

Community Preparedness Behavior of Air Manis Subdistrict, Padang City in Facing Earthquake Disasters

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ABSTRACT

Education on earthquake disasters plays a role in providing the community with basic knowledge about what should be done before, during, and after an earthquake occurs. This study aims to describe the knowledge, attitudes, and skills of the community in facing earthquake disasters. The research was conducted in Air Manis sub-district, Padang city. This study employed a survey design with a quantitative approach and used a Likert scale as the measurement instrument. Data analysis techniques were carried out using SPSS software. The results showed that the majority of the community's cognitive level regarding earthquake disasters fell into the high category with a percentage of 59.1%, the affective level of the majority was in the very high category with a percentage of 89.8%, and the psychomotor level of the majority was also in the very high category with a percentage of 83%. These findings indicate that the majority of the Air Manis community in Padang city has a very good level of preparedness in earthquake disaster mitigation. Nevertheless, continuous education programs, simulations, and training are still needed to ensure that the community's knowledge, attitudes, and skills do not decline and become more evenly distributed.

Keywords

Community Behavior,
Earthquake, Disaster
Preparedness

Article History

Received: 2025-12-24
Accepted: 2025-12-29

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Published by MAN 4 Kota Pekanbaru
DOI: [10.56113/takuana.v4i3.296](https://doi.org/10.56113/takuana.v4i3.296)

1. INTRODUCTION

Indonesia is a vast archipelagic country located along the equator and occupies a strategic position between two continents and two oceans. Geographically, geologically, hydrologically, and demographically, this region is highly vulnerable and frequently affected by various types of natural disasters. This is because Indonesia lies on active continental plates and is surrounded by many active volcanoes, known as the Ring of Fire. Indonesia's disaster vulnerability is caused by multiple elements, including geographical, geological, hydrometeorological, demographic conditions, as well as environmental and spatial planning factors (Ramli, 2010).

Padang City is the largest city on the west coast of Sumatra Island and serves as the capital of West Sumatra Province, Indonesia. The city is the western gateway of Indonesia from the Indian Ocean. Its administrative area covers 694.96 km², with geographical conditions bordered by the sea and surrounded by hills reaching an altitude of 1,853 meters above sea level. Based on data from the Central Bureau of Statistics (BPS) in 2022, the city had a population of 919,145 people (Padang, 2023).

Padang is known as one of the regions with a high level of vulnerability to earthquakes. This is due to its location along the meeting line of the Indo-Australian and Eurasian Plates, as well as the presence of the Sumatra Fault that stretches across the mainland. These geological conditions make Padang a region that frequently experiences earthquake tremors, ranging from mild to strong intensity.

History records that major earthquakes have struck West Sumatra, including Padang, causing severe damage and casualties. Dutch government documents reveal that Padang experienced significant earthquakes accompanied by tsunamis on February 10, 1797, and in November 1833. Reports stated that the tsunami waves reached approximately 3 to 5 meters in height and extended inland up to about 1 kilometer. These events serve as reminders that earthquake threats cannot be ignored.

With the relatively frequent occurrence of such events, the people of Padang are required to coexist with the potential disasters that may happen at any time. Natural disasters inevitably bring serious impacts, such as hundreds or even thousands of casualties, and can disrupt the economic cycle of a region. The Regional Disaster Management Agency (BPBD) of Padang, along with related parties such as Non-Governmental Organizations (NGOs), which are the main pioneers in disaster management, are required to continuously strive to create disaster-ready communities through educational activities, both directly and indirectly.

Earthquake disaster education plays a role in providing basic knowledge to the community about what to do before, during, and after an earthquake occurs. With proper understanding, people can reduce the risk of panic while minimizing the possibility of casualties and material losses. Simple knowledge such as how to take cover, evacuation routes, and early warning signs can save many lives.

In addition, educational activities also help build a culture of disaster preparedness within the community. Through evacuation drills, emergency response training, and outreach in schools and workplaces, the people of Padang can become accustomed to facing earthquake situations. This culture strengthens social solidarity, where individuals help one another when disasters truly occur.

