

Original Research

# The Relationship between the Level of Knowledge and Attitude with Community Preparedness in Natural Disaster Management

Muhammad Z. R Arwanpitu Elly<sup>1\*</sup>, Febby A. Metekohy<sup>2</sup>, Wiwik Widiyati<sup>3</sup><sup>1,2,3</sup>Nursing Study Program, Maluku Husada Kairatu College of Health Sciences, Maluku, Indonesia

---

**Article Info**Received: 24-07-2024  
Revised: 17-10-2024  
Accepted: 28-10-2024\*Corresponding Author:  
Muhammad Z. R  
Arwanpitu Elly  
Nursing Study  
Program, Sekolah  
Tinggi Ilmu Kesehatan  
Maluku Husada  
Kairatu, Maluku  
Email:  
muhammadzrarwanpitu  
elly@gmail.com**Abstract****Background:** The National Disaster Management Agency (BNPB) states that natural disasters are disasters caused by events or series of events caused by nature, including earthquakes, tsunamis, erupting mountains, floods, droughts, typhoons, and landslides.**Objective:** The purpose of the study was to determine the relationship between the level of knowledge and attitudes with community preparedness in handling RT 01 natural disasters in Batumerah Village.**Methods:** This type of research uses a correlational research design, this study looks for relationships between variables. The approach in this study uses a *cross sectional approach*. Sampling uses *purposive sampling* or sampling by determining certain criteria. Data Analysis using *chi-square test*.**Results:** The results show the results of the value  $p = 0.01$  where the value of  $p \leq 0.05$  so that  $H_a$  is sent, and the attitude with preparedness shows results with a value of  $p = 0.00$  where the value of  $p \leq 0.05$  so that  $H_a$  is accepted. Based on the results of the study, there is a relationship between the level of knowledge and attitudes with preparedness in natural disaster management in RT 01 Batumerah Village.**Conclusion:** People's attitudes are also influenced by several factors such as personal experience, the influence of others, mass media, and emotional. The attitude of the community is positive because many people are very concerned about the arrival of disasters, and participate in mitigation efforts, and also have rescue equipment**Keywords:** Level of knowledge; Attitude; Disaster Preparedness

---

**Introduction**

Geographically, Indonesia is located in an area prone to natural disasters such as landslides, earthquakes, volcanic eruptions and floods. Of these disasters, floods are disasters that often come and are unavoidable conditions in a number of regions because about 30% of the 5000 major rivers in Indonesia cross densely populated areas. The percentage of flood events in Indonesia reaches 38% of all disaster events, while landslides account for 18% (Lindawati & Wasludin, 2017).

The National Disaster Management Agency (BNPB) states that natural disasters are disasters caused by events or series of events caused by nature, including earthquakes, tsunamis, erupting mountains, floods, droughts, typhoons, and landslides (Erlia, Kumalawati, & Aristin, 2017). Disaster preparedness is a series of actions, preparations, and activities carried out both individually and collectively to face and anticipate threats that endanger life, through planned, effective, and efficient organizing efforts. Preparedness is one of the mechanisms of disaster management and serves to anticipate and reduce disaster risks. Activities to increase preparedness include enhancing community knowledge and attitudes (Aprilin, Haksama, & Makhfludi, 2018).

According to global disaster data in 2020, various significant disasters occurred, such as an earthquake in the Caribbean (7.7 SR), a volcanic eruption in the Philippines that spewed ash 14 kilometers high and killed 39 people, an earthquake in Turkey (6.7 SR) that killed 41 people, fires in Australia that burned more than 12 million hectares and killed 33 people, and an earthquake in Mexico (7.4 SR) (Millah, 2020). BNPB data (2020) recorded 1,296 disaster events in Indonesia, including 5 earthquakes, 3 volcanic eruptions, 495 floods, and the COVID-19 pandemic, with significant impacts: 17,563 houses damaged, 178 fatalities, over 2 million displaced, and hundreds injured.

