Analysis of community resilience for the situation of earthquake disasters in gangga

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Abstract. Lombok earthquake in 2018 impacted on the material and affected the psychological victims of disaster. Therefore, it is needed efforts the community is able to survive, rise, and adjust to difficult conditions. Gangga District is one of the districts in the North Lombok Regency which was affected by the earthquake. This study aims to determine the level of community resilience in dealing with earthquake disasters. The research method used a descriptive qualitative. Data collection techniques by field observation, questionnaires, documentation, and interviews with the community. The analysis technique in this study is Connor-Davidson Resilience Scale (CD-RISC) which consists of 25 questions by distributing questionnaires. The results showed that the level of community resilience in Gangga sub-district falls into three categories, namely the high resilience category in Gondang and Sambik Bangkol villages, the middle resilience category in Bentek and Genggelang villages, and the low resilience category in Rempek village. Given that the Gangga District is an earthquake-prone area, this research can be used as a reference to reduce the risk of the effects an earthquake. In addition, it is expected that the government, families and the community can increase resilience so that the community can live better in earthquake-prone areas.

1. Introduction

Natural disasters have always been a major threat in various countries including Indonesia, one of the threats of disasters that occurred in Indonesia is the earthquake disaster. Earthquakes can be classified into three of them volcanic earthquakes, tectonic earthquakes, and earthquake earthquakes. The tectonic earthquake is an earthquake caused by the movement of tectonic plates that continuously. The process of tectonic earthquakes; active faults move gradually in the opposite direction so that the accumulation of elastic energy increases [1]. Based on data recorded at the National Disaster Management Agency of West Nusa Tenggara Province, it belongs to an earthquake-prone zone because the area has Flores Back Arc Thrust. The earthquake that occurred in West Nusa Tenggara caused a large impact, such as causing casualties, damage to buildings, public facilities, and so forth. The following are data on events and losses caused by earthquakes that occurred in West Nusa Tenggara Province according to the National Disaster Management Agency (BNPB) [2].
Departing from the trend of losses due to the earthquake disaster in Figure 1, that the Province of West Nusa Tenggara has a great impact on both casualties, facilities and psychological impacts. Such an event occurred because the mindset of increasingly modern society is marked by the pattern of houses that the community built is a semi-permanent to the permanent building so that it is easily destroyed when shaken by an earthquake with a large Richter scale. In contrast to the community at the time of the earthquake that occurred in the North Lombok Regency in 1979 where the worst impact occurred in Tanjung Subdistrict. This is because Gangga District at that time still used houses with wood or bamboo weaving and thatched roofs.

The impact that is felt apart from the economic side as experienced by most people who did not have the opportunity to save their property during an earthquake and damage to housing is a psychological impact. Psychological impacts such as stress and shock due to property loss disappeared due to the earthquake, trauma, and so on felt by the community. Even every day at the research location can be felt by the earthquake that caused panic in the community. Miftahul Fasa (2019) in his research entitled "Family Resilience of Landslide Disaster Victims in Cimenyan District, Bandung Regency" states that the community has a low level of resilience because it does not meet the aspects of family protection and maintenance properly used as an aspect of resilience [3]. The incident caused the community to experience a personal crisis or personal disaster, so the ability to rise again has become one of the interpretations in discussing resilience [4]. Communities who lose their livelihoods and infrastructure due to disaster factors often have thoughts to rebuild buildings in the same place [5] regardless of the danger that will recur. For them, the familiarity of the community at their place of residence and the habits they carry out are part of the resilience of the community in dealing with disasters. Important things must know about the community are about living in harmony with nature in disaster areas, what needs to be feared and avoided in disaster-prone areas, and knowing how to save themselves in the event of a disaster [6].

