



# Self-Efficacy and Emergency Preparedness in Indonesia

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## Abstract

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**BACKGROUND:** Indonesia had the highest death toll globally due to earthquakes and tsunamis. Indonesia has changed its disaster management strategy in recent years, from emergency response and preparedness to disaster management preparedness.

**AIM:** This study aims to analyze the relationship of self-efficacy with nurses' readiness, Indonesian Emergency and Disaster Nurses Association (IEDNA) members, in dealing with natural disasters in Indonesia.

**METHODS:** This study is an analytical observational study with a cross-sectional approach. The study population is a member of the IEDNA. The sample was 107 nurses that sampled using random cluster sampling. The data were analyzed using Fisher's test with a significance level of 95%.

**RESULTS:** Out of 510, 107 nurses became respondents in the study. The gender of the majority of respondents was male (56.1%). As many as 46.7% of respondents were dominated by respondents aged 31–40 years, 34.6% of respondents worked in the Emergency Department. Most respondents (41.1%) had <1 year of experience as emergency nurses. The result of self-efficacy test was  $p = 0.001$  ( $p < 0.05$ ). The majority of emergency nurses (94%) in Indonesia have good self-efficacy in dealing with disasters, although some do not have experience in disaster management. This is because the emergency nurses in Indonesia often attend disaster management training.

**CONCLUSION:** This study concludes that the preparedness phase was good, and there was a significant relationship between self-efficacy and nurse preparedness in facing the disasters.

## Introduction

Disasters are global issues. The complexity of disaster issues requires disaster management in the form of proper planning and structuring, so that it can be implemented in an integrated manner. Asia is experiencing the second highest number of natural disasters, most likely due to its size and vulnerability [1]. In 2018, Indonesia had the highest death toll in the world due to earthquakes and tsunamis, amounting to 2,256. According to the Head of the Center for Information and Public Relations of the National Agency for Disaster Management (BNPB), there had been a series of natural disasters in Indonesia in 2018, starting from the earthquakes in West Nusa Tenggara and Bali in August 2018 [2]. Meanwhile, in September 2018, an earthquake was followed by a tsunami and liquefaction that struck four regions in Central Sulawesi, that is, Palu City, Donggala Regency, Sigi Regency, and Parigi Moutong Regency, which were directly affected by the disaster [3]. In addition, flash floods also hit Jayapura, Papua, in March 2019 [4].

Indonesia, in recent years, has changed its disaster management strategy, from emergency response and preparedness to disaster management preparedness. Therefore, participation and responsibilities across sectors, including government agencies,

non-governmental organizations, communities, and health service providers, especially nurses, are very important [5], [6]. Moreover, it has been widely reported that nurses played an important role in disaster preparedness worldwide [7]. Nurses in Indonesia confirm and reiterate that they are not fully prepared to handle real crisis circumstances because the majority have not performed tasks in these harsh conditions. Despite the fact that most nurses have received disaster management training, there is no disaster planning program that has been approved by medical care centers at the primary and hospital levels [6].

According to Melnikov, Itzhaki, and Kagan, nurses' preparedness is influenced by three factors: their knowledge related to the disaster, realistic attitude toward disaster assessment, and their self-efficacy to increase preparedness [8]. Self-efficacy is an individual's confidence that they have the ability to carry out certain tasks well. In preparedness, self-efficacy is a very determinant of a person's independence in planning and preparing for disaster. In addition to self-efficacy, nurses' preparedness will be better if their knowledge and education related to preparedness are also categorized as good [9]. Hence, the knowledge factor is inseparable from nurses' preparedness. Knowledge with evidence-based practice may influence the nurses' attitudes to be better [10].

