ORIGINAL ARTICLE

Correlation Between Stress, Anxiety and Depression With Sleep Quality of Covid-19 Patient Treated in Isolation Ward

Jhonny Prambudi Batong[1], Luqman Hidayatullah[1], Alfia Rifanti[1], Dini Darayani Husni Putri[1], Rohmaningtyas Hidayah Setyaningrum[1,2], Debree Septiawan[1,3], I Gusti Bagus Indro Nugroho[1,2]

[1] Department of Psychiatry, Faculty of Medicine Sebelas Maret University, Surakarta, Central Java, Indonesia
[2] Department of Psychiatry, Sebelas Maret University Hospital, Surakarta, Central Java, Indonesia
[3] Department of Psychiatry, Doctor Moewardi General Hospital, Surakarta, Central Java, Indonesia

ABSTRACT

Introduction: Stress plays an important role in COVID-19 patients. Sleep disturbances were associated with anxiety, depression, and suicidal behavior. Proper treatment for sleep disorders is important to reduce the symptoms of psychiatric disorders and suicide. This study aims to determine whether there is a correlation between stress, anxiety, and depression on sleep quality of Covid-19 patients treated in isolation wards. **Methods:** A cross-sectional study design was conducted between July 2020 to November 2020. Subjects for this study were 54 respondents who met the inclusion criteria. The rest of the sample were excluded based on Exclusion criteria. Hospital Anxiety and Depression Scale-14, Perceived Stress Scale-10, and Pittsburgh Sleep Quality Index was used, all of the instruments were validated in the Indonesian version. The SPSS version 25 was applied for descriptive and bivariate Pearson correlation analysis. **Results:** The study showed that the average age was 38 years old, male is to female ratio showed that women were more affected than men (n=28; 51.9%), married status (n=37; 68.5%), and highly educated (n=29; 53.7%). There are correlation between stress (r=0.399; *p*-value=0.003), anxiety (r=0.375; *p*-value=0.005) and depression (r=0.374; *p*-value=0.005) with the sleep quality in patient with COVID-19. **Conclusion:** There are several mental disorders due to Covid-19 outbreak, but the main thing was related to stress, anxiety, and depression. All these were related to the quality of sleep of Covid-19 patients in isolation wards.

Keywords: COVID19, Stress, Anxiety, Depression, Sleep

Corresponding Author:
Jhonny Prambudi Batong, M.D
Email: drprambudi@gmail.com
Tel: +6282170810188

INTRODUCTION

In December 2019, there was an increase in the number of identified cases of Novel Coronavirus (2019-nCoV) infection in Wuhan, China. On 29th December 2019, the first 4 cases were reported and all related to the Hunan (South China) seafood market (1). On January 30th, 2020 the World Health Organization (WHO) declared that the COVID-19 outbreak was a public health emergency of international concern. This virus had a direct impact on the physical health of millions of people, and besides, is supposed to be a huge mental health threat globally (2). According to the latest data from the Centers for Disease Control and Prevention (CDC), the incidence in Indonesia in 7 days per 100 000 population is 14.2 (moderate incidence) (3). Till December 30, 2020, for Central Java province there were 11.883 suspected cases, 11.326 confirmed cases (treated active cases in hospitals and independent isolation), 5.743 confirmed deaths, and 77.207 confirmed cases (4).

During the COVID-19 pandemic, common medical (physical) complications receive the most attention. But there were only a few studies that dealt with the relationship of SARS-CoV-2 with mental health along with neurotropic potential. Besides, the indirect effects of the pandemic on mental health, in general, there is a growing concern, especially regarding the SARS-CoV-1 epidemic (2002-2003) is associated with many psychiatric complications. Stress plays an important role in COVID-19 patients. The cortisol levels are thought to be significantly higher in COVID-19 patients who die, compared to those who are still alive (5). Several other studies also point to the same findings so that cortisol levels can be pointed out as one of the prognostic predictors of COVID-19 (6).

Two studies investigating COVID-19 patients found significantly higher levels of posttraumatic stress (PTSS) symptoms (96.2%) and significantly higher symptoms of major depression. Patients with preexisting psychiatric disorders report worsening psychiatric symptoms. Studies investigating healthcare workers have found that there is increasing in burnout, depression/depressive symptoms, anxiety, psychological distress, fear of transmitting infection, feelings of incompatibility, substance

dependence, and Post Traumatic Stress Disorder (PTSD) as well as poor sleep quality (7–9). Studies in a general population revealed higher psychological well-being and lower scores for anxiety and depression before the pandemic outbreak. Various factors are associated with a higher risk of psychiatric symptoms and/or low psychological well-being including female gender, poor self-health, concerning COVID-19 (9).

Sleep disturbances have been linked to anxiety, depression, and suicidal behavior. Sleep disturbance is an independent risk factor for suicidal ideation, attempted suicide, and death by suicide. Recognizing and treating sleep disorders especially insomnia is important in difficult times like this pandemic. By doing so we can significantly reduce suicides. It is also important to identify and treat sleep disorders in psychiatric patients and individuals who are under psychiatric care. People with sleep disorders need to be evaluated for suicidal ideation and suicidal intent (10).

This study aims to determine whether there is a relationship between stress, anxiety, and depression scores with the sleep quality score of patients infected with Covid-19 who are being treated in isolation wards.

MATERIALS AND METHODS

This research is an observational, non-experimental study using a cross-sectional design with a quantitative approach, with descriptive and analytical data processing.

Samples

The sampling method used was purposive sampling following the inclusion-exclusion criteria, carried out in the COVID-19 isolation ward at the Sebelas Maret University hospital in Surakarta from July 2020 to November 2020.

