Factors Affecting Nurse Preparedness in Disaster Management in the Emergency Room of the Pelabuhan Ratu Hospital in Sukabumi Regency

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ABSTRACT

Nurses are the frontline in facing disaster preparedness, especially in health services and technical implementers of operational activities before, during and after disasters. Nurse preparedness in facing disasters is a key factor in reducing the impact of disasters. Disaster knowledge, attitude and training factors influence nurse preparedness. The purpose of this study was to determine the factors that influence nurse preparedness. This type of research is correlational. The population was all nurses in the emergency room at the Pelabuhan Ratu Hospital in Sukabumi Regency with a sample of 24 nurses. The sampling technique used is total sampling. Data collection using a questionnaire with a Likert scale and Guttman scale. Instruments of knowledge, attitudes declared valid (p <0.05) with reliability 0.897, 0.915, 0.872. Data analysis used simple and multiple linear regression. Most respondents had good knowledge (54.2%), good attitude (70.80%), attended disaster training (62.50%) and preparedness was very ready (70.80%). There is a significant influence of nurses 'knowledge on disaster preparedness (0.009), nurses' attitudes towards disaster preparedness (0.000), disaster training on disaster preparedness (0.010). Simultaneously knowledge about preparedness, attitude towards preparedness, disaster training significantly influences the preparedness of nurses in facing disasters (<0.05). There is a significant influence of disaster knowledge, attitude and training on nurse preparedness disaster. It is hoped that the hospital will add nurses' competencies on disaster through training and disaster simulation.

INTRODUCTION

The World Health Organization (WHO) defines disaster as a serious disruption to the functioning of the community that causes extensive human, material, economic, or environmental loss beyond the ability of affected communities to cope with using their own resources (Ulfat et al., 2015). Natural disasters are the most disasters that take lives and property. In addition, it can lead to economic, social and cultural disasters. Indonesia is a geographical, geological, hydrological and demographic area. Indonesian territory is in the volcanic path (ring of fire) which is at risk of volcanic eruptions also on top of the active earth's crust where five earth plate fractures meet, colliding which results in dynamic Indonesian earth movements so the risk of earthquakes is very large. Indonesia has ± 5,590 watersheds (DAS) that are at high risk of ground and landslide movements (BNPB, 2017).

Data on natural disasters from 2010 to 2019 shows that natural disasters have increased, especially in the last three years. While based on the types of disasters that occurred during the period January to September 2019, landslides and floods are natural disasters that often occur in Indonesia, namely 549 events (BNPB, 2019). The number of disasters has become a major challenge for the Government and Indonesians because they are at risk of potential disasters, so there is a need to increase

the preparedness of both the community and government.

Preparedness is one of a series of efforts in disaster management. One element of government that is an important part of preparedness is nurses. Nurses have a big responsibility in preparing for disaster. As the largest part of nurses' health workers are the front lines facing disasters especially in health services (Mirzaei et al., 2019; Satoh et al., 2018). The International Nurse Council classifies disaster nurse competencies, namely mitigation (prevention), preparedness (preparedness), response (disaster response) and recovery and rehabilitation (Anam et al., 2015). Nurses are technical implementers or operational activities before a disaster occurs, during a disaster or after a disaster (Huh et al., 2019).

Many factors affect preparedness including knowledge and attitudes, policies and guidelines, emergency response plans, disaster warning systems and resource mobilization (LIPI-UNESCO / ISDR, 2006). Knowledge, attitude and training of nurses' disasters is very important in the efforts of nurses to prepare for disasters. The knowledge possessed by nurses can influence caring to be ready and alert in anticipating disasters. Nurses 'attitude determines nurses' preparedness in facing disasters (Indrawati & Sari, 2015). Nurses must have a

responsive and responsive attitude to disasters so that nurses can deal with disasters with a positive attitude and can minimize the impact of disasters (Ulfat et al., 2015). Training is an important factor in preparedness. Disaster-related training significantly influences the level of preparedness of nurses in dealing with disasters (Mirzaei et al., 2019).