In the context of disaster management, the expected effect of educational activities is behavioral change. Human behavior is essentially the actions or activities of humans themselves, which cover a wide range, including walking, talking, crying, laughing, working, studying, writing, reading, and so on. Thus, human behavior is all activities or actions of humans, whether directly observable or not observable by outsiders (Notoatmodjo, 2018). Bloom (2012), an educational psychology expert, divides human behavior into three domains or areas: (1) Cognitive Domain- related to thinking, learning, and understanding processes to acquire knowledge, operationalized in this study as knowledge about disasters, knowledge of disaster preparedness, and knowledge of what to do during a disaster; (2) Affective Domain- related to attitudes, interests, emotions, values, and character traits,

operationalized as attitudes and ways of being prepared for disasters; and (3) Psychomotor Domain– related to physical skills, body movements, and the ability to act, operationalized as actions associated with disaster preparedness and actions taken during a disaster (Ristica et al., 2015). Psychomotor emphasizes motor skills, namely working with objects or activities requiring coordination of nerves and muscles (Suparno, 2010).

This study aims to describe the cognitive, affective, and psychomotor domains of the community's preparedness in facing earthquake disasters in Air Manis Subdistrict, Padang City. Air Manis Subdistrict is one of the locations actively engaged in disaster-related activities, such as the Disaster Preparedness Group (*Kelompok Siaga Bencana*) and Mercy Corps (NGO), which are quite active in disseminating information about earthquakes through educational activities for the local community. By measuring the behavior of disaster-ready communities, the government and stakeholders are expected to formulate appropriate policies in earthquake disaster education efforts. This education serves as the main foundation in building a resilient society against disasters. With adequate knowledge, attitudes, and skills, the people of Padang, especially in Air Manis Subdistrict, can be better prepared to face future earthquake threats while minimizing their impacts.

2. METHOD

This study is survey research employing a quantitative approach. Survey research is a type of study that takes a sample from a population and uses questionnaires as the primary tool for data collection (Singarimbun & Effendi, 2017). Meanwhile, quantitative research emphasizes numerical data that are processed using statistical methods (Azwar, 2022). The quantitative method is also referred to as the positivistic method because it is based on the philosophy of positivism (Sugiyono, 2019). From the perspective of its objectives, quantitative research is used to test a theory, present facts or describe statistics, demonstrate relationships between variables, and in some cases, develop concepts, enhance understanding, or describe various phenomena (Subana, 2019).

Population refers to the entirety of characteristics or measurement units that become the object of research. In this study, the population consists of the community residing in Air Manis Subdistrict, Padang Selatan District, Padang City. The total population in this location is 732 respondents. A sample is a portion of the population considered to represent the population (representative). Sampling is based on logical considerations such as practicality, limitations of cost, time, and energy, as well as experiments that may be destructive in nature (Riduwan, 2017). In this study, the sampling technique used is purposive sampling. Purposive sampling is a technique of determining samples based on specific considerations (Sugiyono, 2019). The consideration or criterion applied was that respondents had previously received information about earthquake disasters organized by the Padang City Regional Disaster Management Agency (BPBD) and/or other relevant parties. The sample size was determined using the Slovin formula, resulting in a total of 87.98 or 88 research samples. The measurement scale used was a Likert scale consisting of strongly agree (4), agree (3), disagree (2), and strongly disagree (1). Data obtained from community responses in the form of answers to questions or statements in the questionnaire were processed using Microsoft Excel and SPSS version 26. To describe each variable, descriptive (univariate) analysis was employed.

3. RESULTS AND DISCUSSION

3.1. Respondent Characteristics

To understand community characteristics, sociodemographic aspects that can serve as indicators include age, gender, occupation, education, and media ownership.

Age

Age is a unit of time that measures the duration of existence of an object or living being, whether alive or deceased (Thurstone, 1961). In the Kamus Besar Bahasa Indonesia (KBBI), age is defined as the length of time of living or existence (since birth or creation) (Indonesia, 2020).

In this study, the total number of respondents was 88 people. The age distribution of respondents is as follows: adolescents (17–24 years) totaled 7 people, adults (25–54 years) totaled 74 people, elderly (55–64 years) totaled 6 people, and seniors (>65 years) totaled 1 person. This indicates that the age distribution of respondents is not highly diverse and is dominated by the adult category, namely those aged 25–54 years.

Most respondents can be categorized as being in their productive age. The youngest respondent was 17 years old, while the oldest was over 65 years old. The percentage distribution of respondents is: adolescents 8%, adults 84.1%, elderly 6.8%, and seniors 1.1%.

