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Community Preparadness For Earthquake Natural Disasters on Empirical Study

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ABSTRACT

Background: Indonesia is in a region prone to natural disasters, including earthquakes. Earthquakes often result in loss of life and property damage. One of the main factors contributing to a high casualty rate is the lack of knowledge, attitude, and behavior toward disasters and insufficient preparedness to anticipate such events. Method: A quantitative correlation study used a cross-sectional approach. The sample was selected using stratified random sampling, resulting in 16 samples from each educational level (elementary, junior high, high school, and university), totaling 64 respondents. Data analysis was conducted using the Chi-Square test. Results: The characteristics of the respondents of the gender, the most common are men 56.3%, the most common age group is in the 36-45 years old range 45.3%, then in the occupational group the most common are housewives with 26.6%. The study found that the majority of the community had sufficient knowledge (p-value 0.001), good attitudes (p-value 0.029), and sufficient behavior (p-value 0.001) towards earthquake preparedness. This indicates a significant relationship between the level of knowledge, attitude, and behavior with preparedness for earthquake natural disasters. Conclusion: Knowledge level, attitude, and behavior influence community preparedness for natural disasters, including earthquakes.

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1. INTRODUCTION

Indonesia is a country located on the equator which influences climate and weather such as rainy and dry seasons. One of the disasters that often occurs in Indonesia is an earthquake. An earthquake is an event where the earth shakes due to collisions between plates, fault activity, volcanoes or rock debris which are destructive in nature, can occur at any time and last a short time [1].

Based on data from the National Disaster Management Agency in 2022, there were 3,038 natural disaster events, one of which was 22 earthquakes. Central Java Province in 2021 recorded 5 earthquakes [2]. Cilacap Regency is an area on the south side of the island of Java that often feels the impact of earthquake shocks in the collision zone of the southern Java plate and local fault activity in the Cilacap area. In Cilacap Regency in the period 2019-2021 there were earthquakes, including, on October 9 2019 there was an earthquake in Cilacap Regency with a magnitude of 4.1 SR, on October 14 2019 an earthquake with a magnitude of 4.8 SR in the Cilacap area, in 2019 In 2021 an earthquake occurred again with a magnitude of 4.3 SR [3].

Karanganyar Village is one of the villages located in Adipala District, Cilacap Regency, which is still considered a southern coastal area. So this area is still an area where the southern Java plate zone collides, so if an earthquake occurs it will have an impact on the people in Karanganyar Village. Researchers are interested in conducting research in this village because in that village no one has ever conducted similar research related to "the relationship between the level of knowledge, attitudes and behavior towards earthquake natural disasters, although in several journals in different areas there are already related to earthquakes in the knowledge section, attitudes and behavior of society but no one has researched knowledge, attitudes and behavior simultaneously.

Researchers conducted interviews with several residents in Karanganyar Village to obtain preliminary research results, that the people in the village stated that they did not have a sense of readiness, both physically and psychologically, if an earthquake occurred, even though they were ready. be notified or given a warning by the relevant parties so that they can prepare themselves as early as possible.

In order for society to have a sense of preparedness to face disasters, society needs to have good knowledge, then attitudes (results of knowledge), then behavior (actions). Based on this description, it is necessary to conduct research on "The [SS1]"The Relationship between Levels of Knowledge, Attitudes and Behavior towards Earthquake Natural Disaster Preparedness in the Community of Karanganyar Village, Adipala District, Cilacap Regency".

2. RESEARCH METHOD

This study uses a quantitative method by design *cross sectional* Sampling using *stratified random sampling* namely sampling that takes into account the strata or position of the subject (a person) in society. The sample is people with the last education in elementary school, junior high school, high school and university. The sample in this study uses the formula *Lemeshow* with each of the 16 people with elementary to tertiary education, a total of 64 people. With the inclusion criteria, namely all people in Karanganyar Village, Adipala District, Cilacap Regency, people aged 17-60 years, people with elementary-higher education education, are willing to become respondents. Then for the exclusion criteria, namely people who are elderly, and people who experience physical disabilities or mental disorders. This study uses a questionnaire instrument of knowledge, attitudes, behavior and earthquake preparedness. Data analysis using analysis *Chi-Square,*

