



ISSN Print: 2394-7500  
 ISSN Online: 2394-5869  
 Impact Factor: 5.2  
 IJAR 2019; 5(6): 82-84  
 www.allresearchjournal.com  
 Received: 10-04-2019  
 Accepted: 12-05-2019

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## A learning about family's disaster preparedness from earthquake in lombok island

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### Abstract

Lombok Island Indonesia is an area with high earthquake risk due to hazards, exposure and vulnerability. The earthquake that occurred on Lombok island between July 2018-September 2018 resulted in death and material damage. One of high risk causes is the lack of family's disaster preparedness in earthquake disasters. This study aims to describe : family's preparedness and the learning about earthquakes that obtained by those families in Lombok Island. The research subjects were 83 families from earthquake survivors in Lombok island. The data collected by using questionnaires and interviews. The results of the study showed that those families are lacked of preparation for earthquake disaster. The earthquake that occurred eventually give them some learnings such as physical health, psychological health, and behavioral health; which are expected to increase capacity in dealing with earthquake disasters. The results of this research are discussed further.

**Keywords:** Earthquake, risk, vulnerability, family preparedness

### Introduction

Indonesia has earthquake hazards caused by the meeting of the three main earth tectonic plates, namely the Indian-Australian Ocean in the south, the Pacific Ocean in the east and Eurasia. The relative movements of three tectonic plates and two plates namely the Philippine and Carolina seas, has caused earthquakes in border area between plate encounters and regional faults, which subsequently become the center of the earthquake source (Yuwanto, 2018) <sup>[7]</sup>. The plate is part of the earth's outer shell (with a thickness between 50-250 kilometers) which can still move (Mahyuzar, 2010) <sup>[2]</sup>. Global Data Assessment Report on Disaster Risk Reduction (2009) shows that Indonesia is in the third position of earthquake disaster and the first position of Tsunami disaster.

Lombok Island is one of the earthquakes prone areas (Kertapati, Soehaimi, Djuanda, Effendi, Putranto, 2001) <sup>[1]</sup>. In 2018 a series of earthquakes occurred on the island of Lombok with the following details.

**Table 1:** Lombok Earthquake 2018

Date of earthquake	Magnitude (Richter Scale)
July 29, 2018 (05.47)	6.4
August 5, 2018 (18.46)	7
August 9, 2018 (12.25)	6.2
August 19, 2018 (11.00)	6.5
August 19, 2018 (21.56)	6.9

Earthquakes that occur with a range of magnitude 6.4 - 7 SR can be categorized as destructive earthquakes that can have significant damage to buildings even though the buildings are sturdy. A number of 3,883,493 people were affected by the earthquake that occurred on Lombok Island with details : 555 deaths, 33,318 minor injuries, 2,165 seriously injured, 431,416 refugees.

Thus earthquakes that occurred on Lombok island can be consider as a high risk disaster. World Health Organization (2002) <sup>[4]</sup> states that one determinant of high risk disaster is vulnerability. Families have an important role in dealing with disasters. Families that have disaster preparedness can be a factor in disaster risk reduction.

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On the other hands, families that lack disaster preparedness are vulnerabilities. Referring to the impact of the earthquake disaster on Lombok island, this study focuses on one high risk cause of vulnerability, namely family preparedness. This study aims to describe the readiness of the family in dealing with earthquake disasters and learning obtained by the family from the earthquake disaster experienced.

**Literature Review**

Disaster cannot be predicted but can be reduced at risk. Disaster risk reduction is a study of disaster mitigation (Yuwanto, 2015) [5]. Disaster mitigation can be categorized into two, namely structural and non-structural mitigation. Structural mitigation includes: mapping of disaster-prone areas, arranging safe settlement, making signs and evacuation routes in each house, making gathering points, making signs and evacuation routes, and location of evacuation.

One type of structural mitigation is a family disaster preparedness. An alert disaster family must have capability of psychological first aid for disaster. Psychological first aid (Minnesota Department of Health, 2013) [3] includes physical health, psychological health, and behavioral health. *Physical health* includes *safeguard* and *sustain* that lead into protecting survivors from threats, bringing them to a safe place, basic needs such as food, drinks, clothing, shelter or anything else. *Psychological health* includes *comfortable* and *connect* that can help survivors meeting their basic needs, help individuals dealing with and resolve problems, provide information, and connect individuals to their families or social support providers. Behavioral health is through educate and empowerment, in which the goal is to teach survivors about how to life healthily in disaster conditions and identify resources they have, so that survivors achieve better conditions after a disaster.

Psychological first aid focuses on the basic needs of individuals who experience emergency or trauma conditions, such as reducing threat, increasing the sense of control, providing and giving information needed, fulfilling basic needs such as food, drink, health, shelter, psychological comfort and the direction for the future after

experiencing a catastrophe which refers to Abraham Maslow's Hierarchy of Needs and Clayton Alderfer's ERG (Yuwanto, 2017) [6].

