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Self-Efficacy and Disaster Preparedness of Coastal Nurse in Jember

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ABSTRACT

Coastal areas in Jember Regency have a high risk of getting a big impact if an earthquake and tsunami. These potential disasters force all elements to be prepared to face disasters that can arise anytime, including nurses in the Coastal Public Health Center of Jember. Self-efficacy is thought to have a relationship in improving nurse preparedness in dealing with disaster situations. The aim of this research is to analyze and describe the relationship between the self-efficacy of coastal nurses and the level of preparedness of nurses in dealing with earthquakes and tsunamis in Jember. This study was a correlational research study with a cross-sectional approach. The population of this study was 161 nurses. The sampling method used was convenience sampling, with the total number of nurses participating in this study was 144. We used two main questionnaires to collect the data: the General Self-Efficacy (GSE) and the Disaster Preparedness Evaluation Tool (DPET). We analyzed the data using Pearson Product moment with a significant level (α) =0.05. We found a significant correlation between the disaster preparedness and self-efficacy of the coastal nurse in Jember with a p-value of 0,008 (< 0.05). The degree of relationship was 0.619, which is considered significant and positive. There is a relationship between self-efficacy and nurse preparedness in dealing with disasters. The association is in a positive direction, meaning that the higher the level of self-efficacy, the higher the nurse's disaster preparedness.

Keyword: Disaster Preparedness, Self-efficacy, Coastal nurse, Coastal Areas of Jember

ABSTRAK

Daerah pesisir di Kabupaten Jember memiliki resiko tinggi terkena dampak yang besar jika terjadi gempa dan tsunami. Potensi bencana tersebut memaksa semua elemen untuk siap menghadapi bencana yang bisa muncul kapan saja, termasuk perawat di Puskesmas Pesisir Jember. Self-efficacy diduga memiliki hubungan dalam meningkatkan kesiapsiagaan perawat dalam menghadapi situasi bencana. Tujuan penelitian ini adalah menganalisis dan mendeskripsikan hubungan efikasi diri perawat pesisir dengan tingkat kesiapsiagaan perawat dalam menghadapi bencana gempa bumi dan tsunami di Kabupaten Jember. Penelitian ini menggunakan desain korelasional dengan pendekatan cross sectional. Populasi penelitian ini adalah 161 perawat. Metode pengambilan sampel yang digunakan adalah convenience sampling dengan jumlah total perawat yang berpartisipasi dalam penelitian ini adalah 144. Kami menggunakan dua kuesioner utama untuk mengumpulkan data: General Self-Efficacy (GSE) dan Disaster Preparedness Evaluation Tool (DPET). Data dianalisis menggunakan Pearson Product moment dengan taraf signifikan (α) = 0,05. Terdapat hubungan yang signifikan antara kesiapsiagaan bencana dan self-efficacy perawat pesisir di Jember dengan p-value 0,008 (<0,05). Tingkat hubungan adalah 0,619, yang dianggap signifikan dan positif. Ada hubungan antara efikasi diri dengan kesiapsiagaan perawat dalam menghadapi bencana. Kaitan tersebut ke arah yang positif, artinya semakin tinggi tingkat efikasi diri maka semakin tinggi kesiapsiagaan bencana perawat.

Kata Kunci: *Kesiapsiagaan Bencana, Self-efficacy, Perawat Pesisir, Pesisir Jember*

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Introduction:

Indonesia is a country located at the confluence of three tectonic plates: Indo-Australia, Pacific, and Eurasia, which causes Indonesia to have the threat of earthquakes and tsunamis (Banendro, 2017; BNPB, 2012). Historical records of tsunamis in Indonesia show ± 172 tsunamis between 1600 and 2012 (Mardiatno et al., 2017). Based on the source of the generator, it is known that 90% of the tsunamis were caused by tectonic earthquake activity (Geofisika, 2019). East Java had the highest number of earthquakes in 2021, 26 times, with the last update on October 22, 2021 (BPBD, 2021). Eight regencies have the potential to experience an earthquake and tsunami in East Java, one of which is Jember. (B Monalis et al., 2021) Jember Regency has a high Category Disaster Risk Index compared to other districts with a score of 152.3. Coastal areas in Jember Regency that have a high risk of getting a big impact if an earthquake and tsunami occur, including the Districts of Kencong, Gumukmas, Ambulu, Tempurejo, Puger, and Wuluhan (BNPB, 2021).