Pelabuhan Ratu Hospital in Sukabumi District occupies an important position in disaster preparedness because it is located in an area prone to natural disasters that must be prepared to face all the possibilities that will occur given that natural disaster events cannot be predicted. Especially in serving care for victims of natural disasters. The preparedness of nurses in the emergency room really determines the initial handling of disaster victims who come to the hospital. The purpose of this study was to determine the factors that influence the preparedness of nurses in the emergency room at Pelabuhan Ratu Hospital, Sukabumi Regency.

METHODS
This type of research is a correlational research method with a cross sectional approach. The study was conducted in the emergency room at the Pelabuhan Ratu Hospital in Sukabumi Regency from October 2019 to April 2020. The research variables included knowledge, attitudes, disaster training and nurse preparedness. The population is all nurses in the emergency room at Pelabuhan Ratu Hospital, Sukabumi Regency, totaling 24 nurses with the sampling technique is total sampling. Data collection techniques using a questionnaire. Instruments of knowledge, disaster training and disaster preparedness refer to the guttman scale while attitudes and family refer to the Likert scale.

The results of the reliability test of the instrument of knowledge, attitude and preparedness produced a Cronbach Alpha value of 0.897, 0.915, 0.872, respectively. Univariate analysis was prepared by using index analysis according to LIPI - Unesco / ISDR (2006) with the parameters of knowledge and attitude (KA), emergency planning (EP), Warning System (WS), and Resource Mobilization Capacity (RMC) as in table 1 below this:

Table 1. Preparedness Index

No.	Index Value	Category
1.	80 - 100	Very Ready
2.	65 – 79	Ready
3.	55 - 64	Almost Ready
4.	40 – 54	Less Ready
5.	< 40 (0-39)	Not Ready

Source: LIPI - Unesco / ISDR (2006)

Determination of the index value for each parameter is calculated based on the formula:

$$Index = \frac{real\ Total\ Score}{Max\ Score} \times 100$$

Meanwhile, to assess the overall preparedness the calculation is carried out with weights as in table 2:

Table 2. Weight of Preparedness Parameters

Component	Parameter			
	KA	EP	WS	RMC
Government (P2)	0,74	0,07	0,07	0,11

Source: LIPI - Unesco / ISDR (2006)

Then the preparedness formula:

Indeks P = 0,74*KA + 0,07* EP + 0,12* RMC + 0,07*WS

For univariate analysis of knowledge and attitudes use the following steps:

a. Sets the value of Mi, Mi = ½ (Maximum Score + Minimum Score);
b. Set SDi value, SDi = 1/6 (Maximum-Minimum Score);
c. Determine the interval for each category

Table 3. Interval Categories of Knowledge and Attitude Variables

No.	Interval	Category
1.	$\overline{X} > (M + 1{,}5\ SD)$	Good
2.	$(M + 0{,}5\ SD) < \overline{X} < > (M + 1{,}5\ SD)$	Pretty good
3.	$(M - 0{,}5\ SD) < \overline{X} < > (M + 0{,}5\ SD)$	Not good

Bivariate and multivariate analyzes were performed using linear regression analysis where in the previous use classical assumptions were tested which included normality test with Shapiro-Wilk, linearity with ANOVA, multicollinearity using the value of Variance Inflation Factor (VIF), autocorrelation with durbin-watson and heteroscedasticity. with the Spearman-rho correlation.

RESULT

Based on table 4 shows that the majority of respondents were male (70.8%), married (87.5%), had a D III Nursing education level (79.0%), employment status as non-PNS employees (75.0%).

Table 4. Characteristics of Respondents

No.	Characteristics	Frequency (f)	Percentage (%)
1.	Gender: Male Female	17 7	70.8 29.2
2.	Marital status: Married Single	21 3	87.5 12.5
3.	Education: Diploma III Nursing Bachelor	19 2 3	79.2 8.3 12.5
4.	Nursing: Nurse profession Job status Civil servants Not a civil servant	6 18	25 25

Based on the results of the description of research variables in table 5 shows that the majority of respondents have good knowledge (54.2%), good attitude (70.80%), have attended disaster-related training (62.50%) and have disaster preparedness very ready (70.80%).

