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## **EMERGENCY PREPAREDNESS INFORMATION AMONG EMERGENCY NURSES AND ITS RELATIONSHIP WITH DISASTER PREPAREDNESS**

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### **ABSTRACT**

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Nurses are health workers who play an essential role in disaster management, so the right strategy is needed in disaster preparedness. Management of disaster is an intervention in the emergency department (ED) that has an essential role in preparedness, emergency responses, and recovery to reduce the effects during and after the disaster. Emergency preparedness information in the ED includes triage and first aid, biological agent detection, accessing critical resources and reporting, the incident command system (ICS), isolation, quarantine and decontamination, psychological issues, epidemiology and clinical decision making, communication and connectivity. This study aims to determine the emergency preparedness information and disaster preparedness. This study used a cross-sectional study design conducted in three emergency departments of a disaster referral hospital in Padang City. Respondents who participated in this study were selected using a purposive sampling technique with inclusion criteria, as many as 61 respondents were selected. A few instruments were used in this study. Emergency Preparedness Information Questionnaire (EPIQ), which aims to measure the preparedness of emergency nurses in dealing with disasters, and the Disaster Preparedness Evaluation Tools (DPET)<sup>®</sup> determine the preparedness of nurses in dealing with disasters. The variables in this study were tested using the Pearson statistical test, which tested the relationship between emergency room nurses' preparedness to deal with disasters and disaster preparedness. The results show the relationship between the emergency preparedness information and the disaster preparedness among nurses with a p-value of 0.003, with low correlation r-value of 0.373. The emergency department is a health service that provides emergency response when a disaster occurs. So that the emergency preparedness information must be improved in dealing with disaster situations becomes optimal.

**Keywords:**

Emergency preparedness information, Disaster preparedness, Nurses

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## BACKGROUND

Disaster conditions and emergency situations so far can be caused by human factors and microorganisms, climate change and geology. Geographically and geologically, Indonesia is located in a zone that has a high potential for disaster. Geographically, Indonesia is situated between two large continents and two oceans and is located on the equator, makes Indonesia has a tropical climate with extreme weather conditions. Disasters can occur without prior warning, at times and places that are rarely foreseen, and can cause injury or damage to infrastructure, specifically to a poorly maintained infrastructure. The high population growth rate and climate change encourage more and more factors causing disasters to emerge.

Badan Nasional Penanggulangan Bencana (BNPB) in 2018 states that almost 98% of disaster events in Indonesia are hydrometeorological disasters. Hydrometeorology is a disaster influenced by weather and climate, such as increased rainfall, hurricanes impacted floods, and landslides. In addition to hydrometeorological disasters, some earthquakes and tsunamis threaten Indonesia. This condition made Indonesia vulnerable to earthquakes due to the shift of the plates (BNPB, 2018). Badan Pusat Statistik (BPS) in 2021 noted that almost 10.115 villages were affected by earthquakes. Over three years, 12 villages/families were affected by the tsunami, 19.675 flood events, 10.246 landslides, and 619 volcanic eruptions. January to April in 2021, BPNB recorded as many as 1.205 natural disasters in Indonesia, increasing death as much as 1.83% (BNPB, 2021).

January-April in 2021, BNPB noted that were eight earthquakes that occurred in Indonesia. It was a threatening situation; almost 5 million people suffered and were displaced (BNPB, 2021). The large number of people who suffer and evacuate due to disasters also brings post-disaster health problems.

A lot of people were suffering caused by the disaster. Damage caused many impacts such as infrastructure, psychological matters, disease post-disaster, and economic failure (Amberson et al., 2020) and (Nursing, 2009). Developed countries such as Japan were losing about 235 million dollars caused by the earthquake in March 2011 (Ae et al., 2020). However, developing countries are the countries most affected by disasters, and this is due to limited state income for the recovery process after the disaster (Nursing, 2009).