Further, research by Park and Kim stated that experience in disaster management, which was followed by disaster-related knowledge of 25.6%, could have a significant influence on disaster nurses [11]. The results of a survey of 1,341 Indonesian nurses showed that the average scores of the preparedness in dealing with disasters, the ability to recover from disasters, and the evaluation of disaster victims were 3.13, 2.53, and 2.46, respectively [6]. These results were also in line with Hindriyastuti *et al.*, which stated that nursing students were less prepared to face disasters [12]. In general, nurses surveyed in the study were less prepared for disaster management and did not understand their role both during the disaster preparedness phase and in dealing with disaster situations. Thus, it can be said that disaster management is primarily influenced by the preparedness of human resources.

Several things made nurse resources suboptimal, including feelings of being unable to respond in various disaster situations, awareness of disaster vulnerability in the workplace that was coupled with a lack of confidence in the ability to handle the disaster properly, and suboptimal evaluation of the level of preparedness of the health care system in hospitals [5]. Another influential factor was nurses' lack of confidence in their ability to respond effectively to disaster events [13], [14]. Nurses have several specializations, one of which is specialization in the emergency department and disaster.

Good disaster management can reduce the loss of lives and properties and other losses [15]. Nurses should understand this, although sometimes they do not understand their role during the disaster preparedness phase or in post-disaster situations [6]. Therefore, this study aims to analyze the relationship of self-efficacy with the preparedness of emergency and disaster nurses of the Indonesian Emergency and Disaster Nurses Association (IEDNA) in Indonesia.

## Methods

### Research design

This research is analytical-observational with a cross-sectional approach [16]. The participants were nurses working at the ED and were members of the IEDNA. This research was done from June 10, to October 10, 2020. It involved six Indonesian provinces affected by natural disasters from 2004 to 2019: Aceh, Banten, Special Region of Yogyakarta, Central Sulawesi, West Nusa Tenggara, and Papua. The data collection employed Google Forms, and prospective respondents, sampled by the probability sampling technique [17]. The samples were required to fill out the

**Table 1: Characteristics of demographic**

Characteristics	f	%
Gender		
Male	60	56.1
Female	47	43.9
Total	107	100.0
Age		
<30 years	36	33.6
31–40 years	50	46.7
41–50 years	17	15.9
>50 years	4	3.7
Total	107	100.0
The highest level of education attained		
Three-year vocational nursing education	33	30.8
Bachelor of Nursing/Bachelor of Health Science	60	56.1
Master degree in nursing or health science	14	13.1
Total	107	100.0
Marital status		
Married	78	72.9
Single	29	27.1
Total	107	100.0
Work unit		
Emergency departments	37	34.6
Intensive care unit/high care unit	10	9.3
Operating theater	2	1.9
Renal Dialysis Unit	1	0.9
Educational Institution	19	17.8
Community health center (puskesmas)	11	10.3
Others	27	25.2
Total	107	100.0

consent forms before completing the questionnaires. The inclusion criteria of this research were that the nurses were working or had worked at health care institutions or education institutions in the field of emergency and that they were registered as members of the IEDNA. This survey was previously performed on several IEDNA nurses in East Java to ensure the instrument reliability.

**Table 2: The experience of disasters management training and disaster health team**

Characteristic	F	%
The experience of disasters management training		
Yes	78	72.9
No	29	29.1
Total	107	100.0
The experience of disaster health team		
Yes	62	57.9
No	45	42.1
Total	107	100.0

### Research instruments

Research data were collected by two questionnaires of the self-efficacy and the preparedness of IEDNA nurses in facing disasters in Indonesia. The self-efficacy questionnaire, with the total of 21 questions, was adopted from "Disaster response self-efficacy scale" with a Cronbach's alpha of 0.744 and used five-point Likert scale with the following criteria: 5 for "strongly confident," 4 for "confident," 3 for "less confident," 2 for "not confident," and 1 for "strongly not confident" [18]. Finally, the 33-questions of nurses' preparedness were adopted "the Japanese Disaster Nursing Readiness Evaluation Index" developed by Maeda, Kotera, Matsuda, and Huebner [19], with a Cronbach's alpha of 0.739 and using a four-point Likert scale with the following criteria: 4 for "always," 3 for "frequently," 2 for "occasionally," and 1 for "never." These questionnaire was translated from English to Indonesian by a professional translator and expert in the field of disaster nursing.

