

## ORIGINAL ARTICLE

## EVALUATION OF NURSES MENTAL HEALTH DURING THE COVID-19 PANDEMIC IN GOVERNMENT HOSPITAL IN PADANG CITY, INDONESIA

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## ABSTRACT

*The COVID-19 pandemic can impact on a person's physical and mental health, increasing depression, anxiety, and stress. The nurse is one of the dominant professions in providing health services to patients. Therefore, researchers are interested in evaluating the nurses' mental health during the COVID-19 Pandemic in the government hospital in Padang City, Indonesia. This study aims to determine the nurses' mental health level and the factors influencing the condition. The research design used was non-experimental research with a comparative descriptive. The sample was chosen by consecutive sampling. The data was obtained from the demographic information questionnaire and the DASS-42 questionnaire from 108 nurses in the government hospital in Padang City. A total of 6.48%, 15.74%, and 8.3% of nurses experienced depression, anxiety, and stress categorized as mild to very severe based on this study. There was an association between the depression level of the nurse with gender, history of illness, and age, anxiety level with a history of illness, and the stress level of the nurse with gender and history of illness ( $p$ -value < 0.05). It can be concluded that most nurses are in normal mental health status. Some factors that influenced mental health during the COVID-19 pandemic, including gender, history of illness, and age among nurses in the government hospital in Padang City.*

**Keywords:** COVID-19, DASS-42, Nurse, Mental health, Medicine

## INTRODUCTION

In January 2020, WHO released COVID-19 as a Public Health Emergency of International Concern (PHEIC) after discovering an unknown etiology of pneumonia case on December 31<sup>st</sup>, 2019, in Wuhan City, Hubei Province of China<sup>1</sup>. Initially, this disease was given a temporary name, 2019 novel coronavirus (2019-nCoV), but on February 11<sup>th</sup>, 2020, WHO declared Coronavirus Disease (COVID-19) as a disease caused by the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2)<sup>2</sup>. On March 12<sup>th</sup>, 2020, COVID-19 was reported as a pandemic, and as of December 2020, the number of COVID-19 cases that have been reported is 609 million worldwide and 6.3 million in Indonesia<sup>3</sup>.

The COVID-19 pandemic can affect a person's physical and mental health. COVID-19 severely threatens mental health worldwide, increasing post-traumatic stress disorder (PTSD), anxiety, depression, and negative social behavior<sup>4</sup>. Based on previous studies of the SARS or Ebola epidemics, the rapid onset of disease, as well as life-threatening illnesses can cause tremendous distress to healthcare workers. Increased workload, physical fatigue, isolation from family, emotional disturbances, sleep disturbances, the threat of nosocomial infections, limited protective equipment, and pressure to make informed decisions significantly affect their physical and mental health<sup>5,6</sup>.

Based on a previous study of 1563 healthcare workers in China, it was reported that 50.7% of participants had depressive symptoms, 44.7% had symptoms of anxiety, and 36.1% had sleep troubles<sup>6</sup>. Another study also said that 47% of healthcare workers in Canada need psychological support and 42% of health workers in Pakistan are experiencing moderate psychological distress, and 26% are experiencing severe psychological distress<sup>7</sup>. Besides, a study of 3686 respondents in Indonesia by Aulia Iskandar from Padjajaran University found that around 72% of participants experienced anxiety through the COVID-19 pandemic, and 23% of respondents experienced painful conditions.

Poor mental health conditions can affect a person's performance at work. The nurse is one of the dominant professions in providing health services to patients. A nurse plays a role in maintaining patient safety through assigned tasks and responsibilities, such as administering therapy to patients. Therefore, the nurse's mental health must be maintained to minimize the occurrence of medication errors. However, there are no adequate services to determine the risk of mental health problems and respond to these conditions<sup>8</sup>. Intervention or prompt treatment of anxiety conditions is essential to improve health workers' psychological resilience<sup>5</sup>.