Table 1. Distribution of Respondents by Age

Age Category	Age Range	Frequency	Percentage (%)
Adolescents	17 – 24	7	8,0
Adults	25 – 54	74	84,1
Elderly	55 – 64	6	6,8
Seniors	>65	1	1,1
Total		88	100,0

The age distribution of respondents shows a dominance of the productive adult group (25–54 years). This indicates that the research results more strongly reflect the conditions and perspectives of the productive age population, while the viewpoints of younger and older generations are less proportionally represented.

Gender

Based on the data obtained, out of the total 88 respondents, 43 were male and 45 were female. This indicates that the distribution of respondents by gender is very balanced. The percentage of respondents by gender is 48.9% male and 51.1% female. It can be seen here that the number of female respondents is slightly higher than that of male respondents.

Table 2. Distribution of Respondents by Gender

Gender	Frequency	Percentage (%)
Male	43	48,9
Female	45	51,1
Total	88	100,0

The distribution of respondents based on gender in this study is very ideal and can be considered to represent the population in a balanced manner. With the number of female respondents being slightly higher, the study still maintains good demographic balance for further analysis.

Occupation

The occupations of the respondents are quite diverse. One respondent worked as a farmer, 42 as traders, 1 as members of the military/police, 17 in the private sector, 6 as laborers, 6 as fishermen, 6 were unemployed, and 9 in other occupations. The percentage distribution of respondents' occupations is as follows: farmers 1.1%, traders 42%, military/police 1.1%, private sector 19.3%, laborers 6.8%, fishermen 6.8%, unemployed 6.8%, and others 10.2%.

It can be seen that the majority of respondents in this study worked as traders (42%) and in the private sector (19.3%). This is due to the research location being situated in a tourist area with the landmark "Malin Kundang Rock," where most respondents are traders of food, beverages, and clothing along Air Manis Beach.

Table 3. Distribution of Respondents by Occupation

Occupation	Frequency	Percentage (%)
Farmer	1	1,1
Trader	42	47,7
Military/Police	1	1,1
Private Sector	17	19,3
Laborer	6	6,8
Fisherman	6	6,8
Unemployed	6	6,8
Others	9	10,2
Total	88	100,0

The distribution of respondents' occupations indicates the dominance of the trade sector as the main source of livelihood, followed by the private sector. The presence of laborers, fishermen, and the unemployed in equal numbers reflects the diversity of the community's economic conditions. Meanwhile, the professions of farmers and military/police personnel are very limited, so their contribution to the overall data is relatively small.

Education

The level of education of an individual influences the values they uphold, their way of thinking, perspectives, and even their perception of a problem. A person with a higher level of education tends to be more responsive to information, and education also affects choices in products or brands (Sumarwan, 2018).

The educational level of respondents in this study is quite varied, ranging from elementary school graduates to diploma or bachelor's degree graduates. Respondents' education levels were categorized as very low, low, medium, and high. Elementary school (SD) graduates fall into the very low category, junior high school (SMP) graduates into the low category, senior high school (SMA) graduates into the medium category, and diploma or bachelor's degree graduates into the high category.

Based on the data obtained, the number of respondents by education level was: very low 18 people, low 27 people, medium 41 people, and high 2 people. The percentage distribution of respondents by education level was: very low 20.5%, low 30.7%, medium 46.6%, and high 2.3%. It can be seen that the majority of respondents had a senior high school education, totaling 41 people (46.6%), while the fewest respondents were diploma or bachelor’s degree graduates, totaling 2 people (2.3%).

Table 4. Distribution of Respondents by Education

Category	Education Level	Frequency	Percentage (%)
Very Low	Elementary School (SD)	18	20,5
Low	Junior High School (SMP)	27	30,7
Medium	Senior High School (SMA)	41	46,6
High	Diploma/Bachelor’s Degree	2	2,3
Total		88	100,0

The distribution of respondents’ educational levels shows that the majority have secondary education (high school), while the number of respondents with higher education is very small. This condition reflects that access to formal education up to the university level remains limited within the studied community. These findings are important for understanding the profile of human resource capacity and can serve as a basis for designing programs to improve education and empower the community.