Based on simple linear regression analysis as in table 6 for the knowledge variable shows there is a significant influence of nurses' knowledge about disaster preparedness to nurses preparedness in facing disasters (0.009) with the equation model $Y = 79.454 + 1.157X_1 + \varepsilon$ and r value = 0.524.

Table 5. Description of Research Variables

No.	Variable	Frequency (f)	Percentage (%)
1.	Nurse Knowledge: Good Pretty good Not good	13 7 4	54.2 29.2 16.6
2.	Nurse's Attitude: Good Pretty good	17 7	70.8 29.2
3.	Disaster Training: Following training Do not follow	15 9	62.50 37.50
4.	Disaster Training: Very ready Ready	17 7	70.8 29.2

The attitude variable shows that there is a significant influence of nurses' attitudes towards disaster preparedness towards nurses preparedness in facing disasters (0.000) with the equation $Y = 11.320 + 0.159X_1 + \varepsilon$ and value r = 0.841.

Table 6. Results of Simple Linear Regression Analysis

Independent Variable	B	p	r
Constant Knowledge	79.454 1.157	0.000 0.009	0.524
Constant Attitude	11.320 0.159	0.087 0.000	0.841
Constant Training	95.778 10.356	0.000 0.010	0.513

For disaster training variables, there is a significant influence of nurse disaster training on disaster preparedness to nurse preparedness (0.010) with the equation Y = 95.778 + 10.356 X_1 + ε and the value of r = 0.513.

Table 7. Multiple Linear Regression Analysis

Variable	b	t	p	r	R^2 adjusted
Constant	14.112	1.967	.063		
Nurse Knowledge	.906	5.997	.000	0.953	0.895
Nurse's Attitude	.953	9.298	.000		
Disaster Training	4.404	2.957	.008		

Based on multiple linear regression analysis simultaneously shows nurses 'knowledge about disaster preparedness, nurses' attitudes towards disaster preparedness and disaster training followed by nurses have a significant effect on nurses preparedness in facing disasters in the emergency room of Pelabuhan Ratu Hospital Sukabumi Regency with the equation model Y = 14.112+ 0.906 X_1 + 0.953 X_1 + 4,404 X_3 + Ɛ and the value of r = 0.953 with R^2 adjusted of 0.895.

DISCUSSION
Nurse Knowledge About Disaster Preparedness
The results showed that the knowledge indicator most respondents knew about natural disasters, disaster management and disaster preparedness. In attitude indicators, most respondents know and understand their duties as nurses in the emergency room which include preparing important documents, taking responsibility for patient safety, attending training or simulations and helping patients get to the evacuation route in the event of a disaster. In the emergency response indicator, most respondents know and understand what to do in an emergency response situation when a disaster occurs. In the early warning system indicator, most respondents know about the early warning system including procedures, communication and information related to the early warning system. While on the indicator of resource mobilization, most respondents know disaster preparedness in hospitals such as the existence of simulations, cooperation, coordination in disaster management.

Knowledge is a result obtained based on curiosity through sensory processes, especially the eyes and ears on certain objects and becomes an important domain for the formation of open behavior (Donsu, 2017). There are several factors that influence knowledge, namely education, information, social, culture, and economy, experience, work, age.

Age is one of the factors that influence knowledge. The results showed that the average age of respondents was 28.96 years. This age is the average productive age of 26-35 years which has a series of dense activities and good cognitive abilities so that it can influence the knowledge possessed. At the productive age, individuals have an active role in community, social and have the opportunity to read and get a lot of information and this age there is no decrease related to verbal abilities, intellectual abilities and problem solving (Suwaryo & Yuwono, 2017).

Work is another factor that influences knowledge. All respondents of this study were nurses. Nurses have the competence of disaster nursing in providing nursing actions to individuals, families and communities in each phase of the disaster. Nurse work is a professional job. Nurses have the knowledge and ability skills as professionals who are trained in disaster management both before, during and after disasters (Satoh et al., 2018). Nurses' work in daily activities often intersects with serving disaster victims, so that most respondents have good knowledge related to disaster preparedness.