Some interventions that can be done to reduce anxiety are maintaining communication with family and limiting working hours. The other interventions include changing shifts, providing rest areas, nutritious food, exercise, special training on stress management, providing complete protective equipment, and short forums regarding complaints of health workers, etc. <sup>9,10,11</sup>. Because there is a risk of mental health problems for nurses as a profession that plays an essential role in patient health services in hospitals, researchers are interested in conducting a study to evaluate nurses' mental health during the COVID-19 pandemic in government hospitals in Padang City.

## METHODS

### Research Design

This research was conducted five months from June-October 2020 in Government Hospital in Padang City. The research design used was non-experimental research with a comparative descriptive design. This design describes variables by comparing two or more variables to see the difference. This method was chosen because it examines the independent variable (demographic information of the nurse) and dependent variable (mental health status of the nurse). Google form was used to manage the data to reduce contact during the COVID-19 pandemic. The form included a declaration of anonymity and confidentiality of the correspondence. The nurses joined the online questionnaire survey by clicking a link. The correspondents who understood the survey requirement and agreed to participate could complete the questionnaire. The informed consent form was used to obtain participants' permission to join the research.

### Population and Sampling

The sample in this study was a nurse who works at the government hospital in Padang City. From the data of the total nurse from Padang City Health Department, the sample was determined using non-probability sampling; consecutive sampling. Consecutive sampling is a sampling approach where each subject that meets the inclusion and exclusion criteria is chosen until the required sample size is reached. The minimum number of samples is determined using Slovin's Equation from a known population of fewer than 10000. The equation:

$$n = \frac{N}{(1 + Ne^2)}$$

where: n= sample size, N= population size, e= tolerated margin of error

The inclusion criteria in this study are: 1) nurses who work at a government hospital in Padang City; 2) been contacted with COVID-19 patients

in the hospital; and 3) nurses who are willing to participate in this research as demonstrated by Informed Concern. A total of 108 nurses in a government hospital in Padang City, Indonesia, were surveyed based on the inclusion criteria and reached the minimum sample requirement.

## Measures

### Demographic Information

The questionnaire also included demographic questions like gender, marital status, age, hospital installation, and history of illness (previous and current condition).

### Depression Anxiety Stress Scale (DASS)

The symptoms of depression, anxiety, and stress of correspondence were assessed using a validated DASS 42 instrument<sup>12</sup>. The DASS-42 tool consists of 42 questions to measure the three negative mental health. Each of the DASS subscales contains 14 items, with a range of responses from 0 to 3. Zero (0) indicates that the issue did not apply to me at all; one (1) indicates that it sometimes did to me; two (2) indicates it applied to me to a significant degree, and three (3) means it applied to me very much, or most of the time. The scores for 14 items for each subscale were added to determine a person's level of mental health.

The questionnaire used in this study was the Indonesian version of DASS 42. The questionnaire was validated and relied by Rahma Widyana in 2020. The questionnaire has a high level of validity. Their study showed that Cronbach's Alpha Coefficients were 0.954, 0.903, and 0.917 for depression, anxiety, and stress scale, respectively; and the item discrimination ranges were from 0.497-0.857, 0.423-0.0.716, and 0.552 to 0.714 for depression, anxiety and stress scale sequentially <sup>12</sup>.

### Ethics

The study was approved by the health research ethics committee RSUP Dr. M. Djamil Padang Hospital with the ethical number 347/KEPK/2020. The research fulfills the (7) seven WHO standards.

### Statistical Analysis

In this study, the data were analyzed using IBM SPSS Statistics 23.0. The frequency and percentage were used to describe the variables. The analysis of association was conducted using a chi-square test. The depression, anxiety, and stress level score of correspondence were calculated by adding up the questionnaire items' scores. P-value <0.05 was considered a significant relation statistically. The independent and dependent variables of the study were demographic information and mental health status, respectively.