3. RESULT DISCUSSIONS

Table 1 show that 64 respondens are male, 36 people (56.3%) and 28 people are female (43.8%). Respondents aged 17-25 years were 3 people (4.7%), aged 26-35 years were 21 people (32.8%), aged 36-45 years were 29 people (45.3%), aged 46 -55 years as many as 10 people (15.6%), then the last aged 56-60 years there is only 1 person (1.6%). Furthermore, the people who work as laborers are 15 people (23.4%). 17 people (26.6%) IRT, 4 farmers/planters (6.3%), 10 entrepreneurs (15.6%), 8 employees/PNS (14.1%), private employees as many as 9 people (14.1%), another 1 person (1.6%). Furthermore, for the level of education starting from elementary to university each with 16 people (25%), the level of education starting from elementary to university each with 16 people (25%).

Table 1. Characteristics of Respondents

Characteristics of Respondents	f (64)	%
Gender		
Male	36	56,3
Female	28	43,8
Age		
17-25 Years	3	4,7
26-35 Years	21	32,8
36-45 Years	29	45,3
46-55 Years	10	15,6
56-60 Years	1	1,6
Work		
Laborer	15	23,4
Housewife	17	26,6
Farmer/Grower	4	6,3
Self-employed	10	15,6
Officer	8	12,5
Private sector employee	9	14,1
Other	1	1,6
Education		
Primary School	16	25,0

Characteristics of Respondents	f (64)	%
Junior High School	16	25,0
Senior High School	16	25,0
College	16	25,0

In the first variable; level of knowledge based on the Chi-Square Test, the value of p = 0.001 (<0.05) there is a relationship between knowledge and earthquake disaster preparedness. Then attitude *p value* = 0.029 (<0.05) there is a relationship between attitude and earthquake disaster preparedness. Furthermore, behavior, obtained *p value* = 0.001 (<0.05) there is a relationship between behavior and earthquake disaster preparedness.

Table 2. Association of Knowledge, Attitude and Behavior with Earthquake Preparedness

Variable	Preparedness						Total		*r*	*p*
	Height		Moderate		Low					
	f	%	f	%	f	%	f	%		
Knowledge									0.494	0,001
Good	12	18,8	6	9,4	5	7,8	23	35,9		
Enough	4	6,3	21	32,8	2	3,1	27	42,2		
Less	5	7,8	3	4,7	6	9,4	14	21,9		
Attitude									0,380	0,029
Good	21	32,8	20	31,3	12	18,8	53	82,8		
Enough	0	0	8	12,5	1	1,6	9	14,1		
Less	0	0	2	3,1	0	0	2	3,1		
Behavior									0,478	0,001
Good	11	17,2	6	9,4	4	6,3	21	32,8		
Enough	4	6,3	23	35,9	5	7,8	32	50,0		
Less	6	9,4	1	1,6	4	6,3	11	17,2		
Total	21	32,8	30	46,9	13	20,3	64	100		

Knowledge and Earthquake Preparedness

The relationship between knowledge levels and earthquake preparedness is a crucial aspect of disaster management research. Several studies have examined this connection, shedding light on the significant correlation between the two variables [4][5]. One noteworthy study by Fauzi et al. highlighted the existence of a positive correlation between knowledge and community preparedness for earthquakes [6]. Their research yielded a correlation coefficient of r=0.589, indicating a moderate to strong positive relationship. This finding suggests that as individuals' knowledge about earthquake risks and mitigation strategies increases, their preparedness levels tend to rise accordingly.

Building upon this foundation, Dipura and Janatri (2021) conducted a study focused on the residents of West Bayah Village in the jurisdiction of the Bayah health center, located in Lebak Regency. Their research reaffirmed the relationship between knowledge and disaster preparedness. Among their key findings, they observed that a substantial portion (45.4%) of respondents possessed knowledge categorized as fairly good in terms of disaster-related topics [7]. This further corroborates the idea that higher levels of knowledge are associated with increased preparedness.

