

Need Assessment for The Development of Disaster Mitigation Training Model in South Sulawesi

Firdaus Daud
Biology Department
Universitas Negeri Makassar
 Makassar, Indonesia
 firdaus5752@yahoo.com

Adnan
Biology Department
Universitas Negeri Makassar
 Makassar, Indonesia
 adnan_unm@yahoo.co.id

Arsad Bahri
Biology Department
Universitas Negeri Makassar
 Makassar, Indonesia
 arsad.bahri@unm.ac.id

Arifah Novia Arifin
Biology Department
Universitas Negeri Makassar
 Makassar, Indonesia
 arifahnoviaarifin@unm.ac.id

Andi Citra Pratiwi
Biology Department
Universitas Negeri Makassar
 Makassar, Indonesia
 andicitra.pratiwi@gmail.com

Abstract—This research is aimed to assess the community needs to development Disaster Mitigation Training Model in South Sulawesi. The research population was adolescents in South Sulawesi Province, and the sample consists of 50 people who represented a total of 15 districts and three cities. The questionnaire is taken aimed to investigate participants' knowledge of the types, frequency, causes, and mitigation of disaster as well as the sources they have used to gain knowledge on disaster. The result of data analysis showed that flood (26%), hurricane (21%), and forest fire (12%) are perceived as the most common types of disaster by participants, which may appear once (53%) or twice (21%) a year. Majority of participants (78%) responded "Yes" to the questions of whether they know the causes of the disaster and the management technique that should be conducted when the disaster occurred. However, when asked to elaborate on their answer, the informed explanation could not be provided by the participants. The main sources of participants' knowledge regarding disaster were a television (30%) and parents (24%). Only a few participants responded that teachers (10%), internet (10%), newspaper (9%), books (9%), and peers (5%) had been the source of knowledge on disaster mitigation. Furthermore, all participants responded "Yes" (100%) when asked about the need to develop a model of disaster mitigation training model.

Keywords—*need assessment, mitigation, disaster management*

I. INTRODUCTION

Indonesia is a sovereign island nation located in Southeast Asia. As the fourth most populous country located along the equator, it is susceptible to many different types of hazards, including floods, earthquakes, volcanic eruptions, and tsunamis [1]. The occurrence of various natural disaster in Indonesia is associated with three tectonic plates affecting the Indonesian region, namely the northward-moving Indo-Australian Plate, the south-eastward moving South-East Asian Plate, and the westward-moving Pacific Plate [2]. Besides that, the complexity of demographic, social, and economic conditions, as well as the low capacity in handling disasters also contributes to the increasing disaster risk in Indonesia.

The regular occurrence of a disaster in Indonesia has put Indonesia as one of the most disaster-prone countries in the

world [3]. Generally, the most frequent type of disaster in Indonesia is a hydrological disaster which reached 53.3% of the total disaster events in Indonesia. Among the occurred disaster, the most frequent is flooding (34.1 percent of the total disaster events in Indonesia). In the last decades, Indonesia has faced frequent flooding every year in many parts of the country, including in South Sulawesi. Flood catastrophe could lead to various negative consequences, including social, environmental, and economic impacts [4].

Compared to the frequency of flooding, the occurrence of geological disasters (earthquakes, tsunamis and volcanic eruptions) is much lower, as it only reached around 6.4 percent [2]. Despite occurring in a lower frequency, these types of the disaster had caused great damage and casualties, mainly due to the earthquake that was followed by the tsunami. Such disaster had occurred in the provinces of Aceh and North Sumatra on December 26, 2004. It was a mega earthquake that awakened the Indonesian government to the susceptibility of Indonesian coastal areas to tsunami [5]. The occurrence of the earthquake in Indonesia is affected by the country geographic position which lies along the boundaries of three tectonic plates which may generate large earthquakes and sustain volcanic activity. Based on the position and movements of the three plates. Sulawesi is one of the provinces with the risk of the severe earthquake [1]. An earthquake followed by the tsunami has also occurred in Palu, Central Sulawesi Province, which had caused a death toll more than a thousand. The potential hazard caused by large scale natural disasters in Sulawesi is accompanied by the vulnerability of social condition, infrastructures, economics, and local policies. The unique social and cultural dynamics in South Sulawesi Province has also made it prone to social disasters. Accordingly, a careful arrangement and planning are required to manage the complexity of the occurred disasters in a directed and integrated manner.