**RESULTS**

A total of 108 willing participants in the study were requested to complete the questionnaire. Table 1 shows the demographic characteristic of respondents. The majority were female (79.6%), married (87%), and in the range of 26-35 for age

(53.7%). For COVID-19 status, out of 108 respondents, 2 of the respondents had COVID-19 before. For the history of illness, 96 of respondents has no history of illness, but five respondents have hypertension, two have asthma, two with COVID 19, and the other illness are gastritis, hyperthyroid, and vertigo.

**Table 1: Demographic Characteristics of Participants**

| Variables          | Categories             | Frequencies (n=108) | Percentage (%) |
|--------------------|------------------------|---------------------|----------------|
| Gender             | Male                   | 22                  | 20.4           |
|                    | Female                 | 86                  | 79.6           |
| Marital Status     | Single                 | 14                  | 13.0           |
|                    | Married                | 94                  | 87.0           |
| Age (years)        | 26-35                  | 58                  | 53.7           |
|                    | 36-45                  | 38                  | 35.2           |
|                    | 46-55                  | 12                  | 11.1           |
| History of Illness | Cardiovascular disease | 5                   | 4.63           |
|                    | Respiratory disease    | 4                   | 3.70           |
|                    | Endocrine disease      | 1                   | 0.93           |
|                    | Digestive disease      | 1                   | 0.93           |
|                    | Vertigo                | 1                   | 0.93           |
|                    | None                   | 96                  | 88.89          |

The mental health status of nurses in government hospitals was measured using the DASS-42 questionnaire. For the depression subscale, out of 108 participants, 93.52% were not depressed (score 0-9); 3.70 % were in mild depression (score 10-12); and each 0.93% were moderate (score: 13-20), severe (score: 21-27), and highly severe depression(score >28). Regarding anxiety levels, 84.26% were not anxious (score: 0-7), 8.33% were in mild anxiety

(score: 8-9), 4.63% were in moderate anxiety (score: 10-14), 0.93% were in severe anxiety (score: 15-19), and 1.85% in extremely severe anxiety (score: >20) (table 2). At the same time, for the stress sub-scale, it can be shown that 91.67% of the respondent were not stressed (score: 0-14), 6.48% were under mild stress (score: 15-18), and each 0.93% were in severe (score: 26-33) and highly severe (score: >34) stress (table 2).

**Table 2: Level of Depression, Anxiety, and Stress of Nurses in Government Hospital**

| Severity Level   | Depression  |       | Anxiety     |       | Stress      |       |
|------------------|-------------|-------|-------------|-------|-------------|-------|
|                  | Frequencies | %     | Frequencies | %     | Frequencies | %     |
| Normal           | 101         | 93.52 | 91          | 84.26 | 99          | 91.67 |
| Mild             | 4           | 3.70  | 9           | 8.33  | 7           | 6.48  |
| Moderate         | 1           | 0.93  | 5           | 4.63  | 0           | 0.00  |
| Severe           | 1           | 0.93  | 1           | 0.93  | 1           | 0.93  |
| Extremely Severe | 1           | 0.93  | 2           | 1.85  | 1           | 0.93  |

The association between demographic factors and mental health status was done by a chi-square test. p-value <0.05 means there was a significant relation between demographic characteristics with depression, anxiety, and stress level. Based on the analysis, we found that there was a significant association between the depression level with gender (p=0.031), history of illness (p=0.05), and age (p=0.037). Still, there was no significant association with marital status (p=0.892), as shown in table 3.

Based on our findings, the anxiety level of the nurse is only associated with the history of illness (p=0.11). There was no association between gender (p= 0.073), marital status (p=0.851), and age (p=0.076) (Table 4).

For stress level, there was a significant association between gender (p=0.038) and history of illness (p=0.05) with the stress level of the nurse. There was no association between marital status (p=0.958) and age (p=0.675) (table 5).

