

COMMUNITY-BASED INFORMATION FOR DISASTER RISK IDENTIFICATION

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ABSTRACT

INTRODUCTION: Indonesia Disaster Risk Index (IRBI) in 2018 recorded that 52.33% of districts/cities in Indonesia were at high risk of experiencing disasters, including Bandung Regency area. This study aims to provide an overview of the results of disaster risk identification based on community needs in disaster-prone regions.

MATERIAL AND METHODS: The research method employed is a quantitative exploratory survey of research variables using a cross-sectional design. The measured data includes respondent characteristics, assessment of disaster risk identification, knowledge, attitudes, and community skills related to the need for independent disaster preparedness.

RESULTS: The results showed three types of priority disasters in the community, *i.e.*, earthquakes, landslides, and hurricanes. The level of community knowledge, attitudes and skills related to disaster preparedness is still low: this is due to the ineffectiveness of education and socialization on disaster management based on risk reduction in the community. The role of the nursing community is crucial to empowering the community by providing education and socialization.

CONCLUSIONS: The study shows that there is a need to increase the knowledge, attitudes, and skills of the community in anticipating disasters, so it requires community empowerment and cross-program/cross-sector collaboration by involving elements of the community, government, and universities.

KEY WORDS: disaster risk; community needs

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INTRODUCTION

The National Disaster Management Agency (BNPB) 2016 released data that there had been more than 1800 disaster events between 2005 and 2015, of which most (78%) or 11 648 of them, were due to hydrological damage and geological changes [1]. Hydrometeorological disasters occur in floods, waves/extreme weather, forest fires, and droughts. On the other hand, geological disasters are primarily due

to earthquakes, tsunamis, volcanic eruptions, and erosion. Moreover, the Indonesia Disaster Risk Index (IRBI) 2018 recorded that 52.33% of districts/cities in Indonesia are at high risk of experiencing significant disasters, including Bandung City, especially South Bandung region [2].

According to data from the Centre for Research on the Epidemiology of Disasters (CRED), Indonesia, from 2008 to 2018, was classified as the country

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most affected by natural disasters and the country with the highest estimated death toll caused by natural disasters in the world every year. The World Risk Index (2017) places Indonesia the 33rd in risk category "very high" [3]. It is necessary to increase understanding of the Disaster Risk Reduction Paradigm (DRR) by positioning the community as an active subject in disaster management. This requires adequate understanding, attitudes, and skills in disaster management efforts by the community.

Previous studies by Setiawan et al. show that providing education and strengthening the mindset of rural residents who live in high disaster risk areas is very important to do to normalize the impacts that arise on various aspects of life due to disasters. Population preparedness is the main thing that must be done to anticipate and minimize health problems due to disaster events [4]. This study is supported by the findings of Salasa et al. strengthening and involving citizens in dealing with the risk of disaster events through a preparedness approach to emergency response events can increase the awareness and ability of the young generation to anticipate various things that arise as a result of disasters by empowering all disaster activists [5]. It can be recommended that the young generation be involved in training activities on emergency response plans to increase their preparedness to face the threat of disaster. The various research studies mentioned above show that community groups are an important factor in disseminating the importance of public understanding of disaster management. Further research Kulatunga explains that cultural factors related to disaster risk reduction activities have proven that, in some ways, culture has become one of the factors of community survival from disasters [6]. Therefore, it can be stated that culture has the power to increase or reduce people's vulnerability to disasters.

The concept of nursing actions based on cultural considerations provides reinforcement that in disaster nursing, community nursing must take advantage of cultural forms such as bonds and relationships by providing information and supplements, respecting cultures such as local rules and characters, and restoring and comforting the affected islanders [7]. Strengthening disaster activities in rural communities is a priority because the village is the lowest government institution and has the authority to regulate and manage the interests of the community as the direct spearhead in dealing with local

residents, so community preparedness is an important key in efforts to minimize health problems due to the disasters [4]. In line with this, nurses need to consider both community and long-term care in order to respond effectively to disasters. The response referred to the planning process, the positive and negative consequences of assistance, and individual planning in the community [8].

Referring to this explanation, the main thing that should be implemented is to increase public awareness and participation in pre-disaster, intra-disaster, and post-disaster prevention, mitigation, and self-help, so that basic data are needed to support and strengthen it. In this regard, this study is aimed at describing the knowledge, skills, and attitudes of community members in identifying disaster risk based on the needs of community members in disaster-prone regions, the results of which can be used to identify the need for community preparedness in dealing with disasters in a standardized manner.

MATERIAL AND METHODS

Quantitative exploratory surveys are employed to determine a community's ability to identify the priorities of disaster risk based on community perceptions in disaster-prone regions. The quantitative cross-sectional design is also applied when measuring respondents' characteristic variables, knowledge, attitudes, and community skills to identify disaster preparedness needs. Based on risk reduction independently. The sample in this study were representatives of the community members of Sugih Mukti Village, Pasir Jambu District, Bandung Regency, which were taken randomly in two disaster areas in different *RWs*, *i.e.*, *RW* 05 and *RW* 12, consisted 60 respondents.

