



Anxiety level relationship with sleep quality in Post-COVID-19 patients

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ABSTRACT

Background: Coronavirus disease 2019 (COVID-19) is a disease from a virus transmitted through saliva or water droplets that come out of the nose when someone infected with the COVID-19 virus coughs or sneezes. Most people will experience mild to moderate respiratory illness through an infection that attacks. This new virus has not yet found a vaccine or special treatment, so someone infected will most likely recover without special treatment. In this case, it can cause anxiety in humans, resulting in poor sleep quality.

Methods: Cross-sectional data analysis observation. With a sample size of 56 responders, this study's population was post-

COVID-19 patients from Malang Raya. Data were gathered using the Hamilton Rating Scale for Anxiety (HRS-A) and Pittsburgh Sleep Quality Indeks (PSQI) questionnaires. In this study, anxiety is the independent variable and sleep quality is the dependent variable.

Results: According to *Spearman's* statistical test, anxiety and sleep quality have a $p=0.00$, $r=-0.316$ with poor values, indicating a relationship between anxiety levels and sleep quality.

Conclusion: There is a link between the level of anxiety and the quality of sleep in patients who have had COVID-19.

Keywords: anxiety, gender, Post-COVID-19, sleep quality, COVID-19.

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INTRODUCTION

The pandemic of the coronavirus disease 2019 (COVID-19) has had various consequences on human life.¹ The worldwide transmission of acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is rapid and unexpected, with most infected people experiencing no or mild symptoms. Problems with memory, heart palpitations, dizziness, and joint pain. COVID-19 symptoms include coughing, fever, exhaustion, loss of taste or smell, sore throat, headaches, and more serious manifestations such as shortness of breath and chest pain. If these symptoms worsen, they might result in pneumonia, respiratory failure, organ damage, and even death.^{2,3}

However, 15% of patients experience respiratory distress, diffuse alveolar injury, pulmonary inflammatory infiltrates (hyper), and microvascular thrombosis, all associated with raised inflammatory markers. Multiple organs may be damaged in addition to the respiratory symptoms. Thrombotic consequences, cardiac dysfunction and arrhythmias, acute coronary syndromes, and gastrointestinal symptoms are all disorders.⁴

The worldwide outbreak has had far-reaching consequences for human life. One such effect is the psychological one. According to studies, Individuals were mentally affected, particularly when quarantine measures were implemented in 2020.⁵ Furthermore, the many uncertainties of the pandemic have produced anxiety and terror.^{6,7}

Anxiety is a typical reaction to a stressful event, and most people respond positively to supportive interventions and coping skills.^{8,9} Increased anxiety levels, for example, are connected with greater cooperation with government measures and hygienic procedures during the pandemic.¹⁰

Nevertheless, anxiety is a condition of helplessness in someone who has feelings of insecurity and cannot face the demands of the environment. Mental health refers to emotional and psychological well-being and the ability to use ideas and skills to contribute to society. Traumatic situations such as extreme worry, terror, and conflicts that upset and complicate the psyche can produce mental problems. Both biological and psychological reasons can cause this. As an emotional response, neurotic patients are always dominated by sensations of dread and fear. Anxiety can make a person feel uneasy and fearful of their surroundings.¹¹

Sleep is one of the physiological needs that naturally occurs in humans that can result in changes in consciousness status, characterized by a decrease in consciousness and response to the stimulus. Lack of sleep experienced by a person can have an impact on decreased ability to concentrate, make decisions and participate in daily activities and can affect the learning process, impaired memory, and emotional state.^{12,13}

Based on issues, exposure to early study results, and an absence of research on the association

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between anxiety levels and sleep quality in Post-COVID-19 patients, this study was done to determine the relationship between anxiety levels and sleep quality in Post-COVID-19 patients.

METHODS

This study employed analytical observational research with a cross-sectional design. This research was carried out online in January 2023 using Google Forms. The participants in the study were post-COVID-19 patients from Malang Raya. This study used purposive sampling, with inclusion and exclusion criteria established. A comprehensive sample of 56 respondents was obtained. The Hamilton Rating Scale for Anxiety (HRS-A) and Pittsburgh Sleep Quality Indeks (PSQI) questionnaires were used to collect data. The data was then processed and analyzed with the SPSS 20 computer program, which included the Kolmogorov-Smirnov and Spearman Rho correlation tests.

