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### Anxiety Related to Insomnia Severity Level in Medical Pre-clinic Students of the Faculty of Medicine, Public Health, and Nursing Science (FK-KMK), Universitas Gadjah Mada

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#### ABSTRACT

**Background:** Anxiety can cause insomnia or sleep disturbances. Sleep disorders are characterized by abnormal sleep patterns that interfere with daily activities. This study aims to describe the relationship between the incidence rate and the severity of insomnia in medical students in the preclinical phase of the Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada. **Methods:** This research is an observational study with a cross-sectional design. This research was conducted online and carried out from October 2020 to June 2021. Data collection was carried out for 2 weeks using Jotform as a data retrieval medium. The questionnaire used is generalized anxiety disorder-7 (GAD-7) to measure the level of anxiety and insomnia severity index to evaluate the severity of insomnia. Spearman's Rank analysis test was conducted to determine the correlation between anxiety levels and the severity of insomnia. **Results:** A total of 130 respondents participated in this study. The majority of respondents are women (71.53%) and are more than 20 years old. Based on Spearman's rank analysis, there was a relationship between anxiety level and insomnia severity ( $\rho = 0.394$ ), and it was statistically significant with a p-value = 0.000 ( $p < 0.05$ ). **Conclusion:** There is a relationship between the level of anxiety and the severity of insomnia in medical students in the preclinical phase of FK-KMK Universitas Gadjah Mada.

#### 1. Introduction

Medical education aims to train and produce competent doctors, advance medical knowledge, and improve public health.<sup>1</sup> However, medical education is considered one of the most academically and emotionally demanding of all other professions. These demands and stress have negative effects on students' psychological well-being and can trigger depression and anxiety.<sup>2-4</sup>

Anxiety is a condition or state of adjustment of a person to new, dangerous, or stressful situations.

Anxiety can be a feeling of discomfort, pressure, or fear that arises before an important event occurs. Anxiety can also impair attention and concentration, memory, and perceptual motor functions, which are important domains that enable medical students and physicians to provide safe medical care to patients.<sup>5,6</sup>

A certain level of anxiety can help us stay alert, but those who suffer from anxiety disorders will feel excessive fear or feelings of worry about future threats that can lead to negative behavior and emotions. Risk

factors for anxiety include genetics, environmental factors, and previous medical conditions. In addition, other factors that can cause anxiety are trauma, stress due to an illness, accumulation of stress, personality, other mental health disorders, having blood relatives with anxiety disorders, drugs, or alcohol.<sup>7,8</sup>

Anxiety can cause sleep problems. In clinical terms, it is called insomnia, namely difficulty sleeping, waking up too early, or waking up feeling unrefreshed. Sleep disorders are characterized by abnormal sleep patterns that interfere with physical, mental, and emotional functioning. Medical students experience different levels of insomnia according to the year of study. The higher the study year, the higher the severity of insomnia. In the preclinical phase, sleep disturbances are generally experienced due to altered circadian rhythms. The increasing demands of assignments and practicums make students often sleep late at night to complete college assignments.<sup>9</sup>

Insomnia can be caused by stress, poor sleeping habits, eating too much at night, having a mental illness, use of drugs, sleep-related disorders such as sleep apnea, consumption of caffeine, nicotine, and alcohol, changes in sleep patterns, changes in activity, etc. changes in health conditions. Insomnia can affect both mentally and physically. Insomniacs have a lower quality of life than non-insomniacs. Complications of insomnia can include poor performance at work or school, a higher risk of accidents due to slow reactions while driving, mental health disorders, such as depression, anxiety, or substance abuse disorders, and increased risk and severity of illnesses, such as high blood pressure, heart disease.<sup>10</sup> This study aims to describe the relationship between the incidence rate and severity of insomnia in phase medical students preclinical Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada.

## 2. Methods

This research is an observational study with a cross-sectional design. This research was conducted online and carried out from October 2020 to June 2021. Data collection was carried out for 2 weeks using Jotform as a data retrieval medium. The questionnaire used is generalized anxiety disorder-7 (GAD-7) to measure the level of anxiety and insomnia severity index to evaluate the severity of insomnia. The research subjects were preclinical medical students, Faculty of Medicine, Public Health and Nursing (FK-KMK), Universitas Gadjah Mada Yogyakarta. The inclusion criteria for the research sample were preclinical phase students, registered as active students, and willing to participate in research. All participants had given informed consent and signed the consent to participate in the study. This study has been approved by the ethical committee of Medical Research Ethics, FK-KMK Universitas Gadjah Mada (Ref. number: KE/FK/0332/EC/2021).