The research instrument is in the form of a questionnaire consisting of 30 lists of closed questions with three alternative answer choices. The value of the validity test was of $r = 0.362-0.809$ and the reliability of $r = 0.61$. The instrument on skills is formed in an observation checklist sheet containing a list of skills possessed by the community in independent disaster management activities such as setting up to help victims in the health sector as an implication of community empowerment activities. An observation sheet on the skills performed by the community is prepared to see whether or not an action is taken. Instruments related to skills were tested for validity and reliability by using *Integrator reliability*. A ques-

tionnaire on attitudes was taken by using a Likert scale, consisting of 30 statements of community attitudes about disasters and disaster management by the community with the following alternative answers: strongly agree (4), agree (3), disagree (2), and strongly disagree (1) in a positive statement while for negative information the value is changed otherwise. The results of the validity test obtained a value of 0.461–0.870 and a reliability of 0.607.

RESULTS

Results of disaster risk identification

Table 1 shows that the priority disaster risk felt by the people of Sugih Mukti Village is earthquakes (80%), landslides (11.7%), and hurricanes (8.3%). In contrast, other types of disasters threatening are fire and conflicts between communities.

The study results show that the three types of priority disasters that the people of Sugih Mukti worried about are earthquakes, landslides, and hurricanes. The above facts show a similar result to a report study conducted by BPBD of Bandung Regency, which identifies priority disasters, *i.e.*, floods, landslides, cyclones, droughts, and earthquakes.

Knowledge, attitudes, and skills of respondents in disaster management

Table 2 illustrates that the average knowledge of the respondents about disaster and community-based disaster management in Sugih Mukti, a disaster-prone region, is still inadequate.

This is indicated by the average value of knowledge, attitudes, and skills is still low. The average knowledge score is 58.75 (SD 2.54), and Attitude is 59.31 (SD 0.57). And none of the skills of all respondents can show the ability to act or basic help skills for disaster victims that are carried out independently by the community.

DISCUSSION

Sugih Mukti Village in Pasir Jambu District Bandung Regency is included as one of the prone regions to landslides and earthquakes [2]. This condition is worsened by the geographical location of Sugih Mukti, which is in ring 1 of PT Geo Dipa Energi location as one of the BUMNs that explores geothermal from mount Patuha in Bandung district. The area is around mount Patuha, about 60 km from the city of Bandung. Geodipa Energi project activity is one of

Table 1. Results of Disaster Risk Identification Priority (RBP) 1 to 3 by Sugih Mukti Village Community (n = 60)

VARIABEL	RBP 1		RBP 2		RBP 3	
	F	%	F	%	F	%
Earthquake	48	80	0	0	5	8.3
Landslide	7	11.7	24	40	18	30
Hurricanes	5	8.3	26	43.4	7	11.7
Fire	0	0	5	8.3	25	41.7
Conflict	0	0	5	8.3	5	8.3
Total	60	100	60	100	60	100

Table 2. Measures of Central Tendency of Knowledge Attitudes and Skills in Disaster Management (n = 60)

Variable	Maximal	Minimal	SE	SD	Mean
Knowledge	80	25	1.61	12.54	58.75
Attitudes	83	31	1.36	10.57	59.31
Skills	0	0	0	0	0

SD — standard deviation; SE — Standard Error

the factors that were worsening the vulnerability of Sugih Mukti Village to the threat of landslides and volcanic earthquakes [9].

The results of the study on the level of knowledge, attitudes, and skills of the community or community are still low. In fact, almost all of the community stated that they have never had community-based disaster management skills. The results of this study are nearly the same as the findings of Yan et al. [10] there were no nurses who had adequate knowledge and skills to provide assistance to the community because they had never received training before. Thus, training disaster management to improve nurses' competence is essential and needs to be done [11]. According to Al Thobaity [12], the competency domains that need to be taught include understanding disaster content and locations, communication during disasters and ethical issues, skills, and disaster preparedness are fundamental things for nurses.

This finding confirms that rural communities living in disaster-prone areas really need education and capacity building in anticipating disaster threats. This recommendation is based on the low level of community knowledge, attitudes, and skills in dealing with and managing disaster risk. Community preparedness is an important key in efforts to mini-

mize health problems due to natural disasters [4]. The results of the study by Salsa et al. strengthen these findings and confirm the urgency of community empowerment through contingency planning by increasing the readiness of adolescents against the threat of death due to disasters [5]. Therefore, it is necessary to really consider the sustainability of this approach by young people in supporting an integrated and coordinated disaster emergency system with health service facilities.

