The Effect of Family Resilience towards Household Disaster Preparedness in Coastal Coast District of Sumur, Banten

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Abstract. The tsunami of Sunda Strait that struck Banten and Lampung on Saturday, December 22, 2018 had been claimed many lives, especially in three most affected areas, Pandeglang, Banten, and South Lampung. To minimise the casualty, disaster preparedness program needs to be initiated from the smallest element, such as family or household. Family members need to understand the steps that are needed to be taken for life survival and property protection during the disaster situations. This research was conducted to determine the effect of family resilience towards household disaster preparedness in response to disasters in Sumur District, Banten. The participants of this study were 174 respondents from the family affected by the tsunami. Disaster Preparedness Measured by LIPI-UNESCO / ISDR Instrument and the instrument for Family Resilience by Walsh Family Resilience Framework – Questionnaire were used in this research. The finding shows that family resilience had a significant contribution to the household disaster preparedness by 27.1\%. Furthermore, this study also found a high level of household disaster preparedness among families in Sumur District. However, household disaster preparedness and family resilience need to be socialized continuously due to many family members do not have adequate knowledge about disaster preparedness.

1. Introduction

Indonesia is part of Pacific Ring of Fire path, known as most active volcanoes and seismic activity in the world. Indonesia's geographical position makes it as one of most frequent earthquake area in the world. Based on data from the Indonesian’s Meteorology, Climatology and Geophysics Agency (BMKG), the earthquake occurred in Indonesia as many as 11,920 during 2018 alone [1]. Disaster, according to the Law of the Republic of Indonesia Number 24 article 1 of 2007, is an event or series of events that threaten and disrupt people's lives and livelihoods caused, both by natural factors and / or non-natural factors as well as human factors resulting in human casualties, damage the environment, property losses and psychological impacts.

As a country with high number of active volcanoes, Indonesia experiences frequent earthquake due to volcanic activity. One of the most active volcanoes is Mount Anak Krakatau (Son of Krakatoa), which is located in Sunda strait. The name is literally taken from its former ancient Krakatoa, which erupted in August 1883 and caused a huge heat cloud and tsunami with 36,000 fatalities. The eruption left the remaining crater active and raised a new volcano formation known as Mount Anak Krakatau [2]. Large earth tremor also leads to Tsunami. A Japanese word denoted for huge waves in ocean but different from regular seawater waves. The National Oceanic Atmospheric Administration (NOAA)
noted that there were 246 tsunami incidents recorded, from a period of 416 to 2018 in Indonesia [3]. One of the most destructive Tsunami ever recorded was in Sumatera Island on December 2004. According to the Unsyah Tsunami and Disaster Research Center / TDMRC-Unsyah [4], the tsunami in Aceh on December 26, 2004 causing enormous damage to buildings and fatalities.

Number of studies in Indonesia indicated that people/community were not well prepared for disaster (e.g. earthquake & tsunami). For example, Paramesti [4] conducted a study in Pelabuhan Ratu, West Java indicating that people were not well informed about what they need to do when the disaster comes. Meanwhile, MPBI-UNESCO conducted a study in South Nias and indicated similar result. As can be seen from the tsunami that struck Banten on December 2018, it causes massive lives casualties. It was recorded 281 people died, 1,016 people were injured, 57 people were missing, and 11,687 people were evacuated (Pratama, 2018). There are at least three regions, namely Pandeglang, Serang, and South Lampung that were heavily affected by the tsunami [5]. According to the National Disaster Management Agency (BNPB), the tsunami inundated most of Sunda strait coastline and damaged houses and buildings.

As it is important to understand how people deal with the disaster impact, occurred incident in Sunda strait provided an impact case study for examining people/community preparedness in the affected area. People’s preparation on disaster helps to raise public awareness in the face of disaster hazard. Leading attempt to minimize the damage of the disaster’s impact is needed. Following that, based on the results of aerial photography by the Air Force and the Meteorology, Climatology and Geophysics Agency (BMKG), it is known that Gunung Anak Krakatau is still active, and possess potential eruption on its tectonic plate with high chance of tsunami [6].

Based on the results of previous studies, it is indicated that the level of community preparedness is still in a state of unprepared and almost ready. For this reason, it is necessary to increase preparedness in individuals living in coastal areas. In this study, researchers focused on disaster preparedness within the scope of the family or household. Individuals and households are the main stakeholders which playing a great role in developing community preparedness [7].

