

Nurse Preparedness in CHCs: Evaluating Disaster Response Competencies

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Abstract This research aims to provide an overview of the competency of nurses in dealing with the disaster response phase at the Community Health Centers (CHCs) in Padang City. The research uses an exploratory descriptive approach with data collection techniques using a questionnaire in the form of a dichotomous scale. The sample was taken by total sampling from all nurses at two CHCs, namely Kuranji and Andalas in Padang City, totaling 40 people. The results of the analysis showed that the majority of respondents were women (80.81%), who had a Diploma III in Nursing (90.48%) and worked in General Polyclinics and Emergency Rooms (26.19%). Most respondents (78.04%) had never attended disaster training. However, 91.86% of respondents had disaster response competence at the CHC in the good category. It was concluded that the majority of respondents had good service competence in responding to disasters, both in services to individuals and families as well as in handling psychological problems and vulnerable groups. Nurses who respond quickly to disasters have an important role in

reducing the impact of disasters and improving people's quality of life.

Keywords Nurse Preparedness, Community Health Center, Evaluating Disaster, Padang City

1. Introduction

The Republic of Indonesia especially West Sumatra Province as a whole, is in a disaster-prone position, where all geological, meteorological, and natural disasters are caused by human activities [1, 2]. In more detail, Ali [3] explained that geographically, Indonesia is located on three world tectonic plates, namely the Australasian plate, the Pacific plate, and the Eurasian plate. This causes Indonesia to have geological vulnerabilities which make Indonesia a country at high risk of the threat of tsunamis, earthquakes, successive volcanic eruptions, and land movements.

The 2019 report from the Indonesian National Disaster Management Agency (BNPB) noted that 2,829 disasters occurred in Indonesia from January to September 2019. Disasters that occurred in West Sumatra included earthquakes, floods, and landslides. Based on the BNPB report (2019), there were 746 recorded disasters in West Sumatra that occurred from January to December 2019. As a result of these disasters, 74 people were injured, 10 people died, and 3,026 people were displaced. Not only do they impact human lives, these natural disasters also impact facilities and infrastructure, where the most frequent types of disasters are floods and landslides in West Sumatra [4-6].

One of the biggest disasters that ever destroyed areas in West Sumatra, especially the Padang City, was the earthquake in 2009. Based on data from the Disaster Management Coordination Unit (SATKORLAK PB), the number of fatalities due to this earthquake was 1,117 people spreading across three cities and four regencies in West Sumatra, 1,214 people were seriously injured, 1,688 people were slightly injured, and 1 person was lost. Meanwhile, 135,448 houses were heavily damaged, 65,380 houses were moderately damaged, and 78,604 houses were slightly damaged. A tsunami warning was issued but was soon lifted and there were reports of damage to houses and fires, several hotels in Padang City that were damaged, and reaching Padang was difficult due to lost communications [7-11].

This disaster can cause 4 (four) impacts on humans, namely 1) physical impacts such as disrupting the fulfillment of daily needs for food, drink, shelter, health, and education; 2) psychological impacts such as anxiety, sleep disorders, difficulty forgetting events, fear of another disaster, fear of returning home, and Post-Traumatic Stress Disorder (PTSD); 3) psychosocial impacts such as loss of temporary or permanent housing; and 4) spiritual impacts such as withdrawal, hopelessness, shame and guilt, and loss of meaning in life [12, 13]. According to Li [14], nurses are a team that plays an important role in responding to disasters so that they can recover disaster victims effectively, therefore adequate competency is needed from nurses at the Community Health Centers (CHCs) in responding to disasters. Competency refers to three things, namely a person's skills, knowledge, and attitude in doing a job [15]. Furthermore, according to Tatuil [16], disaster competency is performance when faced with complex situations to solve problems, especially when facing unusual things, namely helping many victims and requiring multidisciplinary team collaboration because assistance must be provided quickly and efficiently.

Research conducted by Xu [17] in a hospital in China shows that nurses' competency is still at a moderate level in handling disasters during emergencies, and education and training related to disaster emergencies are still needed to improve nurses' abilities and reduce community losses and health hazards in hospitals. Based on research of Cut [18], it also shows that nurses still need knowledge and

competencies related to disasters, such as attitudes toward disaster risk, policies and guidelines, emergency plans, disaster warning systems, and resource mobilization. This finding is also supported by research conducted by Firouzkouhi [19], where nurses during the Iraq-Iran war showed that many nurses were unable to carry out triage due to a lack of competence, and were unable to treat wounds quickly due to the large number of army patients who were injured during a disaster. Competence in triage and handling physical injuries is needed to save as many patients as possible when a disaster occurs.

