

Determinants of Preparedness Management and Nurses' Response to COVID-19 Prevention Measures at a Government-Owned General Hospital in Indonesia

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ABSTRACT

Backgrounds: The increasing number of COVID-19 cases demands the preparedness of nurses as the front line in providing health services to prevent being infected with COVID-19. This non-natural disaster has been declared a pandemic epidemic in the world so that efforts must be made to overcome it

Objectives: The purpose of this study was to determine the factors that influence the management of preparedness and nurse response to COVID-19 prevention measures in a government-owned public hospital in a province in Indonesia.

Methods: This quantitative study used a correlative design with a cross sectional approach to 220 nurses who were selected using a proportionate stratified random sampling technique. The data were obtained using a self-report questionnaire and analyzed using the Chi-Square test and Logistic Regression.

Results: The results showed that the effective response factor and facility readiness were the factors that most influenced the nurse's preparedness and response to COVID-19 prevention measures in hospitals. Nurses are expected can maintain their already very good preparedness so that no more nurses are infected with the COVID-19 virus and are ready to be on standby with a new variant of the virus. Hospitals are expected to carry out routine maintenance of facilities so that preventive measures for COVID-19 nurses can be carried out effectively and appropriately and with adequate facilities and infrastructure.

Keywords: Preparedness, COVID-19, Prevention, Nurse, Hospital

INTRODUCTION

In early 2020, the world faced a catastrophic Coronavirus Disease 2019 (COVID-19) pandemic, with positive cases reported in every country with a total of more than 8 million cases worldwide.¹ The World Health

Organization (WHO) has designated this pandemic disaster as a public health emergency that is troubling the world because the increase in the number of cases occurred quite quickly and across countries.² This pandemic disaster is estimated to cause a fairly high number

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of cases in Indonesia, with 6,051,850 people exposed to COVID-19 and 156,510 deaths, 500 new cases per day although the recovery also continues to show an increase as of 19 May 2022.³ COVID-19 disease is an infectious disease caused by severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2) a new type of virus that infects the human respiratory system with symptoms such as fever, cough and shortness of breath are common signs and symptoms of COVID-19 patients or indicated person.⁴

The first case of COVID-19 was detected in Indonesia in early March 2020 with the number of new cases seen experiencing 2 spikes in the addition of new cases, namely in mid-July 2021 as many as 56,757 the number of victims increased significantly then decreased for 7 months until February 2022 as many as 63,956 there was a spike new cases significantly, this increase was due to the number of cases caused by the Delta Variant.³ The findings of a global survey on COVID-19 infections in 52 countries showed that 22,073 health workers in hospitals tested positive, most of the infected health workers were nurses in charge of treating COVID-19 patients.² Indonesia is one of the countries affected by the COVID-19 pandemic.⁴ Cases of spread have spread to 350 regencies/cities in 34 provinces in Indonesia.⁵ The Indonesian government reported that 5.8% of health workers confirmed positive for infection.⁶ As of May 30, 2022, as many as 12,087 health workers were confirmed to have COVID-19 and 717 nurses were declared dead.³ Aceh is one of the provinces in Indonesia with the number of COVID-19 cases ranked 19th in Indonesia.⁷ A total of 9912 nurses were reported to have tested positive, and 395 died in Aceh Province.⁶

This COVID-19 virus is spreading so fast with a high number of infected people, for this reason, fast and appropriate handling is needed. Nurses who have direct contact with patients are at high risk of contracting the COVID-19 virus.⁸ To reduce the spread of the COVID-19 virus, the participatory role of nurses in preventing the spread is

urgently needed, including by increasing the preparedness of nurses in the event of an emergency or a spike in new cases with new variants.⁹ Nurse readiness is a factor that needs to be considered for work safety.⁵ The forms of nurse preparedness can include aspects of knowledge, facility readiness, effective response and readiness of Personal Protective Equipment (PPE).¹⁰ Existing literature review shows that research on nurse preparedness for COVID-19 prevention measures has not been widely carried out and indicates that it still needs to be done in Indonesia. This study aims to identify the factors that influence the preparedness management and nurse response to COVID-19 prevention measures in government-owned public hospitals in Indonesia.

METHODS

This quantitative research used a correlative design with a cross sectional approach. The research was conducted in one of the Regional General Hospitals in one of the westernmost provinces in Indonesia. The total respondents involved were 220 nurses who worked in inpatient rooms, emergency departments and special care for COVID-19 who were selected using proportionate stratified random sampling technique.