The potential for earthquakes and tsunamis in Jember Regency forces all elements to be prepared to face disasters that can arise at anytime. The health sector in disaster conditions is needed to provide health services, and the role of health workers, especially nurses in health facilities, is vital (Sharma & Sharma, 2020). Public health center (PHC) as primary health facility is the spearhead of health services in disaster situations (Atika, 2020). PHC in areas potentially affected by earthquakes and tsunamis must have more preparedness in dealing with disasters at any time. Nurses are one of the most important groups of health professionals who face disasters and must be involved in all phases of disaster management, such as risk assessment and pre-disaster planning, response during crises, and risk mitigation during the reconstruction period (Goniewicz et al., 2021).

Nurses' preparedness in dealing with disasters greatly determines the success rate of disaster management (Ihsan et al., 2022). The services provided will certainly be optimal for nurses and health workers who are ready in disaster situations (Martono et al., 2019). Nurse preparedness in emergencies can be influenced by personal factors such as perceived knowledge, risk appraisal, and self-efficacy (Melnikov et al., 2014). Self-efficacy is thought to have a very significant relationship in improving nurse preparedness in dealing with disaster situations. Self-efficacy is an individual believes that he feels capable of doing something in any situation. A person with high self-efficacy will have the ability and skills to better adapt to conditions within himself, influence situations, and improve his abilities so well that feeling of insecurity can be controlled (Bandura, 1986a).

Good nurse self-efficacy can make it possible to make the level of nurse preparedness in dealing with disaster situations better. This needs to be studied and analyzed further. So this study aims to analyze and describe the relationship between the self-efficacy of coastal nurses and the level of preparedness of nurses in dealing with earthquakes and tsunamis in Jember Regency.

Methods:

The research design in this study was correlational research study design with a cross-sectional approach. The population of this study was all nurses on duty at the Public Health Center (PHC) in the eight coastal areas of Jember. These public health centers include Cakru, Gumukmas, Sabrang, Curahnongko, Puger, Ambulu, Wuluhan, and Lojejer. The population of this study was 161 nurses. The sampling method used was convenience sampling. All nurses in the population were invited to fill out the research questionnaire. Based on the calculation of sample precision with a significance of 5% and a precision of 3% of the total population of nurses,

the questionnaire is targeted to be completed at least 80% of nurses from the total population (≤ 20% incomplete or unreturned questionnaires). The total number of nurses participating in this study was 144 (89.4%).

This research was conducted during the preparation and implementation stages. The preparatory phase was carried out by submitting a research permit through the Research and Community Service Departement of Universitas Jember to the Departement of Health Office and the Public Health Center of Jember. At this stage, the researchers and the team also developed a questionnaire to measure nurses' self-efficacy and preparedness in dealing with disasters. Researchers have also conducted ethical due diligence at the Health Research Ethics Commission of the Faculty of Dentistry, University of Jember.

The implementation stage of the research was carried out by recording all nurses in the research area. The team then coordinated with the CHN coordinators from each health center to be able to explain the process of conducting the research. The CHN coordinator then conveyed this research plan to all members of the nurses in each health center to participate. The team then contacted each nurse via the WhatsApp platform to explain informed consent and distributed a research questionnaire (google form) for nurses to fill out. Nurses who agree to be respondents to the study can continue to fill out the team-provided questionnaire. The time for completing the questionnaire was determined from September 1 to November 1, 2022. The researchers and the team then validated the data that the respondents had filled in to ensure that all questions in the questionnaire had been filled in completely. The team then tabulated the data and analyzed the data from the data collection results carried out during the research process.