This research was conducted at two CHCs in Padang City, namely Kuranji CHC and Andalas CHC during the Large-Scale Social Restrictions (PSSB) period to reduce the spread of COVID-19. Another reason is that there are enough nurses to be used as samples and the CHCs have an Emergency Room (ER) which is the first entry point when a disaster occurs where nurses immediately carry out triage and life-saving measures. Then the disaster victims will be treated in the treatment room or will be referred to the nearest hospital.

Kuranji CHC and Andalas CHC are first/primary level health facilities in Kuranji Sub-District, Padang City. The CHCs have health workers, especially nurses, and a disaster preparedness team has been formed at the CHCs, but no research has been reported on the ability of nurses in terms of disaster response at the CHCs. Kuranji CHC and Andalas CHC each has 30 nurses and 22 caregivers respectively and is supported by facilities such as General Polyclinic, Psychiatric Polyclinic, Children's Polyclinic, Non-Communicable Diseases (PTM) Polyclinic, Elderly Polyclinic, UKM, ER, Medical Records, and Room Care. This research aims to provide an overview of nurses' competence in dealing with the disaster response phase. The expected output or result is an in-depth assessment of nurses' abilities in dealing with disaster situations at the CHCs of Padang City.

2. Methods

The research was carried out at the Kuranji CHC and Andalas CHC, Padang City on 16-25 June 2021. Mentioning the location and period of the research helps readers understand the context and relevance of the results. This research adopts an exploratory descriptive approach to describing the observed phenomena without manipulation of independent variables, by the need to describe certain conditions or characteristics of research subjects [20, 21].

The data collection technique was carried out using a questionnaire distributed via Google Forms with a dichotomous scale (yes/no) with 43 questions chosen as the data collection technique. This selection makes it easier for respondents to respond, while the use of Google Forms facilitates efficient data collection and analysis.

The total sampling method was used where the entire

population of 40 nurses at the Kuranji CHC and Andalas CHC were taken as samples. This approach ensures the inclusion of the entire population relevant to the research, allowing results to be directly applicable to the same population. The data analysis was carried out using the univariate analysis method to describe the basic characteristics of one variable at one time using the Statistical Package for the Social Sciences (SPSS) application. The mentioned references [22, 23] provide the theoretical basis for this approach.

3. Result and Discussions

3.1. Analysis Results

Based on the results of the analysis carried out, the average age of respondents was 40.24 with a standard deviation of 5.81, while the average length of service was 15.50 with a standard deviation of 4.93. The majority of respondents were female, namely 30 people (80.81%), and the number of people who had Diploma III Nursing education is 36 (90.48%), and as many as 11 people (26.19%) worked in the majority work units of General Polyclinics and ER.

Most of the nurses, namely 31 people (78.04%), had never attended disaster training. Further information can be seen in Table 1 and Table 2.

Furthermore, 36 people (91.86%) of respondents had disaster response competency at the health center in the good category. This will improve good and optimal health services during disaster emergencies. The competency of nurses as a disaster management team is to be able to explain the meaning of disaster emergency response to the community, collect injury data, and manage community needs [11, 24, 25]. More details can be seen in Table 2.

From the results of the analysis in Table 1 and Table 2, it can be concluded that respondents have sufficient service competence to the community and are good at disaster response in the adequate category, 7 (19.05%) nurses have service competence to individuals and families in responding to disasters and as many as 33 people (80.95%) are in the good category. For competency in providing services for psychological problems in disaster response, 39 (98.62%) were in the good category, and 25 (61.91%) in the service competency for vulnerable groups were in the good category. Nurses who respond quickly to disasters have important benefits in disaster management, playing an important role in reducing the impact of disasters and improving the quality of life. From the description of these results, more details can be seen in Table 3.

Table 1. Distribution of respondents for demographic data (n=40)

No	Demographic Data	Frequency	Percentage
Age (years)			
1	[Mean: SD]	[40,24;5,81]	-
	[Min: max]	[27;52]	-
Gender			
2	Man	10	20,19
	Woman	30	80,81
Working Length (Year)			
3	[Mean: SD]	[15,50;4,93]	-
	[Min: max]	[4;28]	-
Education			
4	Diploma III	36	90,48
	Ners	2	4,76
	Master	2	4,76
Work unit			
5	General Polyclinic	12	28,19
	Psychiatric Polyclinic	2	4,76
	Children's Polyclinic	1	2,38
	PTM Poli Polyclinic	2	4,76
	Elderly Polyclinic	1	2,38
	Emergency room (ER)	11	26,19
	Society Health Unit	9	21,43
	Medical records	1	2,38
	Inpatient room	1	2,38
Disaster training			
6	Never	31	76,57
	Once	9	23,43
Training type			
7	Basic Trauma and Cardiac Life Support (BTCLS)	3	7,14
	Emergency & disaster	3	7,14
	Basic life support (BHD)	2	4,76
	Post Traumatic Syndrome	1	2,38

Source: Results of research data analysis, 2022.