In this study the rule of thumb was applies with minimum sample size of 30 subjects. Inclusion criteria for this study included 18-64 years old, infected with COVID-19, mild and moderate clinical symptoms, being able to operate a mobile phone, and fill out an informed consent form. Exclusion criteria included suffering from serious or severe mental disorders (schizophrenia and delirium), pregnant women, and patients receiving corticosteroid therapy.

The Ethical approval (Reference No: 01 / I / HREC / 2021) was obtained from the Health Research Ethics Committee Dr. Moewardi General Hospital Surakarta.

Instrument

This research is bivariate research with independent and dependent variables. Instrument that used were Perceived Stress Scale (PSS-10) to measure stress scores, the Hospitalized Anxiety Depression Scale – 14 (HADS-14) to measure anxiety and depression scores, also the Pittsburgh Sleep Quality Index (PSQI) to measure sleep quality. The three instruments had been validated and reliability tested in the Indonesian version with PSQI (Alpha Cronbach's: 0.63) (11), HADS-14 (Kappa coefficient anxiety scale is 0.706 and the depression scale is 0.681) (12), and for PSS-10 (Alpha Cronbach's: 0.81) (13).

Statistical analysis

The data from study results were analyzed statistically using Windows SPSS VERSION 25. Data in numerical form was checked for data normality using the Kolmogorov Smirnov test (n > 50) and then was tested with the Pearson correlation for the correlation of the two variables and statistical significance defined by a $p \leq 0.05$.

RESULTS

Table I showed that, among 54 respondents the average age was 38 years with the ratio showing more women (28 subjects, 51.9%), with married status (37 subjects, 68.5%), and were highly educated (29 subjects, 53.7%). From the stress scale, it was found to be dominant on the moderate scale, anxiety on the normal scale, and

Table I: Demographic Characteristic

	Covid-19 Patient (n = 54)
Age, Mean ± SD	38.31 ± 13.219*
Gender, n (%)	
Male	26 (48.1 %)
Female	28 (51,9 %)
Marital Status, n (%)	
Married	37 (68.5 %)
Unmarried	17 (31.5 %)
Education, n (%)	
Not School	3 (5.6 %)
Primary School	5 (9.3 %)
Junior High School	3 (5.6 %)
Senior High School	14 (25.9 %)
Undergraduate	24 (44.4 %)
Postgraduate	5 (9.3 %)
Job, n (%)	
Health Worker	16 (29.6 %)
Non Health Worker	38 (70.4 %)
Stres Scale, n (%)	
Mild	30 (55.6 %)
Moderate	24 (44.4 %)
Severe	0
Anxiety Scale, n (%)	
Normal	43 (79.6%)
Mild	8 (14.8 %)
Moderate	3 (5.6 %)
Severe	0
Depression Scale, n (%)	
Normal	51 (94.4 %)
Mild	3 (5.6 %)
Moderate	0
Severe	0
Sleep Quality	
Good	11 (20.4 %)
Bad	43 (79.6 %)

depression again on the normal scale, but sleep quality was poor (43 subjects, 79.6%).

The relationship between stress, anxiety, and depression scores on sleep quality can be seen in table II, where there is a significant positive relationship (The quality of sleep was poor with the increase in stress, anxiety, and depression).

Table II: Correlation between Stress, Anxiety and Depression Score with Quality of Sleep

	r (*p*-value)
Stress Score	0.399 (0.003)*
Anxiety Score	0.375 (0.005)*
Depression Score	0.374 (0.005)*

* Correlation is significant at the 0.01 level (2-tailed)

DISCUSSION

This study found moderate stress scores with poor sleep quality. But anxiety and depression was in normal scale. In contrast to this study another study from the Basque Autonomous Community among 976 individual showed dominant in mild depression level, moderate anxiety level, and mild stress level (14). In a meta-analysis it showed that insomnia often appears in the acute phase of COVID-19 infection, although it can also appear in the post-illness phase (15). Another study stated that disturbances in the quality and quantity of sleep sometimes persist for more than 1 month after infection (16). This is less beneficial in the handling of COVID-19 patients because lack of sleep can have a significant effect on the level of immunity in the face of infection, and the presence of infection can also interfere with sleep quality and vice versa (17).

This study found a positive relationship between stress, anxiety and depression score with sleep quality score ($p<0.01$) which is the same as a study conducted in Australia (n = 1491) with a predominance of the normal scale for stress (n = 1077), anxiety (n = 1175) and depression (n = 920) and all of it had an association with changes in sleep behavior ($p<0.001$) (18).

According to the basic theory of stress, when a person faces stress of psychological disorders (distress, anxiety or depression) related to stressors, the body will respond by activating the hypothalamus-pituitary-adrenal axis, all of which produce cortisol at the end of the proccess (19–21). When the cortisol level is high in the body, melantonin level is supressed which causes disruption of sleep-wake cycle (22). A study conducted in King Saud bin Abdulaziz University for Health Sciences in Riyadh, Saudi Arabia found stress in medical students was associated with poor sleep quality conditions (using the Pittsburgh sleep quality index) (23).

A study conducted in India showed that individuals with insufficient supplies to sustain life during lockdown were found to experience distress that leads to a psychiatric problem. Comparison among different professions has been shown that students and health workers experienced the maximum stress and stress-related psychiatric problem compared to other profession (24).

CONCLUSION

COVID-19 is an outbreak in the world that affects almost all domains of individual life. There are many mental disorders caused by this outbreak, but the main disorder is related to stress, anxiety, and depression. This study found a correlation between stress, anxiety and depression with the quality of sleep in infected patients who were treated in isolation wards. Covid-19 patient must get a comprehensive nonpharmacological therapy like supportive or other psychosocial therapy to overcome stress-related disorder, which is very common with this disease. This study has limitations as it was unable to control confounding factors such as length of stay in the hospital and social support of the patient.

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