We used two main questionnaires to conduct this research: the General Self-Efficacy (GSE) and the Disaster Preparedness Evaluation Tool (DPET). The data collection tool used in self-efficacy is the General Self-Efficacy (GSE) questionnaire. This questionnaire has been translated into the Indonesian version and tested for construct validity (Novrianto et al., 2019). The GSE questionnaire there are 10 questions consisting of three dimensions: Level, strength, and generality. This questionnaire has answer choices in the form of a Likert scale with coding Disagree (1) - Strongly Agree (4). The total score ranges between 10 and 40, with a higher score indicating more self-efficacy.

The Disaster Preparedness Evaluation Tool (DPET) questionnaire used is the Indonesian version (Sangkala & Gerdtz, 2018). This questionnaire contains 38 questions about nurse preparedness in dealing with natural disasters. This questionnaire includes 38 Likert-type questions measured using a 6-point Likert scale (Strongly Disagree (1) – strongly agree (6)) and consisted of: 13 items focused on knowledge, 8 questions related to skill, and 17 items rated personal preparation for disaster management (PDM). The total score ranges between 38 and 228, with a higher score indicating more prepared.

We analyzed the data in two stages: (1) descriptive statistics, including age, length of work, gender, education level, participation in disaster course, nurses' self-efficacy, and disaster preparadness; (2) bivariate analysis between self-efficacy and disaster preparedness using Pearson Product moment with significant level (α) =0.05. This study was approved by the ethical committee review board for research No: 1606/UN25.8/KEPK/DL/2022. Ethical and administrative approval from the ethical committee of medical research Faculty of Dentistry, University of Jember.

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Results:

The research results are presented in the following tables. Table 1 describes the characteristics of the research respondents. Respondents in this study were nurses at health centers in the coastal area of the south coast of Jember, with a total of 144 nurses. The average age of nurses on duty at the health center on the south coast of Jember is 36.95 years (SD = 8.09) with an average length of service of 14.42 years (SD = 8.78). Most of the nurses on duty were women (58.3%), with the educational background of the majority being nursing diplomas (70.1%). In the field of disaster, it turns out that most nurses working at the south coast health center have never attended special training on disaster (81.9%).

Table 1. Characteristic of Respondents

Characteristic of Respondents (n=144)		
Variable	**Mean**	**SD**
Age (year)	36,95	8,09
Length of Work as a Nurse (Year)	14,42	8,78
Variable	**Frequency (n)**	**Percentage**
Gender		
Male	60	41,7
Female	84	58,3
Total	144	100
Education Level		
Nursing Diploma	101	70,1
Bachelor of Nurse	8	5,6
Ners	35	24,3
Total	144	100
Participation in any disaster course		
Yes	26	18,1
No	118	81,9
Total	144	100

The results of the assessment of disaster preparedness for coastal nurses and self-efficacy are presented in table 2. Based on these data, the value of disaster preparedness for coastal nurses has an average value of 164.54 (SD=23.58). Disaster preparedness for nurses consists of three domains: knowledge, skills, and personal preparation for disaster management (PDM). Domain Knowledge has an average value of 59.90 (SD=8.43), Skills have an average value of 35.37 (SD=5.49), and PDM has an average value of 73.99 (SD=1.25). Nurses' self-efficacy has an average value of 30.17 (SD=3.33). Nurse self-efficacy consists of three domains, namely level, with an average value of 8.96 (SD = 1.16), Strength with an average value of 8.96 (SD = 1.16), and generality, with an average value of 12.24 (SD=1.38)

Table 2. Self-efficacy and Disaster Preparedness of Coastal Nurse of Jember

Variable		Mean	SD	Min-Max
Self-Efficacy		30,17	3,33	20-40
a.	Level	8,96	1,16	6-12
b.	Strength	8,23	1,02	6-12
c.	Generality	12,24	1,38	8-16
Disaster Preparedness		164,54	23,58	94-222
a.	Knowledge	59,90	8,43	32-78
b.	Skill	35,37	5,49	19-48
c.	Personal preparation for disaster management (PDM)	73,99	1,25	37-102

Table 3. Pearson Correlational Test between Self-Efficacy and Disaster Preparedness

Variable	Disaster Preparedness	
Self-Efficacy	Correlation Coefficient ®	0,619
	Sig. (2-tailed) (*p*)	0,008*
	N	144

Table 3 showed a p-value of 0,008 (< 0.05), indicating a significant correlation between the disaster preparedness and self-efficacy of the coastal nurse in Jember. The degree of relationship was 0.619, which is considered significant and positive.