**Table 3a. Association between depression levels and demographic group of respondents**

| Factor |        | Depression levels |      |          |        |                  | P value |
|--------|--------|-------------------|------|----------|--------|------------------|---------|
|        |        | Normal            | Mild | Moderate | Severe | Extremely Severe |         |
| Gender | Female | 83                | 2    | 1        | 0      | 0                | 0.031*  |
|        | Male   | 18                | 2    | 0        | 1      | 1                |         |

**Table 3b. Association between depression levels and demographic group of respondents**

|                    |                             |    |   |   |   |   |        |
|--------------------|-----------------------------|----|---|---|---|---|--------|
| History of illness | There is history of illness | 9  | 2 | 1 | 0 | 0 | 0.050* |
|                    | No History of illness       | 92 | 2 | 0 | 1 | 1 |        |
| Marital status     | Single                      | 87 | 4 | 1 | 1 | 1 | 0.892  |
|                    | Married                     | 14 | 0 | 0 | 0 | 0 |        |
| Age                | 26-35                       | 55 | 1 | 0 | 1 | 1 | 0.037* |
|                    | 36-45                       | 37 | 1 | 0 | 0 | 0 |        |
|                    | 46-55                       | 9  | 2 | 1 | 0 | 0 |        |

\*Analysis using the Chi-Square test;  $p \leq 0.5$  means there was a significant relation between depression level with the factor

**Table 4. Association between anxiety levels and demographic group of respondents**

| Factor             |                             | Anxiety Levels |      |          |        |                  | P value |
|--------------------|-----------------------------|----------------|------|----------|--------|------------------|---------|
|                    |                             | Normal         | Mild | Moderate | Severe | Extremely Severe |         |
| Gender             | Female                      | 73             | 8    | 4        | 1      | 0                | 0.073   |
|                    | Male                        | 18             | 1    | 1        | 0      | 2                |         |
| History of illness | There is history of illness | 8              | 1    | 2        | 1      | 0                | 0.011*  |
|                    | No History of illness       | 83             | 8    | 3        | 0      | 2                |         |
| Marital status     | Single                      | 13             | 1    | 0        | 0      | 0                | 0.851   |
|                    | Married                     | 78             | 8    | 5        | 1      | 2                |         |
| Age                | 26-35                       | 52             | 3    | 1        | 0      | 2                | 0.076   |
|                    | 36-45                       | 30             | 5    | 3        | 0      | 0                |         |
|                    | 46-55                       | 9              | 1    | 1        | 1      | 0                |         |

\*Analysis using the Chi-Square test;  $p \leq 0.5$  means there was a significant relation between anxiety level with the factor

**Table 5. Association between stress levels and demographic group of respondents**

| Factor             |                             | Stress Levels |      |          |        |                  | P value |
|--------------------|-----------------------------|---------------|------|----------|--------|------------------|---------|
|                    |                             | Normal        | Mild | Moderate | Severe | Extremely Severe |         |
| Gender             | Female                      | 81            | 5    | 0        | 0      | 0                | 0.038*  |
|                    | Male                        | 18            | 2    | 0        | 1      | 1                |         |
| History of illness | There is history of illness | 9             | 3    | 0        | 0      | 0                | 0.050*  |
|                    | No History of illness       | 90            | 4    | 0        | 1      | 1                |         |
| Marital status     | Single                      | 13            | 1    | 0        | 0      | 0                | 0.958   |
|                    | Married                     | 86            | 6    | 0        | 1      | 1                |         |
| Age                | 26-35                       | 53            | 3    | 0        | 1      | 1                | 0.675   |
|                    | 36-45                       | 36            | 2    | 0        | 0      | 0                |         |
|                    | 46-55                       | 10            | 2    | 0        | 0      | 0                |         |

\*Analysis using the Chi-Square test;  $p \leq 0.5$  means there was a significant relation between stress level with the factor

**DISCUSSION**

Social distancing protocols or quarantine can limit the virus's spread, protect people from COVID-19, and disconnect people from their social lives. Prolonged social isolation increases the risk of depression, anxiety, and stress. Loneliness and social isolation were associated with physical and mental disruption, including increased heart disease, blood pressure, and coronary artery disease<sup>13</sup>. For mental health, quarantine was associated with reduced time and efficiency of sleep, increased depression

symptoms, etc. The physiological stress response can cause an adverse health impact, for example, the increased cortisol level in the body. Mental health can be caused by unhealthy behavior during quarantine and smaller social networks with less support<sup>14</sup>.

