COMMUNITY HELATH CENTER RESILIENCE IN DISASTER MANAGEMENT: A NARRATIVE REVIEW

Ani Sutriningsih[1,2], Chatarina Umbul Wahyuni[3], Setya Haksama[4]

[1] Faculty of Health Sciences, Universitas Tribhuwana Tunggadewi Malang
[2] Doctoral Program, Faculty of Public Health, Universitas Airlangga, Surabaya
[3] Department of Epidemiology, Faculty of Public Health, Universitas Airlangga, Surabaya
[4] Department of Health Administration and Policy, Faculty of Public Health, Universitas Airlangga, Surabaya

ABSTRACT

Background: Indonesia's disaster management context uses a system called Pentahelix, which is defined as a more optimal framework for activities and jobs. The community health center is the front line that plays a significant role in the preparedness and management of disaster victims. The aim of this study is to review the resilience of disaster management in community health center.
Subjects and Methods: This was a narrative review. Sources of data in this study come from articles obtained through PubMed, Science Direct, and Scopus databases. The keywords used were "disaster" OR "emergency" AND "resilience" AND "hospital" OR "healthcare" OR "health care". The inclusion criteria consisted of: (1) articles published in English; (2) research or review articles; (3) publication from 2014-2019.
Results: Based on the available articles, it was found that the resilience of public health centers was generally identified in 5 aspects, namely physical toughness, social resilience, institutional toughness, infrastructure resilience, and vulnerability.
Conclusion: Community health center resilience is needed to ensure that community health center will be resilient, safe and will continue to operate in the event of an emergency or disaster.

Keywords: resilience, community health center, disaster

Correspondence:
Ani Sutriningsih. Faculty of Health Sciences, Universitas Tribhuwana Tunggadewi Malang/ Doctoral Program, Faculty of Public Health, Universitas Airlangga, Surabaya. Email: ani.sutriningsih-2018@unair.ac.id

BACKGROUND

The context of disaster management in Indonesia uses a Penta-helix framework which is interpreted as a framework for activities and work to be maximized. Penta-helix consists of government, society, business, academic or expert, and the mass media who have role, interest and character. In Indonesia, Community Based Disaster Risk Management or CBDRM is well known as a method to increase the capacity of the community in managing disaster risk in their own area. Community health center are identical in community, so capacity building is the resources involved and support from stakeholders/ penta-helix around the community health center.

The community health center is the front line that plays a major role for disaster victim preparedness and management (Sugino et al., 2014). This is stated in the Republic of Indonesia's Minister of Health of Kepmenkes Number 145/ Menkes/ SK/ 1/ 2007, namely the implementation of health service duties in disaster management at the location of the incident is the Head of the Community health center. Based on Article 53 of Law No. 24 of 2007, health service is one of the basic needs that must be met in a disaster condition. Health service facilities include village maternity post, village health post, community health center assistant, community health center, and hospital. The Directorate of Com-

https://doi.org/10.26911/the7thicph-FP.04.14

munity Empowerment at BNPB (2018) states that there are 7 vital objects that can be a factor to leverage community resilience, one of which is the community health center. This is reinforced by the existence of a global target in the Sendai Framework which is to substantially reduce disaster damage to critical buildings and disruption to basic services, including health and education facilities through building resilience by 2030 (SFDRR, 2015).

The Minister of Health of the Republic of Indonesia Number 75 of 2014 states that the function of the community health center is the implementation of the first-level Public Health Efforts (UKM) in their working areas and the first-level Individual Health Efforts (UKP) in their working areas. Based on Kepmenkes No. 145 of 2007 the activities of community health center in disaster management are divided into the implementation of pre-disaster, during disaster, and post-disaster activities. This is in accordance with the study of Sugino et al. (2014) which states that during the disaster the community health center was badly damaged by the disaster, causing major disruption to health services. The impact of paralyzed health services at community health center, apart from the potential for increased disease outbreaks due to disasters, also resulted in an increase in the number of victims who died and were injured due to obstruction of life saving measures and medical treatment (Pascapurnama, et al., 2018).

Community health center activities in disaster management are still not optimal because community health center located in disaster-prone areas do not yet have an adequate information system. The health reconstruction effort towards the resilience of community health center relies on accurate information and good coordination between sectors. The collection of information and actions emergency simultaneous has been able to collect: 1) area and geographic location of the disaster and population estimates, 2) status of transportation routes and communication systems, 3) availability of clean water, foodstuffs, sanitation facilities and shelter, 4) number of victims, 5) damage, service conditions, availability of medicines, medical equipment and personnel in health facilities, 6) locations and the number of residents who became refugees, and 7) estimated numbers who died and disappeared.

The definition of resilience in the context of disaster means the capacity of a system, community or community that is potentially exposed to hazards to adapt or change to achieve or maintain an acceptable level of function and structure (UNISDR, 2012). In the health context, resilience is the capacity or ability of the entire system to prepare, plan, absorb, recover from disaster events and maintain the necessary health services in both expected and unexpected conditions (Zhong, 2014).