Data analysis includes univariate and bivariate analysis using SPSS for Windows 25.0. The univariate analysis aims to describe each variable. The normality test uses the Kolmogorov-Smirnov to determine if the data that has been collected is normally distributed or taken from a normal population.

## 3. Results

A total of 130 respondents participated in this study. Table 1 shows the distribution of respondents' characteristics. The majority of respondents are women (71.53%) and are more than 20 years old. A normality test was carried out on data on anxiety levels and severity of insomnia using Kolmogorov-Smirnov analysis. The significance value (Sig.) or p-value was 0.00 (< 0.05), so the anxiety level data was not normally distributed.

Table 1. Characteristics of research subjects.

Characteristics of respondents	Total (%)
Age	
< 20	50 (38.46)
≥ 20	80 (61.54)
Gender	
Male	37 (28.46)
Female	93 (71.54)
Year of starting college	
2018	70 (53.84)
2019	60 (46.16)
Total	130 (100)

Table 2. The relationship between anxiety levels and the severity of insomnia.

		The severity of insomnia						Total	R	P-value
		None		Mild		Moderate				
		N	%	N	%	N	%			
Anxiety level	None	39	30.00	20	15.38	2	1.53	61	0.394*	0.000*
	Mild	31	23.84	17	13.07	3	2.30	51		
	Moderate	1	0.76	3	2.30	7	5.38	11		
	Severe	0	0	2	1.53	5	3.84	7		
Total		71	54.60	42	32.28	17	13.05	130 (100%)		

\* Spearman's Rank Test,  $p = 0.05$

Spearman's rank correlation test was conducted because the data obtained were not normally distributed. The results of the analysis showed that there was a relationship between the level of anxiety and the severity of insomnia. The relationship between the level of anxiety and the severity of insomnia has a correlation coefficient of 0.394, so the level of strength of the relationship is sufficient (0.26 – 0.50). The direction of the correlation between the level of anxiety and the severity of insomnia is positive so when the level of anxiety increases, the severity of insomnia also increases. The significance of the correlation between the level of anxiety and the severity of insomnia was 0.000 ( $p < 0.05$ ), so there was a significant relationship between the level of anxiety and the severity of insomnia.

#### 4. Discussion

Medical students are known to have higher anxiety than the general population, whereas medical education that students undergo is known to have

high, challenging, and stressful demands both from within the students themselves and from the environment.<sup>11-12</sup> The results of this study indicate that there is no relationship between the characteristics of the respondents with the level of anxiety and insomnia. However, there was a relationship between the level of anxiety and the severity of insomnia ( $p < 0.05$ ).

The results of this study showed that most of the students did not experience insomnia (54.61%). During the pandemic, offline campus activities are reduced, so students are more organized in their activities and rest. However, there were still some students who experienced mild and moderate insomnia (33.07%; 12.30%, respectively). This is possible due to more screen time than in the pre-pandemic period. All lectures and social activities are carried out online. Increased use of gadgets, especially at night, can have a negative impact on sleep. Blue light from screens can suppress the natural production of melatonin, a hormone that helps

sleep.<sup>13,14</sup> Lack of physical activity and more screen time than usual can be the cause of insomnia in medical students.

Based on bivariate analysis, there is a significant relationship between the level of anxiety and the degree of insomnia in medical students. Previous research stated that there is a relationship between insomnia, anxiety, and depression.<sup>15</sup> Insomnia and anxiety have similar pathogenesis mechanisms.<sup>16</sup> Hyperarousal that occurs in insomnia and anxiety is caused by impaired regulation of brain neurotransmitters, namely cholinergic and GABA-ergic agents. Hyperarousal and sleep deprivation impairs the functioning of the limbic cortical, leading to impaired reactivity and affective regulation.<sup>17</sup> Genetically related studies also show a strong overlap between genetic influences on insomnia and anxiety.<sup>18-19</sup> This is indicated by the comorbidity between the two disorders (insomnia and anxiety).<sup>19-20</sup>

## 5. Conclusion

There is a relationship between the level of anxiety and the severity of insomnia in medical students in the preclinical phase of FK-KMK Universitas Gadjah Mada.

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