The seven abilities that makeup resilience are as follows: emotional regulation, impulse control, optimism, empathy, causal analysis, self-efficacy, and achievement. Basically, every individual has all the resilience factors above, but what distinguishes one individual from another is how the individual uses and develops the ability that exists in him to deal with the difficulties experienced, and prevent things that trigger stress in the recovery period and can provide the ability to rise from a previous state.
Earthquake disaster control techniques have been used by the government so far, it's just that it is still dominated by the structural approach (technical building) and non-structural approach to the socioeconomic, but still rarely touches on the resilience of the community. Disaster events experienced by individuals are accepted as a stimulus that gives experience and influences one's level of preparedness in facing disasters. Disasters will provide a learning process that is beneficial for individuals in shaping readiness behavior [8]. The learning process is reflected through the preparedness steps taken by the community, so as to minimize victims and the psychological impact of disasters. The behavior of readiness is also supported by the ability of individuals to recover from traumatic events that have occurred. This ability is then called resilience. This agrees with Nurinayanti [9] who argues that resilience is the ability to adapt positively when in an unpleasant and risky condition.

North Lombok Regency is one area that is often affected by earthquakes. The biggest earthquake occurred on July 29, 2018, with 7.0 on the Richter Scale with a depth of 18 km in North Lombok Regency resulting in many losses. Weak understanding of the community about the dangers of potential natural disasters in their area and the ability of community resilience to anticipate earthquakes. Apart from the low level of knowledge of the community, the mindset of the community has been influenced by cultures outside of the customary environment of the surrounding community. The mindset that makes the community become semi-modern is applied in the form of residential residents who begin to follow the times but do not pay attention that the area where people live in an area prone to earthquake disasters. This pattern of thinking results in damage to buildings caused by residential buildings built by residents that are not earthquake resistant.

Based on the description and presentation above, the research problem is "what is the level of resilience of the community in dealing with the earthquake disaster in the Gangga District". The purpose of this study was to determine the level of community resilience in dealing with an earthquake in the District of Gangga, North Lombok Regency, including emotional regulation, impulse control, optimism, causal analysis, empathy, self-efficacy, and achievement.

2. Methods
This study uses qualitative descriptive in the Gangga District of North Lombok Regency, West Nusa Tenggara. Sampling with cluster random sampling technique, amounting to 75 respondents. The research data collection tool uses a questionnaire in the form of a Likert scale consisting of 25 questions based on the Connor-Davidson Resilience Scale. Data processing is done through the stages of editing, coding, transferring and tabulating. Analysis of the data used by calculating the total of all answers from respondents, the categories are very low (25-45), low (46-65), middle (66-85), high (86-105), and very high (106-125).

3. Results
3.1 Research Site
The place of this research was conducted in Gangga Subdistrict, North Lombok Regency, West Nusa Tenggara. Gangga Subdistrict is the area most frequently hit by earthquakes because it is suspected to be the center of the movement of the earth's plates so that in this region earthquake disasters often occur. Gangga Subdistrict is one of the 5 sub-districts in the North Lombok Regency. Gangga District has an area of 157.35 km² consisting of 5 villages namely Bentek Village, Gondang Village, Genggelang Village, Rempek Village, and Sambik Bangkol Village. The Ganges District is directly adjacent to the Java Sea in the north, the foothills of Mount Rinjani and the West Lombok Regency in the south. The natural conditions in this sub-district are still dominated by dry land and only a small portion of the land is the rice field area [10].
Judging from the history of the earthquake that occurred in the North Lombok Regency, in 1979 there was a large earthquake and destroyed people's homes, but at that time the most severe damage occurred in Tanjung District. This is because the people of Tanjung Subdistrict already have a modern mindset because many of the residents migrate to the city so that when returning to their area of origin brings a new influence on people's lives in the surrounding area, such as the process of building permanent housing. Furthermore, in 2018 the North Lombok Regency was rocked by an earthquake. However, the loss in the earthquake in 2018 was greater when compared to 1979. According to the residents around the location of the earthquake in 1979, the most severe damage occurred in the Tanjung sub-district only, but in the 2018 earthquake, all sub-districts in North Lombok Regency had losses the big one. If it is demanded from the history of the formation of people in the North Lombok Regency the majority of people still use traditional houses made of wood and roofs from thatch so that if an earthquake occurs then the damage caused is not so great when compared to the damage caused by permanent housing. However, at the time of the earthquake in 2018, the majority of the population had used semi-permanent buildings so that even large losses were inevitable.