Data collection was carried out with three instruments, namely the demographic, preparedness and preventive measures questionnaire for nurses which was adapted from the WHO Hospital Readiness Checklist questionnaire for COVID-19. Prior to use, the instrument was translated into Indonesian by health professionals who are proficient in English. The back translation method is used in this translation process. An adaptation process to achieve a different language version of the English language instrument which is conceptually equivalent in each country/culture is also carried out. The instrument used has a good level of reliability. The preparedness question has a Cronbach alpha score of 0.89, the preventive action question has a Cronbach alpha score of 0.87.

Questionnaires were distributed and answered directly by the respondents when the respondents were on duty. The data that has been collected is then checked for completeness, processed and analyzed using univariate, bivariate, and multivariate analysis.

Respondents' involvement is voluntary. All respondents involved were given an explanation about the research including the pros and cons of their involvement and asked to give written consent for their involvement in the research. Research ethics permit was obtained from the Ethics Committee of RSUD dr Zainoel Abidin Banda Aceh with Registration Number: 1171012P.

Table 1: Demographic Characteristics of Respondents

Characteristics of Respondents	Frequency (f)	Percentage (%)
Age (Mean \pm SD)	33.18 \pm 5.580	
Length of work	7.827 \pm 5.1032	
Status		
Marry	193	87.7
Single	26	11.8
Widow/ widower	1	0.5
Gender		
Man	38	17.3
Woman	182	82.7
Last education		
D-III	135	61.4
D-IV	2	0.9
Nurse	82	37.3
S2	1	0.5
Job status		
Civil servant	81	36.8
Contract	139	63.2
COVID-19 Vaccine		
Vaccine 2	28	12.7
Vaccine 3 (Booster)	192	87.3
Caring for COVID-19 Patients		
Once	172	78.2
Never	48	21.8

RESEARCH RESULTS

Characteristics of respondents

The characteristics of research respondents can be seen in Table 1..

Table 1 shows that the average age of the respondent nurses is 33 years, the average working period in the hospital is 7 years, most of the respondents stated that they were married (87.7%), female (82.7%), educated D-III Nursing (61.4%), employment status as contract employee (63.2%), has received COVID-19 vaccine Dose 3 or Booster (87.3%) and has treated COVID-19 patients (78.2 %).

Level of Preparednessnurses and COVID-19 Precautions

The level of nurse preparedness and COVID-19 prevention measures can be seen in Table 2. As can be seen in Table 2, almost all of the nurses surveyed were in the ready category (94.5 %), most nurses had COVID-19 preparedness in the ready category for the knowledge aspect (88.2%), facilities (83.2%), effective response (88.2%), and availability of PPE (87.7%). A total of 76.4% of nurses also stated that the COVID-19 preventive measures in hospitals were in the good category.

Relationship between Nurse Preparedness and COVID-19 Prevention Measures

The relationship between nurse preparedness and COVID-19 prevention measures can be seen in Table 3. As can be seen, Table 3 shows that there is a significant relationship between nurse knowledge readiness ($p=0.032$), facility readiness ($p=0.015$), effective response readiness ($p=0.0001$), and PPE readiness ($p=0.0001$) with preventive measures. COVID-19 in nurses in hospital.

Factor The Most Dominant Related to COVID-19 Precautions Nurses in Hospitals

Table 4 shows that the variables of facility readiness ($p=0.044$) and effective response ($p=0.013$) are predictors related to COVID-19 prevention measures for nurses. Meanwhile knowledge ($p=0.593$) and PPE readiness ($p=0.064$) were

Table 2: Levels of Nurses' COVID-19 Preparedness and Precautions

<i>Variable</i>	<i>Preparedness</i>	<i>Frequency (f)</i>	<i>Percentage (%)</i>
Preparedness	Ready	208	94.5
	Not ready	12	5.5
Knowledge	Ready	194	88.2
	Not ready	26	11.9
Facility Readiness	Ready	183	83.2
	Not ready	37	16.9
Effective Response	Ready	194	88.2
	Not ready	26	11.9
PPE readiness	Ready	193	87.7
	Not ready	27	12.3
Preventive measure	Well	168	76.4
	Not good	52	23.6