Various disasters should be a lesson for the community to prepare themselves by unpredictable disaster occurrence. Hence, each in the community should be well prepared to face the occurrence of the disaster. Disaster preparedness is defined as "actions are taken to effectively anticipate, respond to, and recover from the impact of likely or current hazard events or conditions" [6]. Preparedness, in this case, refers to the ability to anticipate and reduce the impact

caused by disasters. Disaster preparedness is an initiative to increase preparedness and knowledge of the community about a disaster, or at least the types of disasters most likely to occur in the local area [3]. However, in reality, the efforts to anticipate and reduce the impact of disasters in the community have not been well implemented, not only by the community but it so by the government. It is due to the paradigm of disaster management in the community which still rely on emergency response, from which action will only be taken after the occurrence of a disaster. Therefore, the implementation of disaster management in the community needs to be improved by making a paradigm shift from the emergency response to the risk reduction paradigm. A risk reduction paradigm in disaster management is related to the characteristics of potentially occurred threat in a certain area, along with the ability of individuals in the area to deal with the threats by utilizing available resources.

One of the important efforts that can be done to improve the capacity of the community in disaster mitigation is to conduct disaster mitigation training which is related with the characteristics of regional disaster as well as the characteristics of local communities. Although there have been various types of disaster preparedness training in the community, one of the main factors that cause a failure to achieve the training objectives is when the training is provided to the wrong people at the wrong time [3]. To prevent the implementation of irrelevant training for the community in the target area, it is deemed important to conduct a need assessment for the development of a disaster mitigation training module. The development of a disaster mitigation training module is a first step to strive for implementing an appropriate disaster mitigation training for participants which is related to the cultural and disaster characteristics of each region. The need assessment of the development of disaster mitigation training modules would be conducted by measuring the understanding of students or community in South Sulawesi about the types of disasters that often occur in their regions as well as their ability to deal with disasters. The need assessment is an important step to ensure that the disaster mitigation module that will be developed later can be carried out by the needs and characteristics of the target community.

II. RESEARCH METHOD

The type of research is descriptive that aims to conduct a need assessment for the development of disaster mitigation training modules for disaster-risk communities in South Sulawesi. The study population was the communities in South Sulawesi Province. A total of 50 South Sulawesi residents, aged 19 to 21 years participated as research subjects, representing a total of 15 districts and three cities in South Sulawesi. The research data was collected by using a questionnaire developed to measure the respondents' understanding on the types of disasters that often occur in their area, the frequency of disasters that often occur in their area, and their knowledge of the steps should be taken in dealing with disasters. A short interview was also conducted after filling out the questionnaire by asking the respondents to elaborate on their written answers on the questionnaire. Thus, interviews conducted after filling out the questionnaire was aimed to further explore the respondents' knowledge regarding the item questions on the questionnaire.

III. RESULT AND DISCUSSION

The results of data analysis showed that flooding (26%), typhoon (19%), and drought (12%) were viewed by the respondents as three types of commonly occurred disaster in South Sulawesi (Fig. 1), with a frequency of occurrence once (53%) or twice (21%) a year (Fig. 2). Most respondents (78%) answered "Yes" to the question of whether or not they know about the cause of the disaster and the way to manage the occurred disaster (Fig. 3). However, when the respondents were asked to explain the causes of disasters and how they deal with disasters, they cannot provide elaboration regarding the causes of disasters and the steps needed to deal with the occurred disaster.

The results of data analysis regarding the sources of respondents' knowledge related to disasters showed that majority of respondents stated television (30%) and parents (24%) as their main source of knowledge on disaster. Other sources of knowledge regarding disaster mitigation with a lower percentage of use, among others, come from teachers (10%), internet (10%), newspapers (9%), books (9%), and colleagues (5%). Furthermore, all participants answered "Yes" (100%) when asked about the importance of developing disaster mitigation training models (Fig. 4).