Disaster events in 2019 included tornadoes (30), landslides (44), and fires (13), which damaged approximately 1,446 homes (BPBD, 2020). In Batumerah Village alone, recurring disasters include about 10 landslides, 5 floods, and 1–2 fires annually (Pemdes, 2021). The knowledge and preparedness attitudes of the community are influenced by their repeated experience of annual floods, forming a sense

of concern and readiness for future disasters (Erlia, Kumalawati, & Aristin, 2017). Flooding typically occurs due to poor water and land management and high rainfall in watershed areas. Human population growth and land use issues also impact water quality and flood risks (Noorratri, 2021). Flood causes are both natural (e.g., heavy rains, sedimentation, tidal floods) and human-induced (e.g., deforestation, waste disposal into rivers, poor drainage maintenance) (Mas'ula, Siartha, & Citra, 2019). Initial data collection in Batumerah Village found it to be a flood-prone area due to its geographical position and the community's behavior of throwing garbage into the river, which clogs drainage systems and exacerbates overflow.

Based on the above background, the author is interested in conducting research titled "The Relationship Between the Level of Knowledge and Attitude with Community Preparedness in Natural Disaster Management in RT 01 in Batumerah Village."

## **Methods**

### **Study Design**

This research design uses a correlational research design, this study looks for relationships between variables. The approach in this study uses a cross sectional approach. Cross sectional research design is one of the research designs concerning independent variables and bound variables that will be collected at the same time according to Notoatmodjo (2014). Measurement of research data from independent (free) variables of knowledge and attitudes with dependent variables (bound) preparedness in natural disaster management.

### **Samples/Participants**

Population is a generalization area consisting of: subjects / objects that have certain quantities and characteristics then determine the researchers who are understood and can be drawn conclusions according to Sugiyono & Hidayat A (2013) in M. Alfandi, (2019) The population in this study was carried out on the community in RT 01 Batumerah Village amounting to 129 people (KK). The sampling technique in this study is using purposive sampling or sampling by determining certain criteria.

### **Instruments**

A data collection tool is a tool used in research in the form of questionnaires. Questionnaire is a data collection technique carried out by giving a set of questions or written statements to respondents to answer according to Ningtyas & Sanjoto (2015) in Sefi aqif hilm, (2020).

### **Data Collection**

Data collection in this study was carried out using questionnaires, data obtained directly by researchers by means of direct research to respondents.

### **Data Analysis**

Univariate analysis is to analyze each variable from the results of research to produce a frequency distribution and percentage of each variable according to Lusje & Kusmiyati (2013) in Sefi aqif hilm, (2020).

Data analysis was shown to answer the research objectives and test the research hypothesis to determine the relationship between dependent variables using the Chi Square statistical test ( $X^2$ ) with a meaning value ( $\alpha=0.05$ ).

### **Ethical Considerations**

This research has been approved by the ethical institute of the College of Health Sciences Maluku Husada.

## Results

### Characteristics of Respondents

Based on table 1, it shows that the respondents who are 98 with 36-45 years old are 65 respondents with percent (66.3%) and those aged 46-55 years are 33 respondents with percent (33.7%).

Table 1 Distribution of respondents by age at RT 01 Desa Batumerah, Ambon City

Age	n	%
36 - 45 Years	65	66,3%
46 – 55 Years	33	33,7%
<b>Total</b>	<b>98</b>	<b>100%</b>

Source : Primary Data 2023

Based on table 2, it shows that 98 respondents with male gender as many as 77 respondents with percent (78.6%) and female gender as many as 21 respondents with percent (21.4%).

Table 2 Distribution of respondents by sex In RT 01 Batumerah Village, Ambon City

Gender	n	%
Man	77	78,6%
Woman	21	21,4%
<b>Total</b>	<b>98</b>	<b>100%</b>

Source : Primary Data 2023

### Characteristics of Research Variables

#### Knowledge

Based on table 3 it shows that 98 respondents who have good knowledge are 83 respondents with a percentage (84.7%) while those who have poor knowledge are 15 respondents with a percentage (15.3%).

Table 3 Distribution of respondents by level of knowledge of the community In RT 01 Batumerah Village, Ambon City

Variable	n	%
Good	83	84,7%
Not good	15	15,3%
<b>Total</b>	<b>98</b>	<b>100%</b>

Source : Primary Data 2023

#### Attitude

Based on table 4, it shows that 98 respondents who have a positive attitude are 80 respondents with a percentage (81.6%) while those who have a negative attitude are 18 respondents with a percentage (18.4%).

Table 4 Distribution of respondents based on community attitudes In RT 01 Batumerah Village, Ambon City

Variable	n	%
Positive attitude	80	81,6%
Negative attitudes	18	18,4%
<b>Total</b>	<b>98</b>	<b>100%</b>

Source : Primary Data 2023

#### Preparedness

Based on table 5, it shows that 98 respondents who have preparedness are 87 respondents with a percentage (88.8%) while those who do not have preparedness are 11 respondents with a percentage (11.2%).