In this situation, the role of the community nurse becomes very important. Community nurses also have a central role and position in preparing the community in educating the community so that they are always ready and responsive in facing disaster threats [13]. Research by Walsh [14] provides an explanation that effective preparedness, response, and recovery from disasters requires a well-planned, integrated effort with professionals. Related to this, Öztekin et al. [15] revealed the perception of Japanese nurses about their disaster preparedness, Japanese nurses perceive that they really need information related to knowledge, skills, and disaster preparedness and recommend the need for a clear, concise, and precise set of training standards that can be used to ensure their competence in dealing with disaster situations.

The training set created can provide a useful starting point for identifying the expected capabilities of health professionals in disaster management and public health management. The research conducted [16] concluded that the prescribed interventions that have been taken by Community Health Nursing (CHN) collaboratively are guided by a planning framework that fits the nursing process. The method is used to take a holistic approach in the earthquake-affected area. This framework includes 4 phases; Assessment, Planning, Implementation, and Evaluation. The framework provides specific directions for working with health care providers for public health promotion in a more systematic manner.

A more detailed explanation regarding the role of nurses in supporting the strength of community participation related to disaster risk reduction has been set by the government. As professional health workers, nurses are expected to have a strategic role in overcoming the above problems through community nursing services as one of the nursing disciplines. Disaster management is an effort to direct the use of existing resources to overcome disaster

threats through each stage of management: pre-disaster, intra-disaster, and post-disaster [17].

Communities in disaster-prone regions must have the ability and strength independently to deal with disasters at every stage, adapted to the conditions and culture of the surrounding community. The results of [6] link cultural factors with Disaster Reduction Risk (DRR) activities and highlight how culture has influenced DRR activities. It is evident that in some respects, culture has become one of the factors of community survival from disasters and that culture has the power to increase or reduce community vulnerability to disasters. Kulatunga's research is strengthened by the results of research Salmani which identify that managerially, it is necessary to complete the legislation, NGOs, and socio-cultural factors, preparedness, response, retention, relocation, termination, and follow-up in each role of nurses in disaster-prone areas [6, 18]. However, not all nurse roles can be easily implemented in disaster situations [19]. The results of the study explain that there are obstacles or challenges in daily life after a disaster incident for older community members (elderly), so efforts are needed to help them reach the recovery stage [20].

In consideration of these conditions, the need for community empowerment to be independent during the disaster cycle cannot be avoided. Training the community to be independent and help themselves should be done continuously by taking into account local cultural conditions. The implication is that people need to have adequate knowledge, skills, and attitudes to be able to help themselves by providing them with training related to disasters [21].

The results of research by Ren et al. [22] in China show several conditions that strengthen the need for community empowerment in disaster locations are as follows:

1. The role model of trainers behavior influences the behavior of participants through their interactions during the training process;
2. The need for mental health training programs to identify the needs of disaster personnel and the victims;
3. Develop a systematic inter-professional education strategy through a collaborative approach to bridge the gap between theory and practice or reconcile local needs and international guidelines;
4. Regulation of training, to maintain and monitor the quality of training program content, standards, ethics, and code of conduct at all levels;

5. A community-centered inter-professional education approach is needed, which focuses on modeling the roles of trainers, and officers, paying attention to the needs of trainees and developing a systematic interprofessional education strategy.

The findings of Ren et al. [22] strengthen the results of Lebowitz's research [23], which explains the need for a stronger emphasis on public health workers in dealing with disasters, such as Civil Reserve Corps medical training to improve public health infrastructure and provide more significant opportunities for having collaboration with the community in disaster management. In addition, all health professionals from various disciplines need to work together and share perceptions in integrating knowledge, and bridging gaps in dealing with disasters, including providing an understanding of risk assessment, identification, and disaster preparedness as implementing a multidisciplinary approach strategy is believed to be the best method in empowering communities to be prepared to face disaster risk, mitigate and prepare for emergencies [24, 25].

Limitation

This research method uses quantitative descriptive studies. The data only describes the number (quantity) of the variables studied, even though it will be more exciting and comprehensive if the assessment of disaster priorities is complemented by direct interviews with the community members who experienced the disaster.

CONCLUSIONS

There are three types of priority disasters experienced by the people of Sugih Mukti Village, *i.e.*, earthquakes, landslides, and hurricanes. The community does not have the knowledge, attitudes, and skills needed to be able to help themselves in the event of a disaster. It can be seen that their level of knowledge, attitudes, and abilities is still low. For this reason, it is necessary to educate, socialize and empower the community and cross-program a cross-sector collaboration by involving elements of the community, government, and universities. In addition, to describe a complete scale of disaster priorities. In the future, it is necessary to conduct qualitative studies related to the perceptions and experiences of community members in dealing with disasters that often befall them.

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Conflict of interest

All authors declare no conflict of interest.

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