Disaster training also encourages increased knowledge and understanding of disaster preparedness. The results showed that the majority of respondents had attended training or simulated disasters. Emergency room nurses at Pelabuhan Ratu Hospital have received training, including emergency training, disaster, wound care training and others. Disaster training and simulation is an educational process that is provided to students systematically and in an organized manner in order to increase knowledge, skills and attitudes in dealing with disasters (Susilawati, 2018). Disaster training is very effective in increasing knowledge about disaster preparedness (Mirzaei et al., 2019). Knowledge about disaster preparedness can be increased through the provision of training on disaster management and management (Osman, 2016).

Nurses' Attitudes Toward Disaster Preparedness
The results showed that most respondents had a good attitude towards disaster preparedness. In cognitive indicators, the majority of respondents were positive to support and understand that emergency room nurses must collaborate with medical personnel, must be able to overcome various patient health problems, participate in disaster management, evacuate victims and be prepared to work with other institutions. In the affective aspect, most respondents believe that nurses are able to coordinate, have high preparedness, are willing to do simulations, can evacuate during disasters. On the conative aspect, most respondents said they would be involved if the government or other institutions conducted training and simulations, empowered the community in terms of disaster, established communication with related parties and coordinated with nurses or other staff in disaster preparedness.

Attitude is defined as a reaction or response that arises from an individual to an object which then raises the individual's behavior towards the object in certain ways (Azwar, 2016). Magnaye states that attitude is the confidence of a person in taking action including disaster emergency preparedness. Nurses' attitudes are needed in disaster preparedness, attitudes in critical situations and applying them in caring for disaster victims will differ depending on their cultural background and situation (Anam et al., 2015).

Factors that influence attitudes are education. Education is the process of changing attitudes and behavior of a person or group and the process of maturing someone through teaching and training efforts both at school and outside of school. According to Wawan and Dewi, education is very much needed in an effort to obtain

information that can improve the quality of life so that it affects the attitude they have (Mindarsih, 2018). In the end related to disaster, the systematic and organized education process can be useful to increase knowledge, skills and attitudes in disaster preparedness (Nurudin & Widaryati, 2015).

Work is another factor that influences attitude. Work generally has a very important impact on one's attitude. According to Mappeboki, the work environment can influence when exchanging ideas and information with friends in the work environment. Information obtained from coworkers will cause a response to the recipient and this response will be seen as an attitude (Mindarsih, 2018). Nurses' work covers health services, one of which is closely related to disaster such as handling disaster victims. The work, especially in dealing with disaster victims, of course, will make information material and exchange ideas between friends in the work environment so that it will help nurses to behave especially in the context of disaster.

Disaster training is also one of the factors that influences respondents' attitudes towards disaster preparedness. One of the formations of attitude is due to training. The training given will give confidence to the trainees themselves. This belief will be stronger when trainees practice their skills and emotional experience while doing training will give awareness to trainees to commit to responding and implementing what they are the object of training (Azwar, 2016). Disaster preparedness training will certainly make the trainees have a strong conviction to respond and implement disaster preparedness.

Disaster Training Followed by Nurses

The results showed that the majority of respondents had participated in disaster-related training. According to Simamora, Training is a series of activities to improve a variety of skills, knowledge, and experience in supporting attitude change. Training regarding the acquisition of certain skills aimed at helping employees carry out their current work better (Jannah, 2016).

Disaster-based education and training are important in disaster prevention. The disaster training that was followed was one of the factors that influenced nurses' ability to respond to disasters. As the frontline in handling disaster victims, nurses must have the skills and be able to handle patients affected by natural disasters. Good skills and the ability to deal with disaster victims can be improved through disaster training (Yehua & Xia, 2016). Work as a health worker requires nurses to be active in participating in various training or simulation activities related to disasters.

Nurse Preparedness in Dealing with Disasters

The results showed that the majority of respondents were very prepared in facing disaster preparedness. The five indicators of preparedness, namely knowledge, attitudes, emergency response plans, early warning systems and resource mobilization are in the very prepared category. Preparedness is part of disaster management. Preparedness is a series of activities carried out to anticipate disasters through organizing as well as through appropriate and efficient steps (Law No. 24 of 2007). There are several factors that affect disaster preparedness, namely age, education, work experience.

