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Research

Analyzing Andalas University Hospital's Disaster Management Capacity Using the Hospital Safety Index

Yulastri Arif [1], *Lia Pertiwi* [2], *Dorisnita*[3]
[1] *Faculty of Nursing Andalas University, Padang, West Sumatra, Indonesia*
[2] *Post Graduate Andalas University, Padang, West Sumatra, Indonesia*
[3] *RSUP Dr. M. Jamil Padang, West Sumatra, Indonesia*

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CORRESPONDING AUTHOR

Yulastri Arif
E-mail: Yulastri.arif@gmail.com

A B S T R A K

Background: *Indonesia, especially West Sumatra Province, is a disaster-prone area. Thus, assessing the preparedness of institutions, especially hospitals as health service facilities in disaster management, is important to do, including the Andalas University Hospital as one of the educational hospitals prepared for disaster management. One of the measuring tools used to analyze hospital preparedness in disaster management is the Hospital Safety Index (HSI). Through HSI, it can be assessed the preparedness of hospitals in disaster management in terms of the functional capacity of disaster emergency management. HIS also looks at how far the hospital can operate in a disaster emergency.*
Purpose: *The purpose of this study was to analyze the Functional Capacity Preparedness of Andalas University Hospital in Disaster Management Based on the Hospital Safety Index.*
Method: *This research is a quantitative research with an evaluative descriptive approach. The research population was all staff and management of Andalas University Hospital who were involved in the disaster management process at the hospital, totaling 379 people and a sample of 15 people were selected by purposive sampling technique. The instrument in the study used the Hospital Safety Index checklist module 4 regarding preparedness of the functional capacity of the hospital and interview guidelines. Hospital preparedness analysis using the Hospital Safety Index Calculator on the Excell tabulation.*
Result: *The results showed that the functional capacity preparedness index for disaster emergency management at Andalas University Hospital was 0.69. This shows that the classification of Andalas University Hospital is in status A with a high level of preparedness (index range 0.66-1). Hospital constraints in improving disaster preparedness in terms of functional capacity are limited budget funds, limited human resources, the location of the hospital is quite far and the focus of hospital management on disaster preparedness has not been. Hospitals have taken various strategies to overcome the obstacles experienced in order to optimize the functions of hospitals in disaster preparedness.*

INTRODUCTION

A disaster is a series of threatening and disruptive events. There are natural, non-natural, and human causes of disasters. Unpredictable disasters result in a variety of disturbances and problems, including loss of life, environmental damage, and property loss, as well as psychological effects [1]. According to figures from the International Federation of Red Cross and Red Crescent Societies reported by the Center for Research on the Epidemiology of Disaster (CRED), there were 5740 disasters globally in 2015, with 32,550 documented fatalities and 108,493 individuals affected [2]. Indonesia is a nation that is highly vulnerable to possible natural calamities. Owing to Indonesia's geographical location, several provinces are susceptible to natural disasters. West Sumatra is one of the provinces with a very high disaster vulnerability. This geographical position makes West Sumatra Province extremely vulnerable to natural and non-natural disasters [3] such as volcanic eruptions, earthquakes, tsunamis, floods, and landslides.

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According to the Indonesian Disaster Information Data (DIBI) compiled by the Regional Disaster Management Agency (BPBD, 2020), landslides (222 incidents), floods (372 incidents), flash floods (77 incidents), earthquakes (374 incidents), tides (54 incidents), typhoons and tornadoes (284 incidents), forest fires (28 incidents), and drought (88 incidents) have occurred in the province of West Sumatra between 2017 and 2021. (1 incident). Although though there was only a single incidence, the Covid 19 pandemic as a man-made catastrophe has taken approximately 160 thousand lives and is still ongoing. It can be stated that the vast majority of natural and man-made disasters occurred in West Sumatra (3). According to data from the Ministry of Finance of the Republic of Indonesia for the year 2020, the average cost to the government of dealing with natural and man-made catastrophes that occur annually in Indonesia is 22.8 trillion rupiah. Throughout the last five years, 30 million people were relocated due to natural catastrophes, 29 thousand were injured, and 7,000 perished or went missing [4]. This demonstrates that the frequency of natural disasters and the magnitude of resulting losses are on the rise. The rising frequency of disasters emphasizes the necessity for readiness to deal with them from a health perspective.

Health in catastrophes underlines the significance of being prepared for calamities. This preparedness comprises planning, management, coordination, training, and other necessary actions, with a strong emphasis on support, capacity building, and local management in order to optimize reaction and mitigate potential disaster-related effects. Preparation for this disaster is a necessary preventive measure to lessen the impact, reduce casualties, and minimize the effects of losses caused by disasters. This encompasses state, regional, and institutional preparedness with a role in disaster management [5]. Hospitals are preparedness facilities that play an essential role in addressing disaster victims.

The Hospital Safety Index (HSI), which is published by the World Health Organization, can be used to evaluate the level of preparedness that hospitals have in the event of a disaster. One is able to evaluate a hospital's level of preparedness for emergencies and overall safety using something called the Hospital Safety Index (HSI). The Hospital Safety Index (HSI) is a tool that can determine how well a healthcare facility can continue to function and keep its structure intact in the face of calamities and other types of catastrophes [6]. In order to conduct a thorough evaluation of a hospital's preparedness using the Hospital Safety Index (HSI), it is necessary to take into account four different modules. These modules are as follows: (1) disaster vulnerability/hazards affecting hospital safety; (2) emergency preparedness and response; and (3) emergency communications. (2) the readiness of the buildings' structural components; (3) the readiness of the structures' non-structural components; and (4) the readiness of the functional capacity of hospital emergency management. One of the aspects that needs to be examined the most is the readiness of the functional capacity of hospital emergency management. This is because it refers to the operational preparedness of the hospital in the event that a crisis occurs.