Disaster preparedness is one of the steps that can be achieved to minimize the impact caused by the

disaster. Community resilience is the essential thing to minimizing the damage. Community resilience is the government's focus in disaster preparedness management (Amberson et al., 2020). Nurses are one of the health workers expected to respond when a disaster occurs (Nursing, 2009). The Disaster Nursing Competency Framework recognizes nurses have to increase the capacity to protect the risky communities, prevent injury, and improve the functioning of the health system.

Preparedness is a series of activities carried out to anticipate the impact of disasters through organization and appropriate steps (Seyedin, Dolatabadi, & Rajabifard, 2015). Disaster preparedness management and the readiness of nurses in the emergency room in dealing with disasters are integrated into each other (Georgino et al., 2015).

Disaster preparedness can be assessed from the aspects that made it. The elements are preparedness, post-disaster, and the evaluation stage of disaster victims. These three aspects are seen from the knowledge and skills of nurses (Martono et al., 2019). Hospitals are health facilities with a high risk of responding to disasters resulting in increased severity of injuries or even death if not carried out optimally. Nurses are a large number of health workers in hospitals. As many as 33% of the total nurses are estimated to be involved in disaster management (Li, Bi, & Zhong, 2017). In disaster management, the role of nurses has also begun to develop, starting from caring for injured victims, now also developing into the recovery and evaluation stage (Ali et al., 2017). Emergency nurses are one of the first health care provide emergency response in the event of a disaster.

Nursing interventions in the Emergency Department (ED) have essential roles such as prevention, preparedness, recovery response to reduce the effects during a disaster. In the early stages of a disaster, nurses need to make life-saving efforts. However, some research results show that nurses' knowledge about disaster preparedness is lack, such as in Malaysia, less than 60% of nurses have a sufficient level of knowledge (Amberson et al., 2020). Research in Philippines shows that almost 80% of nurses have a low level of knowledge. At the same time research conducted by Rizqillah (2018) as many as 57.7% of nurses have a moderate level of knowledge regarding disaster preparedness. Research in Saudi Arabia conducted by Alzahrani & Kyratsis (2017) found that level of awareness to respond was not proportional to the level of knowledge where the awareness rate of clinical nurses was high but the level of knowledge was sufficient.

The impact of disasters on health service providers such as hospitals also affects health services to the community. However, good quality of disaster management depends on the hospital's preparedness, in this case, the readiness of emergency nurses in facing a crisis. Emergency preparedness in dealing with disasters can be identified in planning, knowledge, capabilities, infrastructure, and training of relevant resources as part of the level of disaster preparedness (Ali et al., 2017). The readiness of emergency nurses in dealing with disasters is in line with disaster preparedness. Emergency preparedness information can be viewed from triage knowledge, detection of biological agents, reports, isolation, quarantine and decontamination, psychological issues, epidemiology and clinical decision making, communication, and connections (Georgino et al., 2015).

This study aims to determine the emergency preparedness information and disaster preparedness among emergency nurses in a referral hospital in Padang City.

## **METHOD**

This study used a cross-sectional design to determine the relationship between emergency room nurses' preparedness for disasters and nurses' preparedness for disasters. This research was conducted in three emergency departments of a disaster referral hospital in the city of Padang, among July-October 2020. This study consisted of 66 emergency room nurses as the population. The sampling method used in this study was purposive sampling technique. By using the inclusion criteria, namely 1st level of disaster nurses, then 61 nurses were selected as respondents. Based on International Council of Nurses (2009) 1st Level Disaster Nurses is a certified professional nurse and / or a nurse assigned to manage a disaster if it occurs. The study was conducted for five months, from June to October 2020.