The general objective of the preparation of this literature review is to identify the resilience of public health centers in disaster management. Specifically, the literature review will discuss the resilience of community health center in 5 aspects, namely physical resilience, social resilience, institutional resilience, infrastructure resilience, and vulnerability.

SUBJECTS AND METHOD

1. Study Design

The was a traditional review study. The data were obtained through searching articles on the internet databases namely the PubMed, Science Direct, and Scopus.

2. Inclusion and Exclusion Criteria

The keywords used are (disaster * OR emergency *) AND (resilience *) AND (hospital * OR healthcare OR health care). The inclusion criteria consisted of: (1) articles published in

https://doi.org/10.26911/the7thicph-FP.04.14

English; (2) study or review articles; (3) publication from 2014-2019.

3. Article Extraction

This study was a traditional review, so, the authors acknowledge the possibility that selection bias might influence the articles discussed in this paper. However, although this more purposeful strategy for conducting a literature review has the potential to bias the scope of the literature studied and the subsequent conclusions drawn, the narrative synthesis method is considered appropriate for the purpose of summarizing, synthesizing, drawing insights from the collective body of work, and providing additional direction especially when studying limited topic.

RESULTS

The concept of community health center resilience to disasters is a comprehensive concept, which includes: 1) Structural components, including: building location, design specifications, and materials used; 2) Nonstructural components, including: architectural design and elements, medical and laboratory equipment, life-saving facilities, safety and security systems; 3) Functional components, including: location and accessibility, internal circulation, equipment and supplies, standard operating procedures and guidelines, logistics and utility systems, safety and hazard warning, human resources and monitoring and evaluation (Ministry of Health, 2012). The concept of toughness community health center is needed to ensure that community health center will be resilient, safe and will continue to operate in the event of an emergency or disaster (WHO, 2010; Ministry of Health, 2012).

DISCUSSION

Based on study by Zhong et al. (2014) there is a hospital resilience framework. This framework consists of 4 (four) domains, including: security and vulnerability, disaster preparedness and resources, sustainability of essential services, and recovery and adaptation. This study was conducted in 50 tertiary hospitals A, B, and C in Shandong Province, China. Hospital samples were taken by stratified random sampling. The results showed that there were four main factors from eight domains which reflects the overall level of disaster resilience, including hospital safety, disaster management, disaster resources and disaster medical care capabilities. The domain of vulnerability and security consists of surveillance and security. The disaster preparedness and resource domains consist of leadership, emergency communication, cooperation, disaster planning, logistics management, emergency staff, and disaster training. The domain of essential medical service sustainability comprises emergency services, health interventions, and surgical capacity. The recovery and adaptation domain consists of recovery, evaluation, and adaptation.

Factors that affect resilience include cooperation, training, resource capability, equipment, structural, and organizational operational procedures (Cimellaro et al., 2018). Based on the study results of Cai et al. (2018) found that the three most frequently recommended adaptation strategies are empowering local governments and leaders, increasing public awareness, and improving community infrastructure and communication. Other study states that policies, procedures, resources, and structures in organizations affect resilience (Twigg, 2007; Zhong et al., 2014; Madan and Routray, 2015). Morales et al. (2019) stated the factors of leadership, organizational culture, adaptive capacity, and organizational management ability as predictors of resilience.

Study by Samsuddin et al. (2018) discusses the attributes of hospital toughness. The study was conducted in 26 hospitals in Malaysia with a method cross sectional. The

https://doi.org/10.26911/the7thicph-FP.04.14

hospital toughness assessment used a questionnaire consisting of 243 attributes (21 structural questions; 107 non-structural questions; and 115 functional questions) and 23 toughness indicators (5 robustness; 5 redundancy; 6 resourcefulness; and 7 rapidity).

Data were analyzed using analysis Spearman Rank. The results showed that 17 attributes of preparedness and 23 indicators of resilience were rated as 'very critical' by respondents where human resources & training and the ability to adapt at the right time were ranked first. In addition, non-structural preparedness provides greater correlation strength to resilience; redundancy; and sense. In contrast, the functional attribute shows a higher correlation with speed. The results can be an indicator for public hospital stakeholders in Malaysia to improve their preparedness and resilience.

Preparedness is influenced by social factors, community capacity, economy, institutions and infrastructure. Meanwhile, vulnerability is influenced by social factors, community capacity, economy, institutions, infrastructure, and hazards (Kusumastuti et al., 2014). Disaster preparedness is influenced by several factors. The results of study by Adams et al. (2018) mentions that structural factors consisting of trust between organizations and government-funded programs affect disaster preparedness. Other study states that health care workers (nurses) also play a role in disaster preparedness and response which consists of organizational knowledge, attitudes, facilities and infrastructure (Melnikov, 2014; Veenema et al., 2015; Veenema et al., 2016). Nurse readiness is in the poor category during the disaster preparedness phase or in overcoming post-disaster situations (Martono, et al., 2018).

Disaster drills are often the best learning method for achieving effective disaster preparedness (Sangkala and Gerdtz, 2018). This is in accordance with the results of study which states that knowledge, attitudes, skills of nurses, and personal readiness are directly proportional to disaster preparedness (Duong, 2009; Khalaileh et al., 2012; Baack & Alfred, 2013; Ibrahim, 2014).