3.2 Identification of Society and Resilience

Society formidable (resilience) are much more prone to hazards and disasters. Therefore, this assumption can be validated and useful about how community resilience is determined, measured, improved, maintained and reduced [11]. Resilience is conceptualized as a personality type with traits, good adaptability, self-confidence, independence, articulate, attentive, helpful and task-centered. Besides resilience is called a process and not a fixed default attribute. Resilience is more accurate when seen from the development of mental health in a person that can be enhanced in one's life cycle [12]. In this study data obtained in the form of community resilience scores were adapted from community resilience indicators consisting of seven aspects namely emotional regulation, impulse control, optimism, causal analysis, empathy, self-efficacy, and achievement [13] as follows:

| No. | Parameters          | Indicator                                                                 |
|-----|---------------------|---------------------------------------------------------------------------|
| 1   | Emotional Regulation| • Ability to remain calm despite being under pressure                       |
|     |                     | • Individuals can control emotions, attention, and behavior                |
| 2   | Impulse Control     | • Ability to adapt to the situation of sadness                             |
|     |                     | • Able to develop social skills                                           |
| 3   | Optimism            | • Believe have the ability to troubleshooting                              |
| 4   | Analysis of Causal  | • The ability to identify the cause of a problem                           |
| 5   | Empathy             | • Ability to understand and be able to feel the feeling of others          |
| 6   | Efficacy of Self    | • Trust someone of his ability to achieve upon the success                 |

Source: Reivich & Shatte, 2002

Based on Table 1, resilience indicators obtained several aspects that are used to determine the level resilience of the community in dealing with earthquakes in the Gangga District of North Lombok Regency. One of the factors causing many casualties due to disasters is due to lack of community preparedness about disasters. Therefore, preparing disaster preparedness early on for people who are vulnerable to disasters is very important to avoid or minimize the risk of becoming a victim [14].

Presentation of research data on the level of community resilience in Gangga Subdistrict, North Lombok Regency, is presented in Table 2 below:
Table 2. Result of Calculation of Community Resilience Level

| No | Indicator Name | Bentek | Gondang | Genggelang | Rempek | Sambik Bangkol |
|----|----------------|--------|---------|------------|--------|----------------|
| 1  | Regulation Emotion | 10.27  | 12.47   | 10.8       | 7.2    | 11.67          |
| 2  | Control Impulse   | 14.2   | 15.13   | 14.6       | 9.6    | 14.2           |
| 3  | Optimism          | 11     | 12.13   | 10.8       | 8.2    | 11.47          |
| 4  | Causal Analysis   | 13.87  | 15.07   | 13.33      | 9.87   | 16.33          |
| 5  | Empathy           | 7.8    | 8.87    | 7.47       | 8.47   | 9.8            |
| 6  | Self-Efficacy     | 11.93  | 16.67   | 12.73      | 9.5    | 15.13          |
| 7  | Achievements      | 14.93  | 15.6    | 14.33      | 11.8   | 15.8           |
|    | Total             | 84     | 95.37   | 84.06      | 64.64  | 94.4           |
|    | Average           |         |         |            | 84.5   |                |

Source: Data Calculation Results, 2019

Based on Table 2 it can be seen that the level of resilience the people in Gangga Subdistrict, North Lombok Regency fall into three categories, namely the high resilience category for Gondang and Sambik Bangkol villages, the medium resilience category for Bentek and Genggelang villages, and the low resilience category for the village of Rempek. The data is presented in the form of a map in Figure 2.