**Method**

The subjects of this research are 83 (eighty three) families of disaster survivors living in East Lombok, North Lombok and West Lombok. The data in this research collected by gahtering questionnaires and interviews. Questionnaires are used to reveal the family's readiness to deal with earthquake disasters and will be analyzed using quantitative descriptive method. Interviews were used to reveal family learning from earthquakes experienced and will be analyzed using qualitative method.

**Result and Discussion**

The earthquakes that occur on Lombok island, can be considered having high risk due to the following things :

1. It is located in the area along fault line of the earthquake, so that the earthquakes occur continuously and cause danger with high frequency
2. It is a densely population. The risk of earthquake occurs in densely residential areas is larger due to the large number of buildings and residents. The possible amount of damage is higher because the building can be fall or injure people.
3. The earthquake occured at night, while most people are at home and sleep.
4. Lack of readiness of individuals to deal with earthquake disasters is because they never have earthquakes experience and earthquake preparedness learning.
5. Buildings are not prepared to withstand earthquakes, they only have: buildings with poor technical design, building land, and walls without reinforcement.
6. There are only old buildings, buildings with heavy roofs, and many tall buildings that built without good fundamental, so the buildings over there are not stable.

These are the results of my research related to family's readiness in dealing with earthquake disasters which are Disaster Education and Knowledge of Potential Disaster.

**Tabel 2: Disaster Education**

Disaster Education	Total	%
Has experienced education	3	3.6
Never experienced education	80	96.4
Total	83	100

Table 2 shows 3 (3.6%) research subjects had experienced disaster education. There were 80 (96.4%) research subjects had never experienced disaster education. The forms of

disaster education that have been followed include disaster preparedness are simulations, how to evacuate, and recognize evacuation routes.

**Tabel 3: Knowledge of Potential Disaster**

	Potential Disaster		Earthquake Signs		Negative Impact of Earthquake	
	Σ	%	Σ	%	Σ	%
Have knowledge	18	21.7	7	8.4	83	100
Do not have knowledge	65	78.3	76	91.6	0	0
Total	83	100	83	100	83	100

Based on Table 3 there are 78.3% (seventy eight point three percent) research subjects do not have knowledge of the potential earthquake and 91.6% (ninety one point six

percent) do not have knowledge about the earthquakes signs. All research subjects have knowledge of the effects of earthquake such as damage, injuries, and fatalities.

**Table 4:** Knowledge about Preparedness for Earthquake Disasters

	Evacuation Process		P3K		"Siaga Bencana" Bag	
	$\Sigma$	%	$\Sigma$	%	$\Sigma$	%
Have knowledge	3	3.6	4	4.9	0	0
Do not have knowledge	80	96.4	79	95.1	83	100
Total	83	100	83	100	83	100

Based on Table 4 there were 96.4% (ninety six point four percent) research subjects do not know about the proper evacuation process, also 95.1% (nine five point one percent)

the research subjects do not know about the emergency first aid track and all research subjects did not know about "Siaga Bencana" bag.

**Table 5:** Knowledge of Psychological Recovery

	Ways of Psychological Recovery		Healthy Behavior during Disaster	
	$\Sigma$	%	$\Sigma$	%
Have knowledge	0	0	0	0
Do not have knowledge	83	100	100	100
Total	83	100	83	100

Based on Table 5, it can be seen that all research subjects do not know how to carry out psychological handling in a simple ways (psychological treatment for laymen) during disaster. Table 5 also shows that all research subjects (one hundred percent) do not know about healthy behavior during a disaster. The research subjects do not know about the procedures for maintaining health, how to prepare or how to maintain environmental and physical cleanliness.

All research subjects experienced the earthquake directly and have learned about family preparedness to face earthquake. The lessons learned include signs of earthquakes and how to evacuate when experienced an earthquake (physiological health), how to get comfortable in a simple way by doing relaxation, massage, self-affirmation, and being grateful (psychological health), and persuade a healthy life while experienced disasters such as hand washing, adequate sleep, healthy food, sanitation management, and use masks to prevent respiratory problems (behavioral health).

### Conclusion

The earthquake occurred on Lombok island can be considered as high risk due to hazard, exposure, and vulnerability. High hazard is caused by the location of Lombok island is in fault area which has the potential for earthquake, the frequency of earthquake that occurred several times, the scale of earthquake, and many times occur at night. Earthquake exposure is experienced by the residents around North, West, East, and Middle of Lombok Island. Vulnerability is caused by lack of readiness, especially families to face earthquake disaster and the buildings are not designed to be earthquake resistant. Thus the earthquake caused a lot of casualties and damage. Earthquake disaster gives knowledge about family disaster preparedness such as : physical health, psychological health, and behavioral health through experiences. This learning expected to help the process of resilience and to face disaster.

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