The conclusion of this study is that the concept of community health center resilience against disasters is a comprehensive concept, which includes structural components, non-structural components, and functional components.

REFERENCE

Adams RM, Prelip ML, Gli DC, Donatello I, Eisenman DP (2018). Facilitating partnerships with community- and faith-based organizations for disaster preparedness and response: results of a national survey of public health departments. Disaster Med Public Health Prep, 12(1): 57-66. doi: https://doi.org-/10.1017/dmp.2017.36

Khalaileh MAA, Bond AE, Beckstran RL, & Al-Talafha A (2010). Disaster preparedness evaluton tool. Journal of Advanced Nursing, 66 (3), 664-672. doi: https://-doi.org/10.1111/j.1365-2648.2009.0-5208.x

Baack S, Alfred D (2013). Nurses' preparedness and perceived competence in managing disasters. J Nursg Scolarsh, 45(3): 281-287. doi: https://doi.org/-10.1111/jnu.12029

Cai H, Lam NS, Qiang L, Zou L, Correl RM, & Mihunov V (2018). A synthesis of disaster resilience measurement methods and indices. Int Jof Disaster Risk Reduction, 31: 844-855. doi: https://doi.-org/10.1016/j.ijdrr.2018.07.015

Cimellaro, Malavisi, Mahin (2018). Factor analysis for evaluation hospital resilience. ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering, 4(1).

https://doi.org/10.26911/the7thicph-FP.04.14

Kusumastuti RD, Viverita, Husodo, ZA, Suardi L & Danarsari DN (2014). Developing a resilience index towards natural disasters in Indonesia. Int J of Disaster Risk Reduction, 10(4): 327-340. doi: https://doi.org/10.1016/j.ijdrr.2014.10.007

Madan A, Routray JK (2015). Institutional framework for preparedness and responses of disaster management institution from national to local level in India with focus on Delhi. Int J of Disaster Risk Reduction, 14(4): 545-555. doi: https://doi.org/10.1016/j.ijdrr.2015.10.004

Martono M, Nursalam N, Satino S, Efendi F, & Bushy A (2018). Indonesian nurses' perception of disaster management preparedness. Chinese Journal of Traumatology. Jurnal Traumatologi Cina, 22(1): 41-46. doi: 10.1016/j.cjtee-.2018.09.002

Melnikov S, Itzhaki M, & Kagan I (2014). Israeli nurses' intention to report for work in an emergency or disaster. J Nurs Scholars, 46(2): 134–142. doi: 10-.1111/jnu.12056

Ministry of Health (2012). Pedoman teknis bangunan rumah sakit yang aman dalam situasi darurat dan bencana. Jakarta: Kementerian Kesehatan Republik Indonesia.

Pascapurnamaa DN, Murakamia A, Yasutan HC, Hattori T, Sasakia H, & Egawa S (2018). Integrated health education in disaster risk reduction: Lesson learned from disease outbreak following natural disasters in Indonesia. International Journal of Disaster Risk Reduction, 29: 94-102. doi: https://doi.org/10.1016/j-.ijdrr.2017.07.013

Samsuddin NM, Takim R, Nawawi AH, Alwee, SNAS (2018). Disaster preparedness attributes and hospital's resilience in Malaysia. Procedia Engineering, 212: 371–378.

Sangkala MS & Gerdtz MF (2018). Disaster preparedness and learning needs among community health nurse coordinators in South Sulawesi Indonesia. Australasian Emergency Care, 21(1): 23–30. doi: 10.1016/j.auec.2017.11.002

SFDRR (2015). Sendai framework for disaster risk reduction 2015 - 2030. United Nations.

Sugino M, Hapsari ED, Madyaningrum E, Haryant F, Warsini S, Takada S, et al (2014). Issues raised by nurses and midwives in a post-disaster Bantul community. Disaster Prevention and Management, 23 (4): 420-436. doi: 10.1108/DPM-05-2013-0086

Twigg J (2009). Characteristics of a disaster-resilient community. London: University College London.

Veenema TG, Griffin A, Gable AR, Macintyre L, Simons N, Couig MP, Jr-Walsh JJ, Lavin RP, Dobalian A, & Larson E (2016). Nurses as Leader in Disaster Preparedness and Response-A Call to Action. J Nurs Scholar, 8(2): 187-200. doi: 10.1111 / jnu.12198

Veenema TG, Losinski SLA, & Hilmi LM (2016). Increasing emergency preparedness. The American Journal of Nursing, 116(1): 49-53. doi: https://doi.org-/10.1097/01.NAJ.0000476169.2842-4.0b

Undang-undang No. 24 Tahun 2007 tentang Penanggulangan Bencana

Zhong S, Clark M, Hou X-Y, Zang YL & Fitzgerald G (2014). Development of hospital disaster resilience: conceptual framework and potential measurement. Emerg Med J, 31(11): 930-938. doi: 10.1136 / emermed-2012-202282