To understand the nuances of knowledge in the context of disaster preparedness, it's important to consider the framework presented by Firmansyah, as discussed in Ariyani and Endiyono's work [8][9]. Knowledge, as defined in this model, represents an individual's awareness and comprehension of various aspects related to disaster management. It encompasses six distinct levels: knowing, understanding, application, analysis, synthesis, and evaluation [10][11]. This holistic perspective on knowledge recognizes that it is shaped by multiple factors, including education, cultural influences, the surrounding environment, and access to information.

In the specific case of the Karanganyar Village community, the research results indicate a tangible connection between knowledge levels and earthquake disaster preparedness. The community, as a whole, falls within the category of having sufficient knowledge. This suggests that residents possess a baseline understanding of earthquake-related concepts. However, the preparedness level is described as moderate, implying that while knowledge is present, there may be room for improvement in terms of practical disaster preparedness measures.

Attitude and Earthquake Preparedness

The findings of this study align with previous research, such as the study conducted by Hilmi, which similarly established a significant relationship between community attitudes and efforts in disaster management, as indicated by a p-value of 0.000. This underscores the pivotal role of attitudes in shaping responses to disaster-related challenges [12].

Further insights into the connection between attitudes and earthquake preparedness, which explored the interplay of knowledge, attitudes, and skills in Basic Life Support among nursing students in Banda Aceh [13]. The study revealed that a substantial proportion of respondents (71.4%) exhibited positive attitudes. Importantly, statistical analysis yielded a significant p-value of 0.005 ($p<0.05$), underscoring a direct association between attitude and earthquake disaster preparedness. This signifies that a favorable attitude contributes significantly to being well-prepared for earthquake disasters.

These findings emphasize the vital role that attitude plays in determining community preparedness for natural disasters, particularly earthquakes. Attitude, in essence, acts as a crucial determinant of how individuals and communities respond to and prepare for disaster events. It is imperative that communities foster positive attitudes toward disaster preparedness because these attitudes ultimately shape their level of readiness when faced with unforeseen catastrophes [11]. In essence, having a proactive and positive attitude is a cornerstone of effective disaster management, enabling communities to respond promptly and effectively to mitigate the impact of disasters. Therefore, it is incumbent upon communities to cultivate and maintain favorable attitudes to ensure they are adequately prepared to tackle any disaster that may arise.

Behavior and Earthquake Preparedness

The findings of this study align with prior research, as demonstrated conducted at SMA Al-Hasan Kemiri. This research identified a significant relationship between knowledge and behavior in disaster preparedness. Notably, the respondents in this study were indigenous people who had firsthand experience with disasters like floods and landslides. These experiences influenced their preparedness behavior, underscoring the powerful impact of real-life encounters with disasters on how individuals respond [14].

Additionally, insights from Husnah's study which focused on 131 students, revealed a strong link between knowledge and preparedness behavior when facing disasters. Their research indicated a positive relationship between knowledge and preparedness, suggesting that as knowledge levels increase, so does the propensity for individuals to exhibit preparedness behaviors. This underscores the importance of knowledge as a catalyst for proactive disaster preparedness [15].

Furthermore, research by Habibi in 2021 emphasized the interconnectedness of knowledge, attitudes, and behavior in the context of disaster preparedness. This study underscored the vital roles played by knowledge and attitudes in shaping and reinforcing behavioral factors, including predisposing, supporting, and motivating elements. The result is the cultivation of positive disaster preparedness behaviors [16].

4. CONCLUSION AND RECOMMENDATION

The knowledge, attitudes, and behaviors are all linked to earthquake preparedness in community. Residents generally have good knowledge and positive attitudes, which contribute to moderate levels of preparedness. To improve preparedness, it's important to enhance knowledge, encourage positive attitudes, and promote behaviors aligned with disaster readiness.

Enhancing earthquake preparedness in the community need a strengthen education and awareness campaigns focused on earthquake risks and mitigation strategies to build on the existing knowledge base within the community. Develop initiatives that nurture positive attitudes towards earthquake preparedness, encouraging a sense of responsibility and urgency among residents. Finally, promote and reinforce the adequate preparedness behaviors already exhibited by most participants, emphasizing the importance of consistent and effective disaster preparedness measures.

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