RESULTS

According to Table 1, the characteristics of respondents observed in this study are gender, anxiety level, and sleep quality. Most responders (52% were men) and the highest level of anxiety (38% were moderate). In the majority of responders (52% were men), the level of anxiety was moderate (38%), and sleep quality was the least affected (53%).

Table 2 indicates significant $p=0.014$ and $r=-0.326$ data, indicating a relationship between anxiety levels and sleep quality. However, the value

is negatively proportional. Furthermore, with a value of -0.326 , the association between anxiety levels and sleep quality is weak.

DISCUSSION

According to the research, women are one of the risk factors for post-COVID-19 syndrome. According to this study, women are more prone than males to experience anxiety because a hormone called adrenaline rises when stress arises. Anxiety can impair the immune system by interfering with communication between the endocrine, neurological, and immunological systems. Females are more worried than males for a variety of reasons, according to research.^{14,15}

One of the causes for females' increased fear and anxiety levels could be their gender roles. Because women are more encouraged to share their distress, their anxiety reactions may be heightened. According to the study, women have a more negative perception of the COVID-19 risk and see the pandemic as more dangerous to the community.^{16,17} Furthermore, girls easily show emotions, while guys suppress them and appear powerful. Biological factors may also contribute to women's high fear and anxiety. In other words, hormonal factors and reproduction may trigger women's anxiety.¹⁸

The study's findings show a link between anxiety levels and sleep quality in post-COVID-19 patients in Malang Raya. This relationship can be seen from the data analysis results showing a correlation value of sleep quality with a result of 0.014 , which is worth a positive with an inverted value rate. During the early stages of the pandemic, many adults reported mental health problems, including high levels of anxiety and symptoms of depressive disorders, significant adjustment difficulties, and multiple COVID-related stressors, with isolation from society and home confinement being particular stressors.¹⁹ Moreover, more than half of the group was a bad sleeper, and 89% reported that their sleeping patterns had changed since the pandemic began.^{20,21}

Each person's level of anxiety is unique and impacted by how they adjust to and overcomes situations that cause worry. When a person suffers stress or psychological issues (distress, anxiety, or depression) due to a stressor, the body responds by activating the system known as the hypothalamic-pituitary- which produces cortisol, according to basic stress theory.^{22,23} When the cortisol level in the body is high, the melatonin level is repressed, disrupting the sleep-wake cycle.²⁴

There are some disadvantages to this study.

Table 1. Characteristics of Post-COVID-19 patient respondents

Characteristics	Frequency	Percentage
Gender		
Man	29	52%
Woman	27	48%
Anxiety Level		
No Worries	21	37%
Mild Anxiety	12	21%
Moderate Anxiety	21	38%
Severe Anxiety	2	4%
Sleep quality level		
No sleep disturbances	29	53%
Pretty good	8	15%
Bad	15	27%
Very bad	3	3%

Table 2. Anxiety level relationship with sleep quality in patients Post-COVID-19 in Malang Raya

Variable		Frequency	P-value	r
Independent	Dependent			
Anxiety Level	Sleep Quality	56	0.014	-0.033

Some assumptions should be avoided because the data was voluntarily acquired from participants via an Internet application. Because the data is based on participants' claims, some biases (such as social acceptance errors) probably exist. According to our recommendations, future studies using different approaches should be undertaken on other samples.

CONCLUSION

This study found an inverse link between anxiety levels and sleep quality in post-COVID-19 patients, implying that anxiety has a major impact on poor sleep quality. It is envisaged that future research will pay closer attention to how severe the anxiety level disturbance is with sleep quality in post-COVID-19 individuals.

ETHICAL CLEARANCE

Before beginning the study, the authors requested permission to give sample information.

CONFLICT OF INTEREST

The authors of this work declare that there is no potential conflict of interest.

FUNDING

Any institution did not assist in this research.

AUTHOR CONTRIBUTIONS

ROLP created the study design, gathered and analyzed data, and wrote the manuscript. AM and B.P. analyzed the results of the data analysis and wrote the text.

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