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Discussion:

The study results show a relationship between self-efficacy and nurse preparedness in dealing with the potential earthquake and tsunami disasters. This research is also in line with previous research, which also explains a significant relationship between self-efficacy and nurse readiness in dealing with disasters. Good self-efficacy in nurses will form a high level of disaster preparedness in nurses (Melnikov et al., 2014; Sanjaya, 2022; Wurjatmiko et al., 2018; Zeth et al., 2022). This condition can happen because the skills that arise in a person certainly involve perception, readiness, response, adjustment, and creation. It is strongly believed that this dimension originates from a person's self-efficacy (Kundre & Mulyadi, 2018; Saleem et al., 2018). Self-efficacy based on individual perception will impact a person's ability to take the necessary actions to produce the expected achievements (Bandura, 1986b).

The direction of the correlation relationship generated based on this study is the direction of a positive relationship. The higher the self-efficacy possessed by nurses on the south coast of Jember, the higher the disaster preparedness of these nurses in dealing with the potential earthquake and tsunami disasters. This was also explained by previous research, which showed a significant positive relationship between nurse self-efficacy and nurse preparedness in disaster management (Sanjaya, 2022). Other researchers also revealed that self-efficacy is positively related to personal behavioral abilities and behavioral outcomes that arise in taking action (Li et al., 2017).

Disaster preparedness consists of the dimensions of knowledge, skills, and preparation in dealing with disasters. This study found that the self-efficacy of nurses at the Jember south coast health center had self-efficacy in the good category. The meaning of these results is that nurses have good self-confidence to be ready to face disaster situations that can occur at any time. This phenomenon can occur due to personal factors or individual nurses that motivate nurses to prepare when a disaster strikes (Labrague et al., 2021). This study found that good disaster preparedness possessed by nurses comes from good self-efficacy. Preparedness from good self-efficacy will form nurses who always feel optimistic and resilient when facing disaster situations.

Various factors can influence the self-efficacy possessed by a nurse. Factors that can affect self-efficacy include gender, level of education, disaster training experience that one has attended, and work culture in the institution where one works (Wurjatmiko et al., 2018). Other studies explain that factors influencing nurse self-efficacy include mastery experience, vicarious experience, and verbal persuasion. (Hermanto et al., 2021). Based on these findings, nurses' experience in certain situations in their professional field is the main determining factor for their self-efficacy level.

In disaster preparedness, self-efficacy determines individual independence in planning and preparing for disasters. Self-efficacy is one determining factor determining how good or bad nurse preparedness is in dealing with disasters (Hammad et al., 2018). With good self-efficacy, nurses will be motivated and feel responsible for carrying out activities that aim to minimize the impact of natural disasters (Wurjatmiko et al., 2018). Individuals with good self-efficacy use more effective ways to solve problems because they believe in their ability to handle the situation. Thus self-efficacy can be used as an indicator of the ability to perform clinical behavior, especially in disaster preparedness (Jonson et al., 2017). Lack of readiness or preparedness to handle disaster victims or emergencies of disaster events is associated with low self-efficacy in disaster preparedness (Labrague et al., 2021). Self-efficacy possessed by a nurse is an important factor in supporting the professional competence of nurses needed by nurses to increase the level of preparedness in dealing with the potential earthquake and tsunami disasters.

Conclusions:

There is a relationship between self-efficacy and nurse preparedness in dealing with disasters. The association is in a positive direction, meaning that the higher the level of self-efficacy, the higher the nurse's disaster preparedness.

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