Figure 2. Map of Community Resilience Gangga Subdistrict of North Lombok Regency (Source: Research Data Analysis, 2019)
4. Discussion

Resilience in principle is not only related to a person or community that has been affected by a disaster. Because resilience also covered before the disaster occurred. If resilience is in the aftermath of a disaster, it means that it is part of the recovery and temporary response if before the disaster becomes a part that covers mitigation and preparedness. Resilience generates and maintains a positive attitude to be developed. Individuals take meaning from life and use previous knowledge and experience to prepare themselves in facing difficulties after a disaster occurs.

Research conducted by Aldunce [15] with the research title "Disaster Resilience: Diverse Implications of Conceptualization "Revive". The study states that of the three meta-narrative responses describing the shortcomings of contemporary disaster risk management related to the current focus which emphasizes more on the aspects of community preparedness. General convergence is needed to minimize the negative impacts of disasters such as the capacity to prepare, reduce and minimize suffering losses and social disturbances which are relevant aspects of the conceptual resilience of the community [16] and the idea of re-awakening is key when describing community resilience in the literature.

The level of resilience of the Ganges community is divided into three categories, namely: high, medium and low. Villages that are categorized as high resilience are Gondang Village and Sambik Bangkol Village. Villages that are included in the medium resilience category are Bentek Village and Genggelang Village. Villages that are in the low resilience category are Rempek Village.

Overall, the level of community resilience that has the lowest score is in Rempek Village, starting from the parameters of emotional regulation, impulse control, optimism, causal analysis, self-efficacy, and achievement. Meanwhile, there is one parameter that has the lowest score, namely the empathy parameter found in Genggelang Village. In the village of Rempek it has the lowest score in almost every parameter because the community is still afraid of returning home and is still in a state of prolonged trauma so they prefer to rely on government assistance for survival. Meanwhile, the village of Genggelang had the lowest empathy score because the people of Genggelang Village had the assumption that victims of the earthquake must have had a difficult life so that their empathy had diminished because they put forward their personal or family interests. The highest parameters are found in two villages, Gondang Village and Sambik Bangkol Village. The parameters of emotion regulation, impulse control, optimism, and self-efficacy in Gondang Village and the parameters of causal analysis, empathy and achievement in Sambik Bangkol Village. Basically, these two villages have understood the potential for disaster in the location where they live, so it is not surprising that the resilience score of the community is high because the community quickly understands and can adjust to the situation after the earthquake.

Gondang Village is the village with the highest score, this is because the villagers have understood the potential for disasters and know what to do after a disaster occurs. The recovery of the community to return to the state before the earthquake was more quickly marked by the speed of returning to their respective homes to immediately rebuild their homes and resume their normal activities. In addition, the Gondang Village community has a good communication network characterized by high scores of impulse control parameters and self-efficacy so that people are calmer in the face of earthquakes as well as the achievement parameters which are characterized by a close kinship between their citizens well-established from before to after the earthquake.

Judging from the condition of the community, based on the results of interviews obtained information that the community is still traumatized by the earthquake one year ago. However, the community in some villages claimed to be accustomed to the earthquake that still often occurs in their homes because only a large portion of the community was still traumatized and had not been able to move away from the times when the earthquake struck.
Based on research conducted by the author with the theory and related research results, the authors conclude that each individual can rise from adversity in the presence of resilience factors in themselves, it provides stimulus to individuals to be able to survive in a critical condition after a disaster occurs. In addition, it can overcome the things that trigger stress or trauma to rise up better than the condition before the disaster and can be used as an experience when a disaster occurs again.

5. Conclusions
Community resilience in the face of earthquake disasters in the District of Gangga, North Lombok Regency is in the category of high resilience in Gondang village (95.37) and Sambik Bangkol village (94.4), middle resilience category in Bentek village (84) and villages Genggelang (84.06), and the category of low resilience in the village of Rempek (64.64). Given that the Ganges District is an earthquake-prone area, this research can be used as a reference to reduce the risk of the effects of an earthquake. In addition, it is expected that the government, families and the community can increase resilience so that the community can live better in earthquake-prone areas.

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