Table 3: Relationship between Preparedness and COVID-19 Prevention Measures

<i>Variable</i>	<i>Preventive measure</i>				<i>Total</i>		<i>p-value</i>
	<i>Well</i>		<i>Not good</i>		<i>f</i>	<i>%</i>	
	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>			
<i>Knowledge</i>							
Ready	153	78.9	41	21.1	194	100.0	0.032
Not ready	15	57.7	11	42.3	26	100.0	
<i>Facility Readiness</i>							
Ready	146	79.8	37	20.2	183	100.0	0.015
Not ready	22	59.5	15	40.5	37	100.0	
<i>Effective Response</i>							
Ready	159	82.0	35	18.0	194	100.0	0.0001
Not ready	9	34.6	17	65.4	26	100.0	
<i>PPE readiness</i>							
Ready	157	81.3	36	18.7	193	100.0	0.0001
Not ready	11	40.7	16	59.3	27	100.0	

Table 4: Selection of Candidates for Multivariate Variables

<i>Predictor</i>	<i>OR</i>	<i>p-value</i>	<i>95% CI</i>	
			<i>Lower</i>	<i>Upper</i>
Knowledge	1.335	0.593	0.463	3,851
Facility Readiness	2,143	0.044	0.956	4,804
Effective Response	3,943	0.013	1.332	11,674
PPE readiness	2,199	0.064	0.954	5.068

not predictors related to COVID-19 prevention measures in nurses and had to be excluded from the logistic regression model.

Further test results with logistic regression test using the Stepwise method can be seen in table 5. As can be seen, Table 5 show that

Table 5: Logistic Regression Test of the Dominant Factors Associated with COVID-19 Precautions

<i>Predictor</i>	<i>OR</i>	<i>p-value</i>	<i>95% CI</i>	
			<i>Lower</i>	<i>Upper</i>
Effective Response	6,693	0.0001	2,771	16,165
Facility Readiness	2,205	0.044	0.986	4,932
Constant	0.013	0.0001		

the factor of facility readiness ($p=0.044$) and effective response ($p=0.0001$) were predictors related to COVID-19 prevention measures for nurses. Table 5 also shows that the effective response factor (OR: 6,69) is the most dominant predictor associated with COVID-19 prevention measures in nurses compared to the facility readiness factor (OR: 2,21).

DISCUSSION

Nurses are at the forefront of treating patients and fighting COVID-19 transmission in hospitals, therefore, preparedness is needed to deal with the current pandemic.⁵ The American Nurses Association continues its strategic support to control and prevent further spread while securing nurses on health care teams and communities.¹¹ Preparedness includes early identification and notification. Nurses need the necessary protection, including quality PPE for protection and the provision of quality care for COVID-19 patients. Nurses need to know COVID-19 protocols, infection control guidelines, early identification, quarantine procedures, and precautions in health care settings.^{12,13}

Based on the results of research that has been done, it is known that preparedness of nurses in the ready category with a frequency of 208 nurses (94.5%) and as many as 168 nurses (76.4%) indicating that preventive measures were in the good category. Preparedness has a positive attitude towards COVID-19 prevention measures in the face of a pandemic.¹⁴ Preparedness and response get good results and can affect preventive measures, therefore nurse preparedness is very much needed in order not to contract

this virus which can ultimately improve the quality of health services in hospitals.¹⁰

Based on the results of the study from the results of statistical tests, the most determinant factors obtained were p -value <0.05 , namely effective response ($p=0.0001$) and facility readiness ($p=0.044$) which means that there is a significant relationship between effective response and facility readiness. with preventive measures with values (OR = 6,693) and (OR = 2,205). The results of the analysis were then calculated using k =logistic regression with SPSS software, the results of the effective response influencing COVID-19 prevention actions on nurses were 6.693 times or 7 times. Then for every 1 time increase in the effective response and readiness of each facility, it will increase 7,016 or 7 times the nurse's COVID-19 prevention measures.

CONCLUSION

Nurse very susceptible against contracting the COVID-19 virus because nurses are at the forefront in dealing with this virus, so nurses need to be prepared for COVID-19 prevention measures to prevent contracting this virus in the event of a spike in new cases in the future. Recognizing this problem, the effective response of nurses who carry out treatment is the most important thing in handling efforts to minimize the incidence of nurses being infected with the COVID-19 virus. Hospital support to overcome nurses to avoid being infected with the COVID-19 virus can be in the form of the availability of complete facilities and the availability of adequate personal protective equipment (PPE) and good knowledge of nurses can prevent the transmission of this virus.

LIMITATIONS OF THE RESEARCH

Research time cannot be carried out at one time, so it requires more enumerators so that data can be collected from one room to the next.

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CONFLICT OF INTEREST

No conflict of interest exists to disclose

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