### Statistical test

The statistical test for analyzing the relationship of self-efficacy to the preparedness of IEDNA nurses used a Fisher's exact test at a 95% significance level [17].

### Ethical considerations

This research was granted a letter of ethical feasibility from the Medical Research Ethics Committee of the Faculty of Medicine, Universitas Mataram, No. 33/UN18.F7/ETIK/2020.

## Results

This study included 107 nurses from a total of 510 nurses who met the inclusion criteria. The results revealed that the majority of respondents (56.1%), as many as 60 respondents, were male, with 50 respondents (46.7%) being between the ages of 31 and 40. The most recent education level of 56.1% of respondents was a bachelor in nursing or bachelor in health science, and the marital status of most respondents, with a total of 78 respondents, was married (72.9%). Then, 37 respondents (34.6%) worked in the emergency department. The demographic characteristic can be seen in Table 1 below:

While, the majorities of emergency nurses (73%) in Indonesia have received disaster management training and have experienced as a disaster health team (58%) as seen in following Table 2:

According to Table 3, 91 respondents (93,8%) had good self-efficacy in dealing with natural disasters. Fisher's test results showed  $p = 0.001 < \alpha (0.05)$ , so that statistically, there was a significant relationship between self-efficacy and preparedness of emergency and disaster nurses in Indonesia. The strength of the relationship can be seen from the value of the odds ratio.

**Table 3: The Relationship between self-efficacy with emergency and disaster nurses' preparedness in Indonesia**

Self-efficacy	Emergency Nurses' Preparedness				OR	p value
	Poor		Good			
	n	%	n	%		
Poor	5	50.0	6	6.2	15.167	0.001
Good	5	50.0	91	93.8		
Total	10	100.0	97	100.0		

## Discussion

The analysis showed that self-efficacy and emergency nurses' preparedness for natural disasters

had a significant relationship. Self-efficacy is an individual's confidence in being able to carry out certain tasks well. In preparedness, self-efficacy is a very determinant of someone's independence in planning and preparing for disaster. Good self-efficacy can encourage nurses to be prepared to deal with disasters earnestly and responsibly [8].

Self-efficacy acts as one of the key constructions that affect one's intention to prepare. An individual will have high self-efficacy if they have experience or have received training. In this study, 72.9% of nurses had received disaster preparedness training. Someone tends not to act if they feel that their competency is lacking, whereas individuals who have high self-efficacy will have a tendency to be more prepared to deal with disasters. Self-efficacy can increase the number of plans developed by an individual and increase the perseverance in implementing them [20].

The manifestations of nurses' self-efficacy related to disaster preparedness were 1) confidence to be able to identify disaster risks, disaster impacts, and health service needs during disasters, 2) confidence to be able to establish and formulate disaster nursing planning, 3) confidence to be able to take part in training and disaster simulation, 4) confidence to be able to establish early warning system, 5) confidence to be able to educate the public about disaster preparedness, 6) confidence to be able to evaluate preparedness and data of nurses who are ready to be mobilized in the event of a disaster [21].

A good level of knowledge will affect one's self-efficacy. The adequacy of knowledge and practice could illustrate a positive attitude in the involvement in disaster response [22]. This certainly has a positive impact on self-efficacy. Their workplace can also influence an individual's good self-efficacy. This study found this fact in 34.6% of respondents who worked in the ED. Emergency nurses had high self-efficacy because they often handled a large number of patients so that when a disaster occurred, emergency department nurses had better preparedness [23].

Self-efficacy itself refers to personal factors, because it can create a strong motivation for nurses to make preparations according to their roles and functions in certain work teams when a disaster occurs [24]. A study stated that internal motivation to participate in preparedness activities will last longer and will make nurses always feel optimistic and resilient when they face difficulties when preparing for these activities [25].