Table 5 Distribution of respondents based on community preparedness In RT 01 Batumerah Village, Ambon City

Variable	n	%
Yes	87	88,8%
Not	11	11,2%
<b>Total</b>	<b>98</b>	<b>100%</b>

Source : Primary Data 2023

#### Analyzes Bivariat

### Level of knowledge with preparedness

Based on table 6, it shows that respondents who have good knowledge with preparedness are 78 respondents with percent (94.0%) and respondents who have good knowledge but do not have preparedness are 5 respondents with percent (6.0%). Meanwhile, respondents who have poor knowledge but have preparedness as many as 9 respondents with percent (60.0%) and respondents who have poor knowledge and also do not have preparedness as many as 6 respondents with percent (40.0%).

These results show that respondents who have good knowledge are greater than those who have poor knowledge. The results of the statistical test using *chi-square* showed results with a value of  $p = 0.01$  where the value of  $p \leq 0.05$  which means that there is a significant relationship between the level of knowledge and community preparedness in disaster management in Batumerah Village.

Table 6 Knowledge levels with community preparedness  
In RT 01 Batumerah Village, Ambon City

Knowledge of respondents	Preparedness of respondents						P
	Iya		Not		Total		
	n	%	n	%	n	%	
Good	78	94,0	5	6,0	83	100	0,01
Not good	9	60,0	6	40,0	15	100	
<b>Total</b>	<b>87</b>	<b>88.8</b>	<b>11</b>	<b>11,2</b>	<b>98</b>	<b>100</b>	

Source : Primary Data 2023

### Attitude with community preparedness

Based on table 7, it shows that respondents who have a positive attitude with preparedness are 77 respondents with a percent (96.3%) and respondents who have a positive attitude but do not have preparedness as many as 3 respondents with a percent (3.8%). Meanwhile, respondents who have a negative attitude but have preparedness are 10 respondents with a percentage (55.6%) and respondents who have a negative attitude and also do not have preparedness as many as 8 respondents with a percentage (44.4%).

This result shows that respondents who have a positive attitude are greater than negative attitudes, the results of this statistical test using *chi-square* show results with a value of  $p = 0.00$  where the value of  $p \leq 0.05$  which means that there is a significant relationship between community attitudes and community preparedness in disaster management in Batumerah Village.

Table 7 Attitudes with community preparedness  
In RT 01 Batumerah Village, Ambon City

Respondents attitude	Preparedness of respondents						P
	Yes		Not		Total		
	n	%	n	%	n	%	
Positive attitude	77	96,3	3	3,8	80	100	0,00
Sikap negative	10	55,6	8	44,4	18	100	
<b>Total</b>	<b>87</b>	<b>88,8</b>	<b>11</b>	<b>11,2</b>	<b>98</b>	<b>100</b>	

Source : Primary Data 2023

## Discussion

### The relationship of knowledge level to community preparedness

This result shows that respondents who have good knowledge are greater than those with poor knowledge. The results of statistical tests using chi-square show  $p = 0.001$ , which means there is a significant relationship between the level of knowledge and community preparedness in disaster management in Batumerah Village.

This finding aligns with research by Yatnikasari (2020), which states that the community must actively prepare for flood risks through early action and sufficient knowledge. Knowledge affects one's attitude and behavior in anticipating disasters.

Researchers assume that factors influencing good knowledge among respondents include access to disaster-related information, firsthand disaster experience, and repeated exposure to threats, which increase awareness and preparedness (Erlia, Kumalawati, & Aristin, 2017).

### The relationship of attitudes with the preparedness of society

This result shows that respondents who have a positive attitude are greater than negative attitudes, the results of this statistical test using chi-square show results with a value of  $p = 0.000$  where the value of  $p \leq 0.05$  which means there is a significant relationship between community attitudes and community

preparedness in disaster management in Batumerah Village.

This result shows that respondents with a positive attitude outnumber those with negative ones. The chi-square test produced a value of  $p = 0.000$ , indicating a significant relationship between attitude and preparedness. This supports findings by Ridha and Husna (2018), who explain that positive attitudes include preparing emergency supplies, storing valuables in safe places, participating in risk-reduction planning, and responding quickly to early warning signs. Negative attitudes involve relying