Education is one of the factors that influence preparedness. Formal education increases readiness behavior, class-based education is usually delivered in a systematic way by teachers or lecturers who are trained in schools, and universities. The higher an individual spends formal education the higher one's preparedness (Hoffmann & Muttarak, 2017). The results showed there was a relationship between education and disaster preparedness (Wijaya et al., 2019). The respondents in this study were nurses. Nurse education includes disaster education in the lecture process so that they are equipped with knowledge about service to disaster victims and also familiar with disaster so that by teaching them about disasters it enables them to understand and understand disaster since the lecture was established (Hoffmann & Muttarak, 2017).

Another factor that influences is work experience. Most respondents have work experience of between 5-10 years. The results showed a significant relationship between nurses' length of work and disaster preparedness (Al Fatih, 2019). According to Hasibuan and Sutrisno, someone who has more experience or work longer is a more prepared employee. Work experience as measured by the length of time someone works in disaster management efforts also contributes to the preparedness of a nurse in a hospital. The longer the period of one's work, the more experience gained and increased work productivity in the form of preparedness to anticipate disasters (Al Fatih, 2019). The preparedness of nurses in hospitals in dealing with disasters will greatly depend on the nurses' experience in managing disasters (Mirzaei et al., 2019). Nurse preparedness is largely determined by the length of experience of nurses in handling disasters.

Effect of Nurse Knowledge About Disaster Preparedness To Nurse Preparedness in Dealing with Disasters

The results showed that there was a relationship between knowledge and disaster preparedness. This result is supported by research which shows that there is a significant relationship between the level of knowledge and disaster preparedness (Hesti et al., 2019). The results of other studies also show that individual knowledge is closely related to individual preparedness in facing disasters (Gillani et al., 2020; Wurjatmiko et al., 2018).

Knowledge is the result of knowing and this happens after someone senses a certain object. Knowledge is an important domain for the formation of one's actions and influences one's actions, knowledge can be obtained from things that are formal and informal (Notoatmodjo, 2014). A nurse's knowledge in disaster preparedness can increase understanding, awareness that will form a strong insight about disaster so that it will make a nurse ready to face disasters (Yari et al., 2019). According to Sutton, knowledge about disasters is the main reason for someone to carry out protection activities or existing preparedness efforts. The knowledge possessed can usually influence the concern of individuals to be ready and alert in anticipating disasters, especially for those who live in areas that are vulnerable to natural disasters (Rahmayani, 2018). Factors that influence nurse preparedness include cognitive ability in disaster management. Perry and Lindell explain that the diversity of characters and information media will influence their preparedness desires. The level of preparedness from a person can be formed by how often the person gets knowledge or information about prevention and preparedness (Fitriana et al., 2017).

Effect of Nurse Attitudes Toward Disaster Preparedness Towards Nurse Preparedness in Dealing with Disasters

The results showed that there was a relationship between attitude and nurses' preparedness in facing disasters. The results showed there was a significant relationship between attitude and nurse preparedness in the face of disaster (Wurjatmiko et al., 2018). The results are strengthened by other studies that show there is a positive relationship between attitude and preparedness in facing disasters (Gillani et al., 2020; Odai et al., 2019).

Attitudes are always related to emotional components, cognitive components (perceptions, opinions, beliefs) and behavior. Attitude is a mental and nervous state and readiness that is regulated through experience that gives a dynamic or directed influence on individual responses to all objects and situations related to it (Rahmayani, 2018).

According to Aldina et al, attitude plays an important role in someone's preparedness to save themselves from disaster means the better the attitude about disaster, the better prepared in facing disasters (Hesti et al., 2019). Attitudes can affect disaster preparedness. Indicators of attitude to face disasters by efforts to prevent the occurrence of disasters, examine the environment that is likely to be the cause of disasters, participate in socialization and training activities (LIPI-UNESCO / ISDR, 2006). In disaster preparedness, nurses must have a good attitude and concern for disaster preparedness (Solikhah et al., 2017). The results showed that the majority of nurses' attitudes towards disaster preparedness were good so as to enable preparedness in facing disasters very well prepared. This proves the better the nurses 'attitude towards preparedness then increases the nurse's preparedness in facing disasters otherwise if the nurses' attitude is less good it decreases the nurse's preparedness in facing disasters.