Furthermore, a person's self-efficacy is influenced by several factors, such as mastery experience, representative experience, social persuasion, and physiological and emotional states. The results of this study indicated that 32.7% of nurses had work experience between 10 and 20 years. This was consistent with research conducted by Ainiyah, Ahsan, and Fathoni, which found that sufficient work experience (5–10 years) in the emergency room honed nurses' abilities in dealing with patients and cases. Thus the nurses could give

optimal care [26]. Nurses' self-efficacy is influenced by experience, disaster training, gender, education level, and work culture in their respective workplaces [27]. In addition, the results of this study showed that 57.9% of respondents had joined the health services in disaster management. Park and Kim said that experience in disaster management, which was followed by disaster-related knowledge of 25.6%, could have a significant influence on disaster nurses [11]. Further, self-efficacy is also influenced by training that nurses have received. In this study, 72.9% of nurses had received disaster preparedness training. Experience and training will form a self-efficacy that will affect one's readiness. Self-efficacy illustrates the confidence in the effectiveness of behavior to increase preparedness.

## Conclusion

In general, the level of nurses' self-efficacy for disaster preparedness was good. There was a significant relationship between self-efficacy and preparedness of emergency and disaster nurses of the IEDNA. This study had limitations, namely, data collection technique that used questionnaires from Google Forms, which sometimes made responses given by the respondents less valid. Further research needs to be developed to increase the competency of nurses of IEDNA by having comprehensive training on disaster preparedness and to examine other factors that influence nurses' preparedness in facing disasters.

