorticotropic Hormone) secretion by the anterior pituitary gland which is followed by an increase in hormone secretion in the form of cortisol within a few minutes (Guyton & Hall, 2012). Just like GAD, in mood disorders, there are also two neurotransmitters that are most involved, namely norepinephrine and serotonin. Decreased serotonin can trigger depression and suicide, besides that dopamine activity in depression also decreases (Kaplan, et al., 2010).

The human sleep-wake process is regulated by the hormone melatonin. The hormone melatonin will be produced when it gets dark (the light intensity decreases), so that someone will arrive when this hormone arrives at night. The opposite effect can occur through the secretion of the hormone cortisol due to the physical stress produced during exercise. The hormone cortisol, which should decrease at night, increases and can keep a person awake at night. Physiologically the hormone cortisol is secreted to deal with stress during activities, so it has the effect of increasing alertness and making it difficult for a person to stand up (Guyton & Hall, 2012).

The limitations of the author in conducting this research are influenced by many factors that cause the time it takes the author to collect respondent data. The thing that has the most influence on this research is that this research was conducted during a pandemic, so the authors could not directly collect data. Data collection was carried out through the distribution of questionnaires distributed via google-form. This causes the author to not be able to directly supervise filling out the questionnaire.

1. Conclusion

There is a significant relationship between the level of anxiety, stress, and depression with the degree of insomnia, with an R-square value of 0.455, meaning that the variables of anxiety, stress and depression have an influence of 45.5% on insomnia disorders.

References

1. APA, 2000. *The Diagnostic and Statistical Manual Disorder.* Washington DC: American Psychiatry Association.
2. Delzo, J., 2017. *Insomnia Cure Research 2017: Placebo Treats Sleep Problems As Well As Neurofeedback.* [Online] Available at: <https://www.medicaldaily.com/insomnia-cure-research-2017-placebo-treats-sleep-problems-well-neurofeedback-411969> [Diakses 24 Maret 2021].
3. Fauziyah, N. F. & Aretha, K. N., 2021. Hubungan Kecemasan, Depresi Dan Stres Dengan Kualitas Tidur Mahasiswa Fakultas Kedokteran Selama Pandemi COVID-19. Herb-Medicine Journal, Volume IV, pp. 42-50.
4. Goodwin, R., Gaines, S., Myers, L. & Neto, F., 2011. Initial Psychological Responses To Swine Flu. Dalam: COVID-19 Dalam Ragam Tinjauan Perspektif. D.I Yogyakarta: MBRIDGE Press, pp. 137-150.
5. Guyton, A. C. & Hall, J. E., 2012. *Buku Ajar Fisiologi Kedokteran.* 12 penyunt. Jakarta: EGC.
6. Havens, T., Gatlin, J. & Marrison, J., 2017. *The Fibonacci sequence as a cure for insomnia.* [Online] Available at: <https://www.theguardian.com/lifeandstyle/2017/aug/07/the-fibonacci-sequence-as-a-cure-for-insomnia> [Diakses 24 Maret 2021].
7. Howard, E. & et.al, 2007. *Synopsys Of Psychiatry.* Edisi Kesepuluh penyunt. New York: Lippincott-Raven.
8. Jayusman, R. A., 2018. *Hubungan Antara Dukungan Sosial Dan Coping Stres Pada Mahasiswa Perantau Di Yogyakarta.* [Online] Available at: <https://dspace.uii.ac.id/bitstream/handle/123456789/7220/NASKAH%20PUBLIKASI.pdf?sequence=2&isAllowed=y> [Diakses 12 Juni 2021].
9. Johns Hopkins, 2020. *Corona Virus Resource Center COVID-19 Map.* [Online] Available at: <https://coronavirus.jhu.edu/map.html> [Diakses 23 Maret 2021].
10. Kaplan, H., Sadock, B. & Grebb, J., 2010. *Sinopsis Psikiatri Terjemahan Widhadha Kusuma.* Edisi Ketujuh penyunt. Tanggerang: Binarupa Askara.
11. Kurniawan, A., 2020. *Jenis dan Macam Mahasiswa.* [Online] Available at: <http://222.gurupendidikan.co.id/> [Diakses 24 Maret 2021].
12. Martaria, R. & Reni, Y., 2020. Kecemasan Pada Masyarakat Saat Masa Pandemi COVID-19 di Indonesia. Dalam: *BUKU RAOID RESEARCH COVID-19, COVID-19 DALAM RAGAM TINJAUAN PERSPEKTIF.* D.I Yogyakarta: MBRIDGE Press, pp. 137-150.
13. Nevid, J., Rathus, S. & Greene, B., 2018. *Psikologi Abnormal.* Jakarta: Erlangga.
14. Pranata, R. H. & Asfur, R., 2021. Pengaruh Stres Terhadap Kejadian Insomnia Di Masa Pandemi COVID-19 Pada Mahasiswa FK UMSU. Jurnal Ilmiah Kohesi, Volume V, pp. 63-69.
15. Riskesdas, 2018. PREVALENSI DEPRESI\* PADA PENDUDUK UMUR > 15 TAHUN MENURUT PROVINSI, Jakarta: Riskesdas.
16. Rosita, F. N., 2021. Prevalensi dan Asosiasi antara Depresi, Kecemasan, Stres dan Kualitas Tidur pada Mahasiswa Selama Pandemi COVID-19. PSIKODINAMIKA Kajian Ilmiah Psikologi, Volume 20, pp. 131-143.
17. Syarli, S. & Arini, L., 2021. Tingkat Kecemasan Pada Remaja Putri dan Mahasiswa Pada Saat Pandemi COVID-19. Jurnal Ilmiah Cerebral Medika, Volume III, pp. 1-10.
18. Tyas, W. & Savira, S., 2017. Hubungan antara Coping Stres dengan Subjective Well-Being Pada Mahasiswa. *Jurnal psikologi pendidikan.*
19. Uswatun, H., Ludiana, Immawati & Livana, P., 2020. Gambaran Psikologis Mahasiswa Dalam Proses Pembelajaran Selama Pandemi COVID-19. *Jurnal Keperawatan Jiwa,* VIII(FIKKes Universitas Muhammadiyah Semarang bekerjasama dengan PPNI Jawa Tengah), pp. 299-306.
20. WHO, 2020. *Mental health and psychosocial considerations during the COVID-19 outbreak.* [Online] Available at: http://webproxy.to/browse.php/cY1xGDDC/fPiL02y7/quyZ56\_2/FWeSpiLv/fJkxoF6x/yZuuIvTv/LcMW8kyZ/FCn\_2FSn/8HkJCrWm/qtxj5IFZ/1OQC1SXc/YtLi8ipu/MGEODCNu/h8LDIbO6/b5/fnorefer [Diakses 24 Maret 2021].
21. WHO, 2021. *Indonesia : WHO Coronavirus Disease (COVID-19) Dashboard with Vaccination Data.* [Online] Available at: <https://covid19.who.int/region/searo/country/id> [Diakses 24 Maret 2021].