Effects of Nurse Disaster Training on Disaster Preparedness on Nurse Preparedness in Dealing with Disasters

The results showed that there was a relationship between nurse training related to disaster and nurse preparedness in dealing with disasters. This result is supported by research that shows there is a positive relationship between disaster training and disaster preparedness (Hesti et al., 2019). Other research also shows that there is a significant effect of training and disaster simulation on disaster preparedness (Haryuni, 2018). This result is also strengthened by research that shows there is a significant relationship between the experience of participating in disaster management training activities and the preparedness of health workers in dealing with disasters (Direja & Wulan, 2018). According to Sumantri, training is a short-term educational process in a systematic and organized manner and procedure where participants learn practical knowledge and skills. Bruner and Lewis stated that preparedness is strongly influenced by the cognitive development of individuals that is obtained from the training that is followed, where individuals develop their thought processes and initiatives to do the skills that are taught so that individuals are able to anticipate and control themselves against preparedness in the event of a disaster (Haryuni, 2018). The experience of attending training in disaster management for nurses can increase the capacity of knowledge and skills in mitigation, emergency response, evacuation, and post / post health

care relief impacts of both physical health problems and psychological problems due to disasters such as post traumatic stress disorder (Direja & Wulan, 2018). The experience of disaster management training for health workers can improve understanding and skills about natural disasters such as landslides, earthquakes and tsunamis which include the provision of materials, practices and simulations so that the preparedness of health workers in the face of disasters such as landslides, earthquakes and tsunamis (Nurudin & Widaryati, 2015).

Effects of Disaster Knowledge, Attitudes and Training on Preparedness

The results showed a significant influence of nurses 'knowledge, nurses' attitudes and nurses 'training related to disaster with nurses' preparedness in facing disasters. This proves that nurses' knowledge, attitudes and training related to disaster simultaneously or simultaneously affect disaster preparedness.

Professional nurse preparedness in disaster management is inseparable from the nurse's knowledge of preparedness, nurses' attitudes towards disaster preparedness and training factors. According to Sutton, disaster knowledge can encourage protection activities or existing preparedness efforts. The knowledge possessed can usually influence the attitudes and concerns of the community to be ready and alert in anticipating disasters, especially for those who live in areas that are vulnerable to natural disasters (Rahmayani, 2018). Nurses who have good knowledge are encouraged to have a positive attitude and make nurses pay attention to and care for disaster preparedness which includes pre-disaster, emergency response, and post-disaster impact. Hospitals as the main service facilities are the spearhead of public health services, so they have a great responsibility in controlling disaster risk. Nurses in hospitals should have the attitude of disaster preparedness to take action to prepare for emergency conditions quickly and accurately, in order to reduce the impact of disasters so that it will encourage nurses to have a level of preparedness that is very ready in the face of disasters (Direja & Wulan, 2018).

Disaster training will certainly encourage a nurse to have the knowledge and skills that she has so that it will also directly affect her attitude in dealing with disasters so that it will ultimately encourage a nurse to be very ready in the face of disasters. Important training is maximized with the aim of increasing nurses' knowledge and attitudes about disasters and their preparedness to face disasters (Direja & Wulan, 2018). Based on the description that has been stated, the researcher considers that knowledge, attitudes and training related to disaster is an important series that will determine the preparedness of nurses in the face of disaster. This is also shown by LIPI-UNESCO / ISDR (2006) which states that the factors that affect preparedness are essentially knowledge of disaster, attitudes related to disasters and whether or not they have participated in disaster-related training.

CONCLUSION

There is a simultaneous influence of nurses 'knowledge about disaster preparedness, nurses' attitudes to disaster preparedness, disaster training that nurses follow towards nurse preparedness in the face of disasters. It is expected that hospitals will increase nurses' competencies related to disaster through increased knowledge, attitudes and disaster

preparedness by including emergency room nurses in disaster training or disaster simulations organized by internal hospitals and agencies related to disaster.

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