The data collection process in this study used the Emergency Preparedness Information Questionnaire (EPIQ) and Disaster Preparedness Evaluation Tools (DPET) instruments. DPET is an instrument that aims to determine the preparedness of nurses in dealing with disasters, including: 1) preparedness; 2) mitigation; 3) evaluation. DPET consists of 46 questions with six levels using a Likert scale. The EPIQ aims to determine the nurses' knowledge of nurses in the ER regarding the main competencies in the Emergency Department. The EPIQ includes: 1) triage and first aid; 2) biological agent detection; 3) accessing critical resources and reporting; 4) the incident com-

mand system (ICS); 5) isolation, quarantine and decontamination; 6) psychological issues; 7) epidemiology, and clinical decision-making; and 8) communication and connectivity. This research have been approved by the ethics committee and articles involving human subjects have obtained informed consent by M. Djamil Hospital committee ethics with number 211/KEPK/2020. The value of the mean DPET questionnaire was defined as a mean between 1.00 - 2.99 (weak level), 3.00 - 4.99 (moderate level), and 5.00-6.00 (strong level) (Al et al., 2012; Setyawati et al., 2020).

Process data collection, respondents were given information about the research and informed consent via Microsoft Form. If respondents agree to participate, they will mark their agreement on the consent form on the Microsoft form. After that, the respondents were asked to fill out the questionnaire independently. Statistic analysis used statistic software was done by using the Pearson Correlation Test.

## **RESULT**

### **Characteristics of Respondents**

The results were 81.7% of respondents are women, and as many as 53.3% have a clinical career ladder as a 2nd level clinical nurse.

### **Emergency Preparedness Information and Perception of Nurses in Disaster Preparedness Management**

The results of univariate analysis showed that Emergency Preparedness Information among Emergency Nurses' in Padang was defined as a mean 3.6120 which means nurses' know about the terminology of emergency disaster but have limited knowledge about that topic. Based on The Disaster Preparedness Evaluation Tools (DPET) questionnaires, the level of Disaster Management among Nurses was moderate level, 4.5440 (3.00 - 4.99).

### **Relationship between Emergency Preparedness Informations and perception of Nurses in Disaster Preparedness Management**

The relationship between Emergency Preparedness Information regarding nurses' perception of disaster preparedness management in Padang City hospital is at a low positive level, 0.373. The statistical tests explain that the r-value is 0.373 greater than the r-table (n=60) 0.254. It can be concluded that there is a linear relationship between The Emergency Preparedness Information and Nurses' Perception of Disaster Preparedness Management. The statistical

Table 1. Characteristic Respondent

Variable	Category	f	%
Gender	Male	11	18,3
	Female	49	81,7
Clinical Career Ladder	1 <sup>st</sup> Clinical Nurse	17	28,3
	2 <sup>nd</sup> Clinical Nurse	32	53,3
	3 <sup>rd</sup> Clinical Nurse	8	13,3
	4 <sup>th</sup> Clinical Nurse	2	3,3
	Other	1	1,7

Table 2. Emergency Preparedness Information &amp; Perception of Nurses in Disaster Preparedness Management

Variable	Mean	SD	n
Emergency Preparedness Information	3.6120	0.76697	60
Disaster Nurse Preparedness	4.5440	0.43277	60

Table 3. Relationship Emergency Preparedness Information &amp; Perception of Nurses in Disaster Preparedness Management

Variables	n	r	R	p-value
Emergency Preparedness Information	60	0.373	0.139	0.003
Disaster Nurse Preparedness				

test has met the criteria for The Pearson Correlation Test. The p-value of this test is 0.003, smaller than the alpha value of 0.05, so it means that the correlation between variables is significant.

Based on the analysis results, The Coefisien Determination (R-value) is 0.139, which means Emergency Preparedness Information determines 13% of the level of Disaster Preparedness Management among Emergency Nurses.

## DISCUSSION

The results showed a relationship between emergency preparedness information and nurses' perception of disaster preparedness management, as indicated by a p-value of 0.003 ( $p < 0.05$ ). The r-value indicates the strength of the relationship between the two variables. The Pearson correlation test is 0.373, which means that the relationship between emergency preparedness information and nurses' perception in disaster preparedness management is at a low level. The Coefisien Determination (R-value) is 0.139, which means Emergency Preparedness Information determines 13% of the level of Disaster Preparedness Management among Emergency Nurses. Other

variables and conditions may cause the remaining 87%.