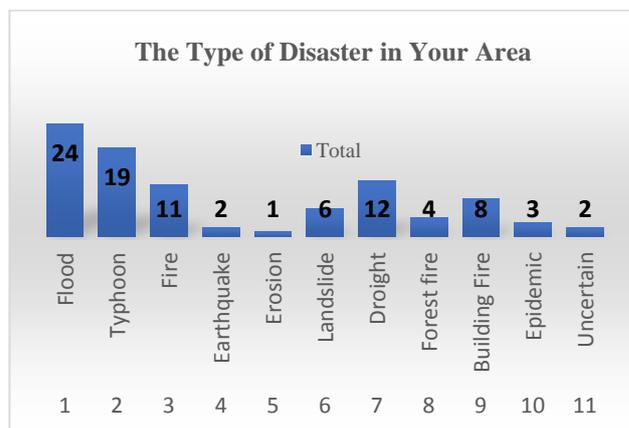


Fig. 1. Students' Knowledge on The types of disaster in South Sulawesi

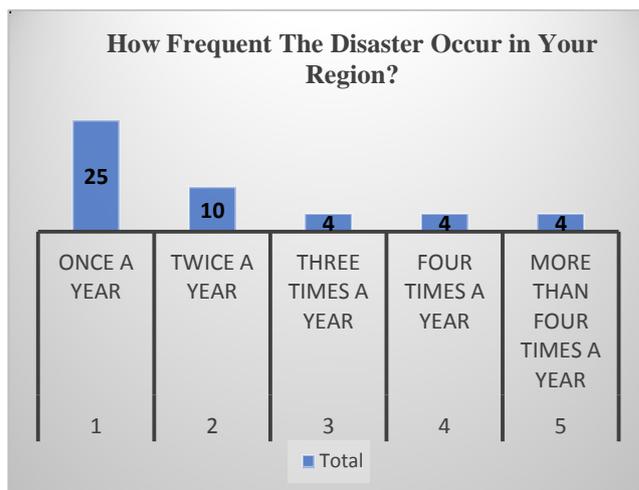


Fig. 2. Students' Knowledge on The frequency of disaster in South Sulawesi

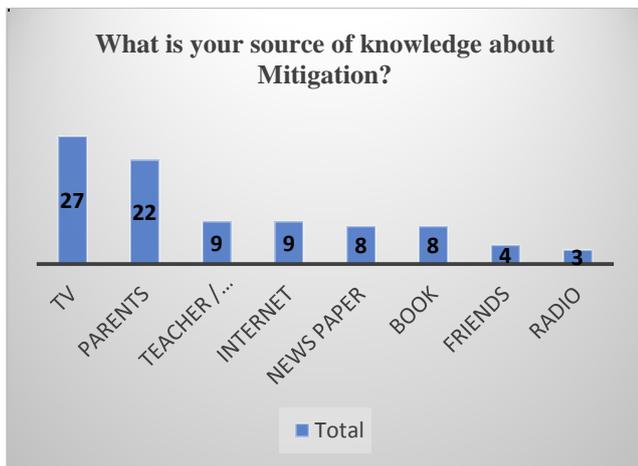


Fig. 3. Students' Source of Knowledge Regarding Disaster Mitigation

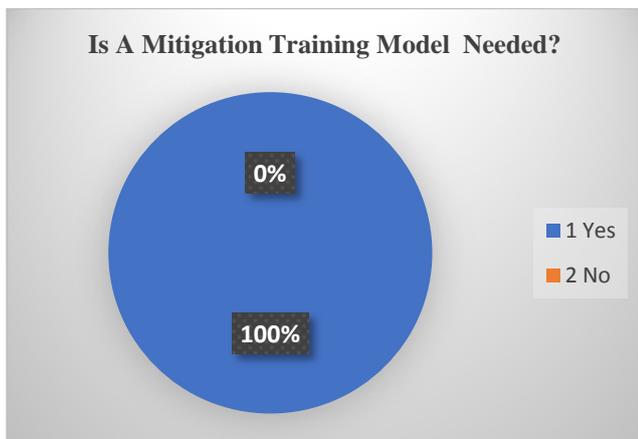


Fig. 4. The Need of the Development of A Disaster Mitigation Training

Based on data obtained from The National Agency for Disaster Countermeasure [2] during the last ten years (2009-2018), there were 610 disasters in South Sulawesi Province. The occurred disasters with a higher frequency of occurrence during this period including floods (42%), hurricane (33%), drought (14%), and landslides (10%). Meanwhile, other disasters, with a lower percentage of occurrence were forest fires (1%). The three types of disasters with the highest frequency of occurrence according to data released by The National Agency for Disaster Countermeasure are by participants' responses regarding the types of disasters perceived as the most frequent, namely flooding (24%), hurricane (19%), and drought (12%). This indicates that the respondents' knowledge about the types of commonly occurred disaster in the surrounding environment is in line with the factual data released by The National Agency for Disaster Countermeasure.