Health workers are at high risk for mental problems ranging from mild to severe stress due to the increased pressure they face in the workplace<sup>15</sup>. Stress is related to the worry that one may get sick and contaminate their loved one. Even if they do not have COVID-19, many

healthcare professionals must distance themselves from their loved ones and closest companion. This is a difficult decision and can cause a heavy psychological burden on them<sup>16</sup>. In a study of 5062 healthcare workers in China, it was reported that the incidence of anxiety, stress, and depression were 24.1%, 29.8%, and 13.5%, respectively<sup>17</sup>. Most were afraid to expose COVID to their partner and family, emotionally and physically tired, and not getting sufficient emotional support<sup>17</sup>.

Based on this study, 6.48%, 15.74%, and 8.3% of nurses experienced depression, anxiety, and stress, categorized as mild to very severe. Another study conducted by Alexa (2021) on 176 respondents who were Indonesian Healthcare workers, and the study showed that the prevalence of mental-emotional issues was 18.75% overall, with depression prevalence at 10.8%, anxiety prevalence at 12.5%, and stress prevalence at 12.5%. Based on that study, nurses were more likely than other occupations to experience stress (OR 8.38;  $p=0.014$ )<sup>18</sup>. The nurse is one of the dominant professions in providing health services to patients. Nurses risk COVID-19 exposure because of their close, frequently contacted patients, increased work time, and limited personal protective equipment. A study showed that nurses risk developing stress and mental health disruption more than physicians<sup>15, 16</sup>.

The prevalence of mental-emotional problems in healthcare workers in Indonesia was smaller than the study results in China<sup>17</sup>. The result of this study might diverge from a study in China because the data collection took place during the early COVID-19 pandemic, while our study was conducted seven months after COVID-19 was declared a pandemic. Aside from the time aspect, the sampling sites differ from our study; China was the first country COVID-19 was found. Respondents may have more mental and emotional issues as a result of this. The other reason is that the quarantine has ended in Padang City, and there was a vaccine study.

In this study, researchers discovered that the occurrence of mental-emotional issues among nurses as health professionals occurred not only in the moderate category but also in the severe, and extremely severe depression, anxiety, and stress categories. Diagnosis mental and emotional issues early should have been done to avoid difficulties. Early diagnosis is crucial since mental and emotional issues can lead to a higher load, the need for various treatments, and more serious complications. Concentration issues that can lead to poor work, and other mental-emotional issues are possible complications. In addition to interfering with the immune system and making the body more prone to illness, mental and emotional disorders can also result in self-harm or suicide<sup>18</sup>.

The Indonesian government, through the Ministry of Health, has established Sejiwa (an acronym for "sehat jiwa," which translates to "healthy mind"). Sejiwa is a counseling hotline service through disaster call center 119 extensions 8 to facilitate psychological consultations to support public mental health during the COVID-19 pandemic. People of productive age, kids, teens, and health professionals are the categories most susceptible to psychological collapse, according to the case Sejiwa has received<sup>19</sup>.

In an analysis to determine the association between mental health level and demographic data, we found an association between gender and the status of depression and stress of nurses in the government hospital in Padang City, Indonesia. Women nurses reported having a high level of stress and depression than men. A greater burden of housekeeping and childcare on women may contribute to it, which may significantly compound the pandemic-related distress. This task has increased during the pandemic because the school is off, so they should help the children study. On the other hand, women tend to have a higher risk of depression and stress than a man because of some biological mechanism. Based on a study, females have a greater basal concentration of Adrenocorticotrophic Hormone (ACTH) that can control the production of cortisol.<sup>20</sup> Based on another study, the news about COVID-19 in social media increased the prevalence of depression and stress in women<sup>21</sup>. This result was similar to the study by Tan in Indonesia, that females tend to develop more mental health problems than men<sup>18</sup>.