Table 2. Frequency distribution of disaster response competencies among nurses (n = 40)

No	Disaster Response Competency	Frequency	Percentage
1	Good	36	91,86
2	Less	4	8,14

Source: Results of research data analysis, 2022.

Table 3. Frequency distribution of disaster response competencies among nurses (n = 40)

No	Sub-variable	Frequency	Percentage
Service to the society			
1	Good	16	40,48
	Enough	17	42,86
	Less	7	16,67
Service to individuals and families			
2	Good	33	80,95
	Enough	7	19,05
Psychological problem services			
3	Good	39	98,65
	Less	1	1,38
Service to vulnerable groups			
4	Good	25	61,91
	Enough	14	36,71
	Less	1	1,38

Source: Results of research data analysis, 2022.

3.2. Discussions

Based on the results of the analysis carried out, 36 nurses (91.86%) had disaster response competency in the good category. These results can be explained that these two CHCs already have disaster preparedness teams and each CHCs was accredited Pratama and Intermediate in 2020, however, the implementation of disaster training based on research results is still relatively lacking, namely only 9 people (23.43%) nurses who have attended disaster training. Nurse competency in disaster response according to the World Health Organization (WHO) (2009) in Asman [24] is immediate action given when a disaster occurs which aims to save as many human lives as possible, meet the immediate needs of victims, and reduce long-term health impacts of disasters. Furthermore, research [25] explains that the nurse's role in this phase is to provide physical and mental care. Nursing tips are aimed especially at high-risk groups to improve the level of public health by emphasizing efforts to improve health and prevent disease. Nurses must have good competence in the emergency/disaster response phase.

The research results found that disaster response competency was in the good category for nurses. This is supported by the fact that the two CHCs each has a disaster preparedness team at the CHCs by the regulations of the Minister of Health of the Republic of Indonesia in 2007, each of CHCs is required to have a disaster preparedness team for preparedness facing health crises resulting from disasters, conducting outreach to health workers, and the public, and follow established guidelines [26-28].

Based on the results of demographic data, nurses who work at two CHCs have an average of 15.5 years of work experience, and nursing education is dominated by Diploma III in Nursing as many as 36 people (90.48%). This of course affects the knowledge, skills, and attitudes of nurses in responding to disasters. According to Wahidah, Yanti, Marni [29-31], the length of time a nurse works can have the greatest influence in responding to disasters, the longer a nurse works, the more experience she will gain, and can increase work productivity in anticipating disaster events. A total of nine (9) nurses (23.43%) have participated in disaster training such as BTCLS, Emergency and Disaster, BHD, Posttraumatic Stress Disorder (PTSD), and natural disaster management. This has an impact on the competency of CHCs nurses in handling disasters.

The results of this research are supported by research of Wahidah [29] which shows that the majority of health workers, especially CHCs nurses in disaster-prone areas in West Sumbawa Regency, have good knowledge about disaster management, especially about the understanding and efforts made at each stage, including disaster emergency response, so that nurses have a good level of knowledge about disasters.

In line with research of Yanti [30], it shows that 85% of nurses have moderate disaster preparedness, meaning they are quite ready and able to respond to disasters. Similar to research conducted by Marni [31] on 32 Rural ER nurses in New South Wales, Australia, it was found that nurses had moderate knowledge skills regarding disaster management knowledge and skills. The results of this research are supported by research of Lestari [32], and it is known that as many as 47 (58.8%) nurses in the CHC Banda Aceh work area are in the sufficient knowledge category at the disaster preparedness stage. Meanwhile, research conducted by Brewer [33] found that the majority of nurses at CHC Samatiga and CHC Drien Rampak, West Aceh Regency stated that they lacked knowledge about emergencies in dealing with earthquake and tsunami disasters (64.4%).