Disasters can happen at any time. The nurse in an emergency room is the first person to respond when a disaster occurs in the hospital. Emergency nurses' major competencies are adequate knowledge and skills regarding the emergency response and recovery after a disaster. So that the provision of health services can be provided optimally (Zhou, et al.). In addition, continuous training on preparedness management can be one thing that increases nurses' knowledge (Martono et al., 2019). Hospital resilience is also essential when dealing with disaster conditions. With the individual and managerial preparation of the hospital, this treatment can protect the nurses themselves from the threat of danger during the emergency response phase and after the disaster. In addition, the high workload in the ER, the high number of visits, and the level of complexity of cases handled in the ER are also challenges for emergency room nurses (Zhong et al., 2014).

Research by Duong, Dip, & Nsg (2009), shows that the nurses in the emergency room in Australia decreased preparedness. The nurses may cause it was lack exposure to disaster preparedness training. The lack of that experience can reduce self-confi-

dence, self-efficacy, and awareness of response during emergency response. Nurses' knowledge of disasters will explore the various efforts nurses can take to increase their understanding of disaster preparedness (Martono et al., 2019). Nurses who take responsibility during disasters are expected to have the initiative to increase their capacity. To reach that, the nurses might be attending scientific classes regarding potential disasters in their area, knowing which emergency contacts to contact if a disaster occurs.

Nurses' preparedness is essential to providing a fast and appropriate response during a disaster emergency response. The competence possessed by each nurse who works in the Emergency Room is the hospital's responsibility hospital to provide quality services to the community. Emergency Preparedness Information contains various aspects that have information that becomes the competence of emergency room nurses in a disaster. The information is: 1) triage and first aid; 2) biological agent detection; 3) accessing critical resources and reporting; 4) the incident command system (ICS); 5) isolation, quarantine, and decontamination; 6) psychological issues; 7) epidemiology, and clinical decision-making; and 8) communication and connectivity (Georgino et al., 2015). From these eight aspects, it can be concluded that the EPIQ is an essential provision for ER nurses to respond well to conditions that often occur in the ER. Negligence can occur due to a lack of preparedness by nurses and hospital managers. Research by Shoji, Takafuji, & Harada in 2020 showed a positive effect on nurses' perceptions of recognizing signs of local disasters in their area when the nurses get disaster preparedness education.

A study suggests that using a disaster preparedness curriculum can improve Emergency Preparedness Information. The curriculum was developed using various methods, namely daily huddle questions, staff meeting presentations, communication with nurses' emails, and whiteboards. With the increased capacity of nurses, it is also expected to be able to strengthen hospitals as one of the optimal resource units when disasters occur (Amberson et al., 2020). The resilience of hospital management also contributes to preparing the available resources, and nurses to form an adequate system for disaster management. Sufficient capacity is needed from hospitals, such as the ability to survive, respond, and respond to emergency and post-disaster situations to maintain health services so as not to collapse. So that essential health services can recover to their original state and adapt during the post-disaster (Zhong et al., 2014).

## CONCLUSION

There was a relationship between emergency nurses' information and nurses' disaster preparedness, as evidenced by the p-value = 0.003. It had a low correlation with  $r = 0.373$ . It is essential to increase the capacity of nurses as a resource who respond first during a disaster, and this must also be strengthened by the hospital's efforts to facilitate these efforts. Nurses can do various actions to know the potential disasters that exist in their area, find out the communication flow with the local government, and find out strategies during the emergency and post-disaster response through disaster management training classes. In addition, the disaster preparedness curriculum can be applied to emergency room nurses as a known basic competency for increasing the capacity of themselves and the Emergency Room itself.

Limitations: The pandemic Covid-19 outbreak in mid of 2020 in Padang lengthened the time for data collection compared to the researcher's plan. Nurses' who get duty in ER were hard to find to get research approval because of self-isolate.

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