Apart from disaster preparedness, Banten coastal communities also need family resilience. Based on research conducted by Satria& Sari [8], resilience generates and maintains a positive attitude. Individuals can take meaning from life and use previous knowledge and experience to prepare themselves in facing difficulties such as disasters in an appropriate manner. A family that lives in disaster-prone areas is very much needed resilience, because this will help them to cope with the traumatic experiences during and post crisis periods. Further, it may help people to overcome things that can trigger stress and help individuals to rise better beyond the circumstances beforehand so that the natural disasters experienced before can be used as valuable experiences when disasters strike again.

1.1 Disaster preparedness

Preparedness, according to RI Law number 24 of 2007, is a series of activities that are carried out to anticipate disasters through organizing as well as through appropriate and efficient steps. Preparedness according to Charter [9] is actions that enable governments, organizations, communities, and individuals to be able to respond to a disaster situation quickly and efficiently.

Preparedness is one part of the disaster management and in the current developing concept of disaster management, increasing preparedness is a crucial element of pro-active disaster risk reduction activities before a disaster occurs [7]. Preparedness efforts also aim to ensure that the resources needed to respond in a disaster event can be used effectively during a disaster and are known how to use it [10]. As mention earlier, disaster preparedness needs to start from a smaller scope, such as in family setting. This idea is parallel with Sutton & Tierney [10], who stated that preparedness begins from the basics of the house, together with family members. According to Febriana [11], household preparedness is an action that can be taken immediately in order to prepare people and their families before and after the disaster occurred.
LIPI-UNESCO / ISDR [7] compiled five aspects to measure individual and family preparedness to anticipate natural disasters. First (1), Knowledge and Attitude; Understanding of disasters, understanding of disaster preparedness, includes understanding of appropriate rescue measures during earthquakes and tsunamis, actions and equipment that need to be prepared, as well as attitudes and concerns about disaster risk. (2) Policy or Guide; Policies required for household preparedness in the form of a family consensus in the event of a disaster, namely a family discussion about appropriate attitudes and actions to save themselves. (3) Emergency Response Plan; Emergency response plan is an essential part of preparedness, especially concerning rescue and rescue so that disaster victims can be minimized. (4) Disaster Warning System; Disaster warning systems include warning signs and the availability of information sources for disaster warnings from both traditional and local sources, and there is access to get disaster warning information. Exercises and simulations about what to do if there are any alerts need to be conducted. The simulations include how to evacuate yourself in a particular time, according to the location where the family is at the time of the warning. The last one is (5) Resource Mobility; Mobilization of family resources includes having family members involved in disaster preparedness meetings/seminars/trainings, having skills related to preparedness, allocating funds or family savings to deal with disasters, and having family agreements to regularly monitor disaster prepared equipment.

1.2 Family resilience

McCubbin et al define family resilience as psychological characteristics that help families survive when faced with change and adaptive when facing a crisis situation [12]. McCubbin defines family resilience as positive behaviour patterns and functional competencies of individuals and family units when under stressful conditions, which interferes with the family's ability to recover by maintaining integrity as a unit, restoring the welfare of family members as a part of unity [13].

Walsh (1998) defines family resilience as the ability to recover from adversity, become stronger, and be smart in dealing with other problems in the future. Walsh [14] broadens his definition of family resilience, rather than being able to deal with difficult situations, but can also use these difficulties to develop oneself and relationships with others [15]. Walsh [14] suggests that there are dimensions that makeup family resilience. The main dimensions of family resilience are: (1) Belief Systems; The belief system broadly covers values, beliefs, attitudes, biases, and assumptions. Belief systems are divided into three sub-dimensions, namely making meaning of adversity, positive outlook, and transcendence & spirituality. (2) Organizational Patterns; The organizational pattern of resilient families is characterized by the flexibility and connectedness that is influenced by social and economic resources. (3) Communication Process; The communication process facilitates resilience by bringing together clarity about difficult situations, encouraging open emotional expression, and developing collaborative problem-solving. The communication process is divided into three sub-dimensions, namely clarity, open emotional expression, and collaborative problem-solving.

2. Methods

This study used a quantitative approach analysis. Two variables used, including the dependent variable, disaster preparedness and the independent variable is family resilience. The sample used in this study was parent (father/mother) as a representative of a family living in the coastal area of Sumur Sub-district, Pandeglang Banten. Using non-probability sampling techniques, the sample criteria in this study are: (1) Father or mother as a representative of the family. (2) Residing in the District of Sumur, Pandeglang Banten.