There was also an association between a history of illness with the level of depression, anxiety, and stress; and between age with depression level. According to a number of studies, age can be a risk factor for COVID-19. Immune responses can vary between age groups since geriatric tend to have weak immune systems and are, therefore, more susceptible to viral infections like SARS-CoV-2. Older individuals often have lower inflammatory signaling tolerance and generate more pro-inflammatory cytokines, possibly resulting in a cytokine storm<sup>22</sup>.

Patients with chronic illnesses like hypertension, asthma, cardiovascular disease, cancer, and diabetes also increase the severity of COVID-19. Hyperglycemia in diabetes mellitus can affect the immunological and inflammatory processes. High concentrations of glucose levels in human monocyte also increase viral replication through the activation of hypoxia-inducible factor 1 $\alpha$  and mitochondrial reactive oxygen<sup>23</sup>. On the other hand, the receptor ACE-2 is supposed to support cardiovascular health, but it can also potentially amplify the harm of coronaviruses. ACE-2 expression and levels in fibroblasts are lower in cardiac patients than in healthy controls, but

they are higher in endothelial cells and cardiomyocytes. Patients with heart failure and aortic stenosis also exhibit this rise <sup>24</sup>.

There was no association between marital status and the mental health of nurses. Most people assume that living with family can reduce loneliness. Families can sometimes be the source of emotional and social support. The social support that friends or family feel can protect against anxiety. According to a study, being single increases your risk of developing psychological problems. Because of the lack of social commitment, a covert sense of loneliness, the absence of cost-sharing arrangements, and the uncertainty of the COVID-19 pandemic associated with anxiety, according to this study<sup>25</sup>. But in this study, there were no associations between them.

The psychological crisis in health workers due to the COVID-19 pandemic can trigger an urgent need to design and implement psycho-social support and program interventions to reduce psychological stress. The intervention can include trauma healing programs, changes in work pressure, hypnotherapy, and mentoring with a psychiatrist <sup>26</sup>. The use of technology like telemedicine to reduce interactions with patients can also be the solution to prevent transmission. Telemedicine is the use of electronic communication to improve the clinical health status of patients. In the midst of a pandemic, the use of telemedicine can cut operational costs of health services and reduce costs incurred by patients<sup>16</sup>.

For controlling COVID-19, live video consulting has some promise. Live video conferencing can lessen the risk of being exposed to respiratory secretions and halt disease transmission to physicians and other healthcare personnel by avoiding direct physical contact. Live video might also be a lifesaver for patients seeking advice on COVID-19, for worried patients, and in place of in-person visits for evaluations of chronic conditions, some medication checks, and triage when telephone cannot adequately handle the situation. In ambulatory and urgent care settings, phone calls and electronic health records (EHR) can facilitate patient screening or treatment without needing in-person visits and can improve team decision-making<sup>27</sup>.

Despite the findings, this study also has some limitations. First, because the data was collected online, some nurses declined to participate in this study. Second, due to a lack of time, data collection is not done to its full potential. Third, many other factors that can affect a person's mental status can be the bias of this study.

## CONCLUSIONS

Based on our study, 6.48%, 15.74%, and 8.3% of nurses in government hospitals in Padang City experienced depression, anxiety, and stress categorized as mild to very severe based on this study. There was an association between the depression level of the nurse with gender, history of illness, and age; anxiety level with a history of disease; and the stress level with gender and history of illness (p-value < 0.05).

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## Conflict of interest

The author(s) declare(s) that there is no conflict of interest regarding the publication of this article.

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