The results of the Hospital Safety Index (HSI) provide three different hospital safety indexes, the first of which is a safety index ranging from 0 to 0.35 and receiving a classification of C, which denotes a low risk. (2) Safety index between 0.36 and 0.65, corresponding to grade B (medium); (3) Safety index between 0.66 and 1, corresponding to classification A (high). When it comes to dealing with unexpected events and catastrophes, each evaluation index offers recommendations for changes that are individualized to the requirements of the institution [7]. The outcomes of the Hospital Safety Index (HSI) assessment that has been carried out in a number of nations around the world have been varied. In 2014, Jahangiri reported the results of a self-assessment of safety assessments for disasters in hospitals in his research titled "Hospital safety index (HSI) analysis in confronting disasters: A case study from Iran." Jahangiri conducted research related to HSI in 224 hospitals out of 919 hospitals in Iran. His findings were published in Jahangiri's work titled "Hospital safety index (HSI) analysis in confronting disasters: A case study from The overall safety components received a score of 32.4 out of a possible 100 points. A total of 122 hospitals, or 54.5%, were rated as having a low level of safety, while 102 hospitals, or 45.5%, were rated as having an average level of safety. There are no hospitals that are classified as being in the high safe category, and the hospital index is currently in the category C. The non-structural module 3 has the safety index value that is the lowest of all the modules, which is 0.32 [8].

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In Indonesia, Sunindijo, Lestari, & Wijaya (2019) studied 10 West Java and 5 Yogyakarta hospitals in their journal. This study's HSI showed a total hospital preparedness index of 0.544 (level B/average safe) with structural 0.613, non-structural 0.579, and functional capacity 0.416. The lowest preparedness index score is functional capacity [9]. The COVID-19 pandemic caused problems at Andalas University Hospital. Logistics, room systems, communication, medicines, the large number of hospital health workers affected by the disaster, and human resources were all issues in handling the Covid 19 disaster (K3RS UNAND, 2021). According to the Hospital Safety Index (HSI), hospital emergency management functional capacity issues arise. However, more research is needed to assess UNAND Hospital's disaster preparedness, especially in terms of emergency management capacity.

METHOD

Quantitative evaluative descriptive research is used [10]. 15 people were studied at Andalas University Hospital (UNAND Hospital) from October to November 2022. 5 key respondents were chosen to answer research questions about hospital constraints and disaster preparedness strategies. Purposive sampling met research objectives and criteria to select respondents. The measurement tool is the WHO Hospital Safety Index (HSI) checklist module 4 on Functional Capacity Preparedness for Hospital Emergency Management and an interview guide that addresses hospitals' disaster preparedness constraints and strategies. Quantitative data for the Hospital Safety Index Calculator with Word Excel tabulation:

Preparedness Index = {(number of checklist items with low results x 0) + (number of checklist items with medium results x 0.5 + (number of checklist items with high results x 1 } : total number of checklist items [11]

Henceforth, the calculation of the final preparedness index for the functional capacity of hospital emergency disaster management is classified into 3 classifications of hospitals, namely: C, B, and A, namely [6].

Safety Index	Hospital Classification	Intervention plan to be carried out
0 – 0.35	C (low)	Urgent intervention is urgently needed Hospitals are unlikely to function during and after emergencies and disasters, and current levels of security and emergency and disaster management are inadequate to protect the lives of patients and hospital staff during and after emergencies or disasters.
0.36 – 0.65	B (currently)	Intervention steps are needed in the short term. The current level of hospital safety and emergency response and management is such that the safety of patients and hospital staff, and the ability of the hospital to function during and after a disaster emergency are potentially at risk.
0.66 - 1	A (high)	It is probable that the hospital will function in emergencies and disasters. However, it is recommended to continue with measures to improve emergency response and disaster response capacity and to undertake measures in the medium and long term to improve security levels in the event of emergencies and disasters.

RESULT DAN DISCUSSION

Andalas University Hospital (UNAND Hospital) is a State Higher Education Hospital (RSPTN) which is under the management of Andalas University. Andalas University Hospital is located in the Limau Manis UNAND campus complex, Pauh sub-district, Padang city, West Sumatra. This hospital stands on a land area of 3.5 Ha with a building area of 21,306 m2. The UNAND Hospital has a capacity of 200 beds and was operational for the first time on November 4 2017. The hospital was officially opened in September 2018 and has been accredited for the first time through an accreditation survey by KARS in December 2018.

1. Preparedness functional capacity of disaster emergency management Andalas University Hospital

No	Type of Emergency Disaster Management Functional Capacity Preparedness Assessment of Hospital	*Fungsional Safety Index*			Total	*Max Score*	*Index group score*
		Low	Middle	High			
1	Management coordination during emergencies and disasters	0	3	5	8	6,5	0.81
2	Hospital response and recovery plans for emergencies and disasters	0	3	2	5	3.5	0.7
3	Communication and information management	0	1	3	4	3.5	0.88
4	Human Resources	0	4	1	5	3	0.6
5	Logistics and finance	0	2	2	4	3	0.75
6	Patient service and support	0	7	2	9	5.5	0.61
7	Evacuation, decontamination and security	0	5	0	5	2.5	0.5
	Total	0	25	15	40	27.5	0.69
Classification of Functional Capacity Preparedness Index							**A**

CONCLUSION

Analysis of functional capacity preparedness for emergency management of hospitals according to the Hospital Safety Index shows that Andalas University Hospital has a preparedness index of 0.69 with an A preparedness classification and high preparedness status. This shows that Andalas University Hospital can function well during emergencies and disasters.

ANNOUNCEMENT

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