Data collection techniques used in this study was a questionnaire. The Disaster Preparedness instrument used in this study was a Disaster Preparedness measurement tool compiled based on the grid from the Indonesian Institute of Sciences (LIPI) and UNESCO / ISDR [7]. The Disaster Preparedness Instrument consists of 40 items with 39 favourable items and one unfavourable item. Walsh Family Resilience Framework – Questionnaire was used in this study to measure family resilience. The Family Resilience Instrument consists of 32 items with 30 favourable items and two
unfavourable items. In this study the two measuring instruments used a Likert scale to measure the self-disclosure of respondents' answers. Respondents were asked to choose six alternative answers, from very appropriate to very inappropriate.

The trial of this instrument conducted on 50 subjects (father/mother living in the District of Sumur, Pandeglang Banten). Data collected from July 8 to July 14, 2019. The number of subjects in this study was 174. In this study, the statistical tests used were testing the reliability of the instrument, item validity, descriptive analysis, normality test, and correlation and test Regression analysis using SPSS version 25.

3. Result and discussion

Validation and reliability tests on both instruments showed satisfactory results. Disaster Preparedness instrument has a reliability value of 0.932 and The Family Resilience instrument obtained a reliability value of 0.911. Both scores were categorized as very reliable according to Guildford's rules.

Table 1. level of disaster preparedness

| Level | Frequency | Percentage |
|-------|-----------|------------|
| Low   | 30        | 17.2%      |
| High  | 144       | 82.8%      |
| Total | 174       | 100%       |

As can be seen on table 1 above, 30 subjects were identified with low level of disaster preparedness (17.2%), while 144 people have a high level of disaster preparedness 82.8%. This descriptive result indicates that research subjects mostly have a high degree of preparedness.

Table 2. level of family resilience

| Level | Frequency | Percentage |
|-------|-----------|------------|
| Low   | 0         | 0%         |
| High  | 174       | 100%       |
| Total | 174       | 100%       |

Next to that, table 2 above shows there are no subjects who have a low level of family resilience, all subjects have a high level of family resilience. This indicates that all research subjects have high resilience.

Table 3. Hypothesis testing

| p     | A   | F   | F-table | R square |
|-------|-----|-----|---------|----------|
| 0.000 | 0.05| 63.915 | 3.90 | 0.271 |

Regression analysis result indicates that the significance value of $p = 0.000$, thus $p <0.05$ and F value of 63.915 with F table value of 3.90 (for db 1 and n = 174), hence the value of F count> F table. From the test results, it can be said that Ho rejected and Ha is accepted, so that the Family Resilience variable can be used to predict Disaster Preparedness in Families. Based on the results of the regression analysis test, it shows that Ho is rejected and Ha is accepted on the variable Disaster Preparedness and Family Resilience, which means that there is a significant influence between Family Resilience to Disaster Preparedness on families on the coast of Sumur District. The results of this study indicate that between the variables of Disaster Preparedness and Family Resilience has a significant positive effect. This finding means that the better a family has family resilience, the higher disaster preparedness will be. The results of this study are in line with research conducted by Thomas, et al, which states that resilient communities have experience of disasters that can assist communities in conducting disaster preparedness simulations. The results of the study are also in line with research conducted by Satria& Sari [8], which states that the level of community resilience in disaster-prone
areas is in the standby category. Based on this, it shows that families living in disaster-prone areas have high preparedness.

Analysis of the coefficient of determination obtained based on the square of the correlation coefficient between the two variables shown in the model summary table above shows a value of 0.271. This figure can be interpreted that there is a 27.1% tendency of the contribution of Family Resilience to Disaster Preparedness and another 72.9% is influenced by factors that are not examined in this study so that Family Resilience is proven to have an influence on Disaster Preparedness in Families on the coast of Sumur District by 27.1%.

This study has several limitations. Many residents in Sumur District have less educational background. Therefore, researchers took personal approach by read the statements and helped them to fill out questionnaires. This process resulted in taking data for one questionnaire lasted approximately 30 minutes. In the same time, taking data with such method has potentially increased social desirability during questionnaire session. Lastly, there are still very few journal references related to disaster preparedness and family resilience variables.

4. Conclusion

Based on the finding above, it can be concluded that there is an influence between family resilience to disaster preparedness on families on the coast of Sumur District. The impact of Family Resilience on Disaster Preparedness produced was 27.1%. The higher a family can withstand difficulties and be stronger in dealing with problems, the higher the family’s preparedness in facing disasters.

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