Nonetheless, respondents in this study also place forest fires as one of the most frequent disasters (11%). Respondents' opinions on this matter are not following data from The National Agency for Disaster Countermeasure [7] as the forest fire disasters in South Sulawesi only occur with a percentage of events below 1%. In this case, during the last ten years, only two incidents of forest fires were recorded in South Sulawesi. The television can influence the differences in respondents' perceptions of the actual occurrence of the forest fire in the field as the main sources of respondents' knowledge (30%) about disasters and mitigation. This may occur as forest fires are frequently occur as a hot news

national news, but this incident generally occurs on the islands of Borneo and Sumatra.

When answering the question item regarding the average occurrence of disasters in their respective regions per year, the majority of respondents (50%) stated that disasters occur once a year. Meanwhile, 20% of respondents answered twice a year, and less than 10% answered three times or more. The data from The National Agency for Disaster Countermeasure shows that disasters in South Sulawesi generally occur about 4 to 5 times per year in the past seven years. However, when it viewed from the data on the number of disasters occurred per region, in 2017, more than 50% of the regions in South Sulawesi experienced disasters ranging from 3 to 7 times per year. The area with the highest disaster incidence in 2017 is Wajo District (11 disasters) followed by Barru Regency (8 disasters). Meanwhile, in 2018, Wajo District remained the region with the highest disaster incidence in South Sulawesi (10 disasters) followed by Tana Toraja District with seven disasters.

A total of 72% of respondents answered "Yes" to the question of whether they knew the cause of the disaster, and also for the question of whether they knew the ways must be taken to overcome the occurred disaster. Only a small percentage of respondents (28%) claimed that they do not know the cause of the disaster and what to do when a disaster occurred. For respondents who answered "Yes," further interviews were carried out to find out how much knowledge they had about it. However, the results of the interview indicated that even though the participants answered "Yes," they have not been able to provide an accurate explanation of the causes of the disaster and the countermeasures that need to be taken when a disaster occurs. One of the factors that can be the cause of the respondents' low ability to explain the causes of disasters is the low role of books and teachers' knowledge which can be used as the main source of respondents' knowledge regarding disaster mitigation efforts. In this study, only 8% of respondents mentioned books and 9% of respondents acknowledged school teachers as their main source of knowledge regarding disaster mitigation. This indicates that the role of educational institutions is still low in improving the community's readiness to deal with disasters through various disaster mitigation efforts. When asked about the importance of developing disaster mitigation training modules, all respondents (100%) answered that the development of a disaster mitigation training model is "necessary" to be conducted.

IV. CONCLUSION

Based on the results of data analysis, it can be concluded that the respondents in this study have known the type of disaster that most often occurs in South Sulawesi. However, most respondents were unable to provide an accurate explanation of the causes of the disaster and the appropriate mitigation measures when the disaster occurred. All respondents (100%) stated that the development of disaster mitigation training modules needed to be carried out.

REFERENCES

- [1] Center for Excellence, "Center for Excellence in Disaster Management & Humanitarian Assistance," p. 98, 2018.
- [2] C. of E. in D. M. and H. Assistance, *Indonesia: Disaster Management Reference Handbook*. Center for Excellence in Disaster Management and Humanitarian Assistance, 2015.

- [3] N. N. N. Nazli, S. Sipon, and H. M. Radzi, "Analysis of training needs in disaster preparedness," *Procedia-Social Behav. Sci.*, vol. 140, pp. 576–580, 2014.
- [4] R. I. Hapsari and M. Zenurianto, "View of flood disaster management in Indonesia and the key solutions," *Am. J. Eng. Res.*, vol. 5, no. 3, pp. 140–151, 2016.
- [5] A. Muhari, S. Diposaptono, and F. Imamura, "Toward an integrated tsunami disaster mitigation: Lessons learned from previous tsunami events in Indonesia," *J. Nat. disaster Sci.*, vol. 29, no. 1, pp. 13–19, 2007.
- [6] U. Nations, "2009 UNISDR Terminology on Disaster Risk Reduction," *ations International Strategy for Disaster Reduction*, Geneva, Switzerland, 2009.
- [7] IFRC, "Disaster Preparedness Training Programme Participant resource and learning module," 2000.