

## Original Research Article

# FACTORS AFFECTING NURSE ANXIETY IN ROLE AS A CAREGIVER DURING THE COVID-19 PANDEMIC

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### Article Info:

Received: December 1, 2020

Revised: May 18, 2021

Accepted: June 5, 2021

### DOI:

<https://doi.org/10.36720/nhjk.v10i1.233>

### Abstract

**Background:** During the Covid-19 outbreak, health workers, especially nurses, are vulnerable to potential psychological symptoms such as anxiety, which can prevent nurses from carrying out their role as caregivers in health services (Lai et al., 2020; Shanafelt et al., 2020).

**Objectives:** The purpose of this study is to analyze the factors that can influence the anxiety of nurses in playing the role of caregiver during the Covid-19 pandemic.

**Methods:** This is a cross-sectional study with a population of all nurses who met the inclusion criteria as much as 105 nurses. The research sample was selected through stratified random sampling and obtained 84 nurses. This research was conducted at RSI Jemursari Surabaya from June until September 2020. The research instruments used in this study were the demographic observation sheet, knowledge questionnaire, and the Hamilton Anxiety Rank Scale (HARS). Data analysis used Pearson chi-square test and multivariate logistic regression.

**Results:** The results of the Pearson Chi-square test showed that of all the factors studied, only age ( $p = 0.004$ ), availability of personal protective equipment ( $p = 0.002$ ), and knowledge ( $p = 0.017$ ) influenced nurses' anxiety. The results of the analysis using multivariate logistic regression test showed that the factor that most influenced nurses' anxiety was the availability of personal protective equipment ( $p = 0.001$ ; OR = -3.062).

**Conclusion:** Younger nurses, inadequate personal protective equipment, and less knowledgeable nurses were at high risk for more severe anxiety. Regular observation of the psychological condition of nurses and the fulfillment of the need for personal protective equipment is needed to prevent increased anxiety in nurses.

**Keywords:** *Nurse, anxiety, Covid-19, caregiver.*

## INTRODUCTION

Corona Virus Disease 19 (COVID-19) is a new type of infectious disease that has recently become a pandemic around the world, including in Indonesia. COVID-19 is caused by

corona viruses such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). The virus that causes COVID-19 is called Sars-CoV-2 (Tim Kerja Kementerian Dalam Negeri, 2020).

COVID-19 affects people from all nations, continents, races and socio-economic groups. Actions that can be taken to prevent a widespread outbreak, namely by social quarantine, dismissing schools, and self-isolation (Shanafelt et al., 2020). According to data released by China's National Health Commission, the number of cases of COVID-19 became 80,815 infected, and 3073 people died in China (L. Huang et al., 2020). On January 30, 2020, WHO held an emergency meeting and declared the COVID-19 outbreak a public health emergency that received international attention (Lai et al., 2020). Indonesia is one of the countries with a significant increase in cases every day. On April 16, 2020, there were 5,516 cases recorded, with 548 cases recovered, and 496 deaths (BNPB, 2020). In East Java, there were 588 cases with details of 98 patients who were declared cured, while 56 patients were declared dead, the most cases were in Surabaya with 299 cases with a total of 45 patients recovered and 31 people died (<http://infocovid19.jatimprov.go.id/> date April 20<sup>th</sup>, 2020)

Respiratory droplet transmission and contact are the main routes, but there is a risk of fecal-oral transmission. Aerosol transmission, mother-to-child transmission and other routes have not been confirmed. The virus is transmitted through droplets produced when a patient coughs, sneezes or talks, and susceptible people can become infected after inhaling the droplets (Tim Kerja Kementerian Dalam Negeri, 2020). The people most at risk of contracting this disease are those who have close contact with COVID-19 patients, including those caring for COVID-19 patients (Kementerian Kesehatan RI, 2020). Facing the current critical situation, health workers as the frontline who are directly involved in diagnosing, treating and treating COVID-19 patients are at risk of experiencing psychological distress. Symptoms that indicate a mental health disorder are anxiety, fear, depression, and insomnia (Lai et al., 2020). Several things that have resulted in