Media Ownership

Media ownership can be defined as whether individuals (communicants) generally own a television set, subscribe to newspapers, or not (Cangara, 2020). Mass media is an institution that functions as an agent of change, serving as a pioneer of transformation. This is the main paradigm of mass media. In carrying out its paradigm, mass media plays roles as an educational medium, an informational medium, and an entertainment medium (Bungin, 2023). Media ownership is categorized into four types of mass media: newspapers, magazines, television, and radio.

Based on the data obtained, the number of respondents in the “few” category (owning 1 type of media) was 71 people, in the “moderate” category (owning 2 types of media) was 16 people, and in the “many” categories (owning 3 types of media) was 1 person. The percentage distribution of respondents by media ownership was: few (owning 1 type of media) 80.7%, moderate (owning 2 types of media) 18.2%, and many (owning 3 types of media) 1.1%. It is clearly evident that most respondents owned only 1 type of media, namely 71 people (80.7%), and only 1 respondent (1.1%) owned 3 types of media. The community in Air Manis Subdistrict, Padang City did not have any respondents who owned all 4 types of media.

Table 5. Distribution of Respondents by Media Ownership

Category	Media Ownership	Frequency	Percentage (%)
Few	1 Type of Media	71	80,7
Moderate	2 Type of Media	16	18,2
Many	3 Type of Media	1	1,1
Total		88	100,0

The distribution of media ownership among respondents shows that the majority of the community relies on only one type of media as a source of information or communication. This limited variety of media may reflect socio-economic conditions, levels of media literacy, as well as access to technology. These findings are important for understanding community communication patterns and can serve as a basis for designing effective information dissemination strategies in accordance with the characteristics of the dominant media used.

3.2. Community Preparedness Behavior

Cognitive

Cognitive, also referred to as the domain of knowledge, is the result of knowing, which occurs after individuals perceive a particular object. Perception takes place through the human senses, namely sight, hearing, smell, taste, and touch. Most human knowledge is acquired through the eyes and ears (Notoatmodjo, 2018).

In measuring the level of community knowledge about earthquake disasters, four categories can be used as a basis: very low, low, high, and very high. The knowledge level of the community in Air Manis Subdistrict, Padang City was assessed through several questions regarding the definition of earthquakes, causes of earthquakes, consequences of earthquakes, characteristics of earthquakes with tsunami potential, what should be done during an earthquake, what should be done to reduce the impact of earthquakes, and other related questions.

Based on the data obtained, the cognitive level of the Air Manis community regarding earthquake disasters showed that 4 respondents had a low cognitive level, 52 respondents had a high cognitive level, and 32 respondents had a very high cognitive level. The percentage distribution of cognitive levels was as follows: 4.5% low, 59.1% high, and 36.4% very high. The largest number of respondents had a high cognitive level, totaling 52 respondents (59.1%), while the smallest number had a low cognitive level, totaling 4 respondents (4.5%).

Table 6. Respondents' Cognitive Level Regarding Earthquake Disasters

Category	Frequency	Percentage (%)
Low	4	4,5
High	52	59,1
Very High	32	36,4
Total	88	100,0

The dominance of the high category in the cognitive domain of the community indicates that, in general, people already understand the basic concepts, mechanisms, and disaster mitigation measures. This is further supported by the fact that most of the community not only has a general understanding but also possesses in-depth knowledge and is able to connect information with concrete actions in facing disasters. However, there remains a small portion of the community with limited knowledge. This group is potentially more vulnerable when disasters occur due to a lack of understanding of safety procedures.

Overall, the cognitive level of the community regarding disaster preparedness is predominantly in the high and very high categories. This serves as an important asset in

building disaster preparedness within the community. Nevertheless, equal distribution of education is still required for the small group with low cognitive levels, along with special attention through outreach, training, and simulation activities to ensure they are not left behind. These findings are consistent with the study by Akhirianto et al., (2023), which revealed that the “Desa Tangguh Bencana” (Disaster Resilient Village) program was able to improve community knowledge on disaster preparedness, although not always evenly distributed.

Affective

The affective domain, or attitude, refers to a person’s internal reaction or response to a stimulus or object. Newcomb, a social psychology expert, stated that attitude is a readiness or willingness to act, and not the execution of a specific motive. Attitude is the readiness to respond to objects in a particular environment as an appreciation of those objects (Notoatmodjo, 2018).