The results obtained in the sufficient category for the sub-variable of service to the community were obtained in this study because the education level of the highest number of respondents was Diploma III Nursing, with 36 respondents (90.48%). One factor that can influence CHC nurses' knowledge is education. In the second sub-variable of individual and family services for nurses at CHC Kuranji and Andalas, Padang City, there were 33 people (80.95%) respondents in the good category. Saltira [34] stated that individual and family services are the understanding and abilities that nurses must have for individuals and families of disaster victims which include 1) rapid assessment; 2) assessment of medical history; 3) recognition of infectious diseases; 4) identifying decontamination needs; 5) isolation/quarantine; 6) critical thinking; 7) triage principle; 8) method of administering the drug; 9) vaccine, immunization; 10) infection control;

11) maintenance documentation; 12) respect for culture and society; and 12) spiritual/diversity. Research conducted by Nisa [35] shows that nurses who work in ERs or intensive care have good skills during care and tend to have better preparedness in dealing with disasters. This research also found that individual and family services were in the good category because the research was conducted during the COVID-19 pandemic so nurses were trained and also exposed to information related to isolation, quarantine, and decontamination at CHCs. Then, the work experience of the majority of nurses has worked on average 15.5 years.

Apart from the length of work factor, Stanhope [36] in his research also stated that emergency training, disaster training, and wound care training are variables that can influence nurses' preparedness in facing disasters. The training attended by nurses can have a positive impact on increasing information and experience in improving health service preparedness in facing disasters.

In the third sub-variable, 39 respondents (98.62%) of CHC Padang City nurses' psychological problems services were included in the good category. Psychological services according to Baack [37] are the understanding and abilities that nurses must have in providing services to disaster victims which include identifying psychological responses, providing psychological support, identifying individual behavioral responses, distinguishing adaptive and maladaptive responses, mental health interventions, identifying coping strategies, and providing care support for mental health, and referrals if necessary. According to Husna [38] trauma recovery will be easier to overcome if people have a healthy mind or soul. To improve mental or psychological health, support from family and the surrounding environment is very necessary, as well as making people ready to face disasters and have strong personalities to live life after a disaster.

The research results found that competence in handling psychological problems was in a good category. This can be explained by the fact that CHCs nurses have long work experience which influences nurses' knowledge about psychological services. Ifdil [39] states that nurses not only provide clinical assistance when a disaster occurs but must also provide support to disaster victims so that psychological services for disaster victims are also a concern for nurses when providing care when a disaster occurs. In line with research conducted by Knebel [40], the preparedness of health workers in facing floods can be said to be quite ready even though not all of the health workers at CHC tuminting have been provided with training due to their limitations. Funds from CHCs to cover each staff member's training need to be provided. In this study, only 1 respondent (2.38%) had attended post-traumatic syndrome training and the majority of nurses had good grades in psychological services. This is because nurses have long work experience, and their experience in dealing with victims of the 2009 Padang City earthquake which destroyed most of the cities and

districts in West Sumatra, can be used as real experience in dealing with disaster victims who experience psychological problems.

The results of this study are supported by the fact that most of the nurses have worked for an average of 15.5 years so they have experience in dealing with disasters while working at CHCs, although 15 respondents (38.09%) have never attended training for vulnerable groups so that less than a few nurses have sufficient grades and some are also lacking. In order to meet these needs, special treatment training programs can be carried out for vulnerable communities. The results of this study are different from Al Otaibi, Tzeng [41, 42]. The lowest score was obtained below the mean value of 2.80, which indicates that nurses are not ready to respond to disasters, especially in vulnerable populations. This is because the treatment of vulnerable groups receives less attention and causes many failures in treatment. During times of emergency, vulnerable groups are the ones who need the most attention, but in reality, progress in meeting the needs of vulnerable groups is slow and unprepared. Xu [43] also stated that providing appropriate training to staff or nurses is the right way to increase nurses' readiness in terms of disaster emergency response, especially in dealing with vulnerable groups. The form of these activities can be in the form of real disaster training and simulations, disaster nursing education in the nursing curriculum, and in-house training curriculum in disaster preparedness to meet the needs of nurses in dealing with disasters so that the competency of nurses also increases.

4. Conclusions

Based on the results of the research and discussion, it can be concluded that the disaster response competency of Padang City CHC nurses is in the good category in managing services to the community, individual and family services, services for psychological problems, and services for vulnerable groups. Policymakers at the Health Service of Padang City and CHCs should improve the competency of nurses in the variable serving vulnerable groups, which is the variable that obtains the lowest results, by holding continuous disaster and emergency training to improve the special competency of nurses in serving these vulnerable groups. Nursing educational institutions increase students' information and knowledge about the importance of knowing and understanding emergency response information in dealing with disasters. Nurses also need cooperation between relevant government agencies in efforts to overcome disasters, as well as training and provision for nurses to manage resources before, during, and after a disaster.

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