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## References

- Jaganmohan M. Global Number of Natural Disasters Events 2000-2020. Statista; 2021. Available from: <https://www.statista.com/statistics/510959/number-of-natural-disasters-events-globally> [Last accessed on 2022 Feb 07].
- BNPB. Dampak Gempa Lombok: 436 Orang Meninggal dan Kerugian Ekonomi Lebih dari 5.04 Triliun Rupiah. Kepala Pus. Data Inf. dan Humas BNPB; 2018.
- BNPB. Kerugian dan Kerusakan Dampak Bencana di Sulawesi Tengah Mencapai 1.382 Triliun Rupiah. Kepala Pus. Data Inf. dan Humas BNPB; 2018.
- BNPB. Banjir Bandang Sentani Provinsi Papua. Kepala Pus. Data Inf. dan Humas BNPB; 2019.
- Oztekin SD, Larson EE, Akahoshi M, Öztekin I. Japanese nurses' perception of their preparedness for disasters : Quantitative survey research on one prefecture in Japan. *Japan J Nurs Sci*. 2016;13(3):391-401. <https://doi.org/10.1111/jjns.12121> PMID:26877076
- Martono M, Satino S, Nursalam N, Efendi F, Bushy A. Indonesian nurses' perception of disaster management preparedness. *Chin J Traumatol*. 2019;22(1):41-6. <https://doi.org/10.1016/j.cjtee.2018.09.002> PMID:30850325
- Veenema TG, Griffin A, Gable AR, MacIntyre L, Simons RN, Couig MP, et al. Nurses as leaders in disaster preparedness and response a call to action. *J Nurs Scholarsh*. 2017;48(2):187-200. <https://doi.org/10.1111/jnu.12198> PMID:26869230
- Melnikov S, Itzhaki M, Kagan I. Israeli nurses' intention to report for work in an emergency or disaster. *J Nurs Scholarsh*. 2014;46(2):134-42. <https://doi.org/10.1111/jnu.12056> PMID:24354915
- Chen H, Chang SC, Feng JY, Lin SJ, Chen LC, Lee CL, et al. Nurse participation in continuing education in disaster nursing in taiwan. *J Emerg Nurs*. 2017;43(3):197-202. <https://doi.org/10.1016/j.jen.2016.10.009> PMID:28359709
- Novrianda D, Hermalinda H. Knowledge, attitude and practice of evidence-based nursing practice and barriers. *J Keperawatan Padjjaran*. 2019;7:884. <https://doi.org/10.24198/jkp.v7i3.884>
- Park H, Kim J. Factors influencing disaster nursing core competencies of emergency nurses. *Appl Nurs Res*. 2017;37:1-5. <https://doi.org/10.1016/j.apnr.2017.06.004> PMID:28985913
- Hindriyastuti S, Kako M, Ranse J, Kako M, Hutton A. Nursing students' roles and experiences of disasters in a nursing school. *J Keperawatan Padjjaran*. 2019;7:997. <https://doi.org/10.24198/jkp.v7i1.997>
- Labrague LJ, Yboa BC, Pettite DM, Loblino LR, Brennan MG. Disaster preparedness in philippine nurses. *J Nurs Scholarsh*. 2016;48(1):98-105. <https://doi.org/10.1111/jnu.12186> PMID:26650188
- Baack S, Alfred D. Nurses' preparedness and perceived competence in managing disasters. *J Nurs Scholarsh*. 2013;45(3):281-7. <https://doi.org/10.1111/jnu.12029> PMID:23574544
- ICN. ICN Framework of Disaster Nursing Competencies. Geneva, Switzerland: International Council of Nurses; 2009.
- Nursalam. The Concept of Implementing Research Methods in Nursing Sciences. Jakarta: Salemba Medika; 2013.
- Sugiyono S. Metode Penelitian Kuantitatif, Kualitatif, dan R & D. Bandung: Alfabeta; 2016.
- Li H, Bi R, Zhong Q. The development and psychometric testing of a disaster response self efficacy scale among undergraduate nursing students. *Nurse Educ Today*. 2017;59:16-20. <https://doi.org/10.1016/j.nedt.2017.07.009> PMID:28917131
- Maeda T, Kotera S, Matsuda N, Huebner CA. Developing a scale to measure Japanese nurses' individual readiness for deployment to disasters. *Nurs Health Sci*. 2018;20(3):346-54. <https://doi.org/10.1111/nhs.12572> PMID:30311410
- Herdwiyanti F, Sudaryono S. Preparedness differences in facing disasters reviewed from elementary school's self-efficacy level in Kelud Mountain affected area. *J Psikol Kepribadian dan Sos*.

- 2013;2:1-7.
21. Wurjatmiko AT, Zuhriyah L, Fathoni M. Analysis of factors related to preparedness of puskesmas (community health center) nurse in facing flood disaster in Kendari city of Southeast Sulawesi, Indonesia. *IOSR J Dent Med Sci*. 2018;17:36-47.
22. Ahayalimudin NA, Ismail A, Saiboon IM. Disaster management: A study on knowledge, attitude and practice of emergency nurse and community health nurse. *BMC Public Health*. 2012;12:2458.
23. Fry M, Macgregor C. Confidence and impact on clinical decision-making and behaviour in the emergency department. *Australas Emerg Nurs J*. 2014;17(3):91-7. <https://doi.org/10.1016/j.aenj.2014.03.003>
24. Samuel P, Quinn MT, White M, Fitzpatrick JJ. Crisis leadership efficacy of nurse practitioners. *J Nurse Pract*. 2015;11:862-68. PMID:25113311
25. Villers MJ, Devon H. Moral distress and avoidance behavior in nurses working in critical care and noncritical care units. *Nurs Ethics*. 2012;20(5):589-603. <https://doi.org/10.1177/0969733012452882> PMID:23186938
26. Ainiyah N, Ahsan A, Fathoni M. Analysis of triage implementation factor in emergency room. *J Ners*. 2015;10:147-57.
27. Ansthoobar D, Miellen C. *Disaster Nursing Management*. New Delhi: Janpoor Company; 2013.