The affective domain or attitude was measured through several questions about whether or not individuals were willing to carry out activities that could reduce the impact of an earthquake disaster. Such activities include fastening furniture to the walls with nails and brackets to prevent them from falling or collapsing during an earthquake, storing flammable items in safe places, always turning off water, gas, and electricity when not in use, renovating houses to be earthquake-resistant, and other related questions. In total, 12 questions were used to measure the affective level of the community in Air Manis Subdistrict, Padang City, with two possible answers: agree or disagree.

The results of measuring the affective level of the Air Manis community regarding earthquake disasters showed that 1 respondent had a low affective level, 8 respondents had a high affective level, and 79 respondents had a very high affective level. The percentage distribution of affective levels was 1.1% low, 9.1% high, and 89.8% very high. The largest number of respondents had a very high affective level, totaling 79 respondents (89.8%), while the smallest number had a low affective level, totaling 1 respondent (1.1%).

Table 7. Respondents’ Affective Level Regarding Earthquake Disasters

Category	Frequency	Percentage (%)
Low	1	1,1
High	8	9,1
Very High	79	89,8
Total	88	100,0

These findings reveal that the majority of the community possesses positive attitudes, strong concern, and emotional awareness regarding the importance of disaster preparedness. The emotional readiness of the community serves as a crucial asset in fostering solidarity, care, and collective preparedness. Nevertheless, efforts in socialization and guidance are still necessary to ensure that all members of the community achieve an equal level of affective preparedness. Through social approaches, education, and motivation, no group should be left behind in disaster readiness. In line with this, the study by Maharani & Prasetyo (2025) demonstrated that community preparedness is strongly influenced by the level of knowledge and attitudes toward disasters.

Psychomotor

The psychomotor domain, or skill domain, focuses on physical skills and the ability to act, which require coordination and the use of muscles. This domain is also related to a person's tendency or intention to act or behave toward an object, arising from their knowledge (cognitive) and attitudes (affective). It is often referred to as the behavioral or action component. This represents the aspect of motivation and willpower that drives individuals to take concrete actions (Pratama, 2024).

Based on the data obtained, the psychomotor level of the community in Air Manis Subdistrict, Padang City regarding earthquake disasters showed that 1 respondent had a very low psychomotor level, 14 respondents had a high psychomotor level, and 73 respondents had a very high psychomotor level. The percentage distribution of psychomotor levels was as follows: 1.1% very low, 15.9% high, and 83% very high. The largest number of respondents had a very high psychomotor level, totaling 73 respondents (83%), while the smallest number had a very low psychomotor level, totaling 1 respondent (1.1%).

Table 8. Respondents' Psychomotor Level Regarding Earthquake Disasters

Category	Frequency	Percentage (%)
Low	1	1,1
High	14	15,9
Very High	73	83,0
Total	88	100,0

The high percentage (83%) in the very high category indicates that the majority of the community already possesses good skills, physical readiness, and practical abilities in facing earthquake threats. In addition, 14 respondents (15.9%) demonstrated good readiness, although further improvement is needed to reach the very high category. However, the presence of 1 respondent (1.1%) with a very low psychomotor level shows that there are still individuals at greater risk in terms of disaster-related skills. This group requires special attention through training or mentoring.

The implications of these findings suggest that the majority of the community has a very good level of preparedness in disaster mitigation. Nevertheless, continuous education programs, simulations, and routine drills are necessary to ensure that community skills do not decline and become more evenly distributed. Furthermore, special interventions should be provided to the most vulnerable groups during disasters.

4. CONCLUSION

The findings of this study indicate that the community of Air Manis Subdistrict, Padang City, demonstrates a very high level of preparedness in facing earthquake disasters. This is reflected in the high cognitive achievement, very high affective attitudes, and very high psychomotor skills. These results affirm that the community's knowledge, attitudes, and skills have been comprehensively developed, thereby supporting the creation of a disaster-ready and resilient society.

Nevertheless, community preparedness is not static and may decline if not supported by continuous programs. Therefore, policies and practices should emphasize ongoing

education, regular evacuation simulations, and practical training that reach all segments of society, including vulnerable groups. The implications of these findings highlight the need to integrate disaster education into school curricula, strengthen the capacity of local disaster preparedness cadres, and provide supporting facilities such as evacuation routes and public information boards.

ACKNOWLEDGMENT

The authors express their appreciation and gratitude to all parties who have participated in this research, for the various experiences and insights shared throughout the research process.

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