psychological pressure on health workers include the increasing number of positive cases of COVID-19, excessive workload, lack of personal protective equipment, depletion of medicines, and stigma from society. The large number of health workers who have died from contracting COVID-19 also adds to the psychological pressure on health workers, especially nurses. As of April 17, 2020, there were 13 nurses who died from COVID-19 (Tim Kerja Kementerian Dalam Negeri, 2020). Research conducted by Li et al (2020) shows that nurses, whether front-line nurses or not, have psychological distress or trauma during the COVID-19 pandemic. Symptoms of psychological trauma that arise include loss of appetite, difficulty sleeping, physical decline, fear, inability to control emotions, and can even trigger suicide (Creighton et al., 2018). This psychological trauma is stress due to stressors in the form of COVID-19, and a negative consequence of stimulation caused by stress, because acute psychological stress is known to activate the sympathetic adrenal medulla system and the hypothalamic-pituitary adrenal axis, and this two-component response has an impact on physical and mental health and have disease consequences (Turner et al., 2020). Anxiety can be avoided if we identify the factors that influence nurse's anxiety, therefore this study aims to analyze the factors that influence nurse anxiety in carrying out the role of Care Giver during the Covid-19 pandemic.

## **METHODS**

### *Study Design*

The study design was an analytic observational study with a cross sectional approach. The independent variables in this study are the factors that affect anxiety (age, education, gender, length of work, knowledge, personal protective equipment, marital status, work experience), while the dependent variable is nurse anxiety.

### *Setting*

This research was conducted at RSI Jemursari Surabaya in 4 rooms namely IGD,

Azzahra 1, Azzahra 2, and Poli in June-September 2020.

*Research Subject*

The population in this study were all nurses who worked at Jemursari Islamic Hospital Surabaya who met the following criteria:

1. Inclusion criteria: Still actively working in the emergency room, outpatient room, Azzahra 1 and 2 inpatient rooms, working as a nurse for more than one year, and willing to be a respondent.
2. Exclusion criteria: nurses on leave, unsanitary physical condition.

The research subjects in this study were part of the nurses who were taken randomly from 4 rooms (Azzahra 1 = 27, Azzahra 2 = 18, emergency room = 17, outpatient department = 22). The research subjects were taken using stratified random sampling.

*Instruments*

The research instruments used in this study were the demographic observation sheet, knowledge questionnaire, and the Hamilton Anxiety Rank Scale (HARS). The instrument used to measure anxiety is the Hamilton Anxiety Rating Scale (HARS) which consists of 14 questions. Each item is scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0–56, where <17 indicates mild severity, 18–24 mild to moderate severity and 25–30 moderate to severe (Ramdan, 2019).

Item construct validity based on the Pearson correlation ranged from 0.529 to 0.727, Cronbach’s alpha reliability was obtained at 0.756. The questionnaire was created using google form. The google form link is then sent via a group on social media that can be accessed by respondents.

*Data Analysis*

Data analysis was performed using SPSS statistical software version 25 (IBM Corp.). The data analysis used Pearson chi-square bivariate analysis to determine the relationship between the independent variables and the dependent variable, and multivariate logistic regression to explain the relationship between the response variable is data dichotomous/binary variables in the form of large-scale data interval or categorical. It is also determining the factors that most influenced nurse anxiety.

*Ethical Consideration*

This research has passed the ethical acceptance test at the Health Research Ethics Commission of Jemursari Islamic Hospital with number 0184 / KEPK-RSI JS / VII / 2020. Researchers provided research explanations and sent informed consent online. Prospective respondents can fill in informed consent if they agree to be research subjects. Researchers are responsible for ensuring the confidentiality of data provided by respondents.

**RESULTS**

*Bivariate Analysis of the Factors that Influence Nurse Anxiety*

**Table 1.** Bivariate Analysis of the Factors that Influence Nurse Anxiety in Jemursari Islamic Hospital using Pearson Chi-Square Test.

Variable	Anxiety level		Total (%)	p-value	Information
	Mild	Mild to Moderate			
Age (n, %)					Multivariate model
< 40 years old	60 (71.43)	17 (8.33)	77 (91.67)	0.004	
≥ 40 years old	2 (2.38)	5 (5.95)	7 (8.33)		

Variable	Anxiety level		Total (%)	p-value	Information
	Mild	Mild to Moderate			
Sex (n, %)					
Male	18 (21.43)	7 (8.33)	25 (29.76)	0.941	Not in multivariate model
Female	44 (52.38)	15 (17.86)	59 (70.24)		
Last education (n, %)					
Diploma	40 (8.50)	14 (16.67)	54 (64.29)	0.806	Not in multivariate model
Ners	22 (26.19)	8 (9.52)	30 (35.71)		
Marital status (n, %)					
Married	47 (55.95)	21 (35.00)	68 (80.95)	0.117	Not in multivariate model
Single	15 (17.86)	1 (1.19)	16 (19.05)		
Working time (n, %)					
< 8 hours	43 (51.19)	14 (16.67)	57 (67.86)	0.747	Not in multivariate model
≥ 8 hours	19 (22.62)	8 (9.52)	27 (32.14)		
Length of work (n, %)					
< 9 years	50 (59.52)	17 (20.24)	67 (79.76)	0.069	Not in multivariate model
≥ 9 years	12 (14.29)	5 (5.95)	17 (20.24)		
Personal protective equipment (n, %)					
Adequate	60 (71.43)	16 (19.05)	76 (90.48)	0.002	Multivariate model
Inadequate	2 (2.38)	6 (7.14)	8 (9.52)		
Knowledge (n, %)					
Good	61 (72.62)	19 (22.62)	80 (95.24)	0.017	Multivariate model
Less	1 (1.19)	3 (3.57)	4 (4.76)		

Sources: Primary Data of Questionnaire, 2020.

Based on table 1, it showed that most of the respondents who are less than 40 years old (91.67%), women (70, 24%), nursing diploma education (64.29%), married (80.95%), work less than 8 hours (67.86%), work experience less than 9 years (79.76%), wear adequate personal protective equipment (90.48%), and have good knowledge about Covid-19 (95.24%). Most of the respondents experienced mild anxiety (73.81%), while 22 respondents

(26.19%) experienced mild to moderate anxiety. Pearson Chi-square test results showed that of all the factors studied, only age ( $p$ -value = 0.004), availability of personal protective equipment ( $p$ -value = 0.002), and knowledge ( $p$ -value = 0.017) influenced nurses' anxiety. The three factors were then analyzed by using multivariate logistic regression to determine the most dominant factor affecting nurse anxiety.

#### Multivariate Analysis of Factors that Influence Nurse Anxiety

**Table 2.** The Results of the Multivariate Analysis of Factors that Influence Nurse Anxiety in Jemursari Islamic Hospital using Logistic Regression.

Variables	Coefficient	OR (95% CI)	p-value	R square
Age	-2.880	0.056 (0.009-0.339)	0.002	0.539
Personal protective equipment	-3.062	0.047 (0.008-0.273)	0.001	
Knowledge	-3.062	0.047 (0.004-0.506)	0.012	

Sources: Primary Data of Questionnaire, 2020.

Table 2 showed that the factors that significantly influence nurses' anxiety in carrying out their role as care giver are age ( $p$ -value = 0.002) with an OR of 0.056, while the availability of personal protective equipment ( $p$ -value = 0.001) and knowledge ( $p$ -value = 0.012) with OR the same amount of 0.047. The relationship between the factors of age, personal protective equipment, and knowledge has a negative coefficient which indicates that younger, inadequate self-protection equipment, and less knowledge can increase anxiety in nurses. These three factors have an R square of 53.9% which indicates that these three factors affect nurse anxiety as much as 53.9%, while 46.1% is influenced by other factors which are not observed by the researcher.

## DISCUSSION

Nurses who work in their roles as caregivers are at risk of experiencing anxiety during the Covid-19 pandemic. Most of the nurses had mild anxiety while the rest had mild to moderate anxiety. This is in line with the research of Fadli et al (2020) which measured nurse anxiety at three different hospitals showing that most nurses experienced mild anxiety (47.8%) experienced mild anxiety, moderate anxiety (11.3%), severe anxiety (1.7%). Nurses as health workers at the forefront of caring for Covid-19 patients have great psychological pressure such as anxiety.

Factors that significantly influence nurse anxiety were age, availability of personal protective equipment, and knowledge. Most of the nurses who are less than 40 years old have mild anxiety. The younger the age, the heavier the anxiety you feel. The web-based study shows that Younger participants (<35 y.o) were more likely to develop anxiety and depressive symptoms during COVID-19 outbreak than older participants ( $\geq 35$  y.o) (Y. Huang & Zhao, 2020). Another study shows that almost all nurses aged 21-35 years' experience anxiety because the coping mechanism in older nurses is better than younger nurses (Fadli et al., 2020). Increasing age in adulthood is able to handle stress proactively and be able to

anticipate stressors that come (Neubauer et al., 2019). Younger nurses are less experienced in caring for patients, especially during a pandemic, and the coping mechanisms for dealing with anxiety are not as good as those of older nurses.

One of the factors examined in this study was marital status. Most of the nurses who were the subject of this study were married and experienced mild anxiety, but in this study, marital status had no effect on nurses' anxiety ( $p$ -value = 0.117). This is not in line with the research of Fadli et al (2020) which states that marital status has a significant effect on nurses' anxiety because of the risk of transmitting Covid-19 to the family at home. The anxiety of transmitting the virus to the family is reduced possibly because there are hospital operating standards that carry out periodic PCR tests on nurses as well as close observation of vital body signs.

In this study, gender did not affect nurse anxiety, both female and male nurses experienced the same anxiety. This study is in line with other studies which prove that gender does not significantly influence nurse anxiety (Fadli et al., 2020; Y. Huang & Zhao, 2020). Meanwhile, another study shows female nurses are very prone to experiencing anxiety because most nurses are women and they spend most of their time caring for Covid-19 patients (Lin et al., 2020; Pappa et al., 2020; Zhang et al., 2020).

Another factor that also affects nurse anxiety is knowledge. Observations of the nurse's knowledge include etiology, transmission, clinical manifestations, and prevention of covid-19. Knowledge about Covid-19 is needed as a basis. Knowledge and attitudes affect the level of public compliance with self-protection to prevent Covid-19 transmission (Roy et al., 2020). Most of the health workers have good knowledge of 93 people (80.9%) on the prevention of virus transmission. But there are still many who experience mild anxiety (53.9%). This could be due to higher job demands, including long working hours, an increasing number of

patients and changing best practices as Covid-19 information evolves (Fadli et al., 2020).

In contrast to other studies which state there is no significant relationship between knowledge, education, work experience and anxiety (Nemati et al., 2020). Educational level, classification of provinces with number of confirmed COVID-19 cases and knowledge scores were not significantly associated with either STAI-S or STAI-T in the univariate analysis (Lin et al., 2020). Almost all nurses have good knowledge about etiology, transmission, symptoms, signs, prognosis, and treatment. Even though nurses have good knowledge about Covid-19, they still need to be given the latest information about Covid-19 to carry out their role as caregivers.

The availability of self-protection equipment is a factor that most influences nurses' anxiety compared to other factors. Adequate PPE not only protects Hubei pediatric nurses from infectious diseases but also reduces the psychological impact of a pandemic (Zheng et al., 2020). Research by Fadli et al (2020) proves that the lack of availability of personal protective equipment can increase anxiety about the health and safety of nurses. The reasons for the psychological distress to which medical health workers were exposed might be related to the many difficulties of being safe at work, such as the initially insufficient understanding of the virus, the lack of prevention and control knowledge, the long-term workload, the high risk of exposure to patients with COVID-19, the shortage of medical protective equipment (Zhang et al., 2020). Nurses who have the role of caregivers for patients spend most of their time in contact with patients with Covid-19, who are at great risk of contracting it. Transmission can be prevented by the use of adequate personal protective equipment. However, in reality not all rooms provide adequate personal protective equipment.

This research has several limitations, namely first, the limitations of respondents due to hospital licensing problems, not all nurses can be examined, research is not allowed in

certain rooms. Second, researchers cannot apply rigorous sampling during a pandemic. Third, the researcher cannot observe the filling of the questionnaire because the questionnaire is given online, it is possible that there is inaccurate data related to filling out the questionnaire.

## CONCLUSION

Of all the factors studied, namely age, education, gender, length of work, knowledge, personal protective equipment, marital status, and work experience, only age, knowledge and availability of personal protective equipment significantly influenced nurses' anxiety. Younger nurses, inadequate personal protective equipment, and less knowledgeable nurses were at high risk for more severe anxiety. The availability of personal protective equipment is a factor that most influences nurse's anxiety.

## SUGGESTIONS

Regular observation of the psychological condition of nurses and the fulfillment of the need for personal protective equipment is needed to prevent increased anxiety in nurses. Future studies are expected to be able to examine with a larger sample of nurses in East Java and not only measure anxiety but also sleep quality and mental health symptoms in nurses.

## ACKNOWLEDGMENT

The authors would like to thank all participants for their time and excellent cooperation.

## DECLARATION OF CONFLICTING INTEREST

None.

## FUNDING

This research is funded by internal research funds from the Institute for Research and Community Service, University of Nahdlatul Ulama Surabaya.

## AUTHOR CONTRIBUTION

**Yurike Septianingrum:** Designed the study, collected and analyzed data, contributed to the interpretation to the result, and wrote final manuscript.

**Andikawati Fitriasari:** Collected and analyzed data, contributed to the interpretation to the result, and drafted the manuscript.

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**Cite this article as:** Septianingrum, Y., Fitriasaki, A., & Wardani, E.M. (2021). Factors affecting nurse anxiety in role as a caregiver during the Covid-19 pandemic. *Nurse and Health: Jurnal Keperawatan*, 10 (1), 108-115. <https://doi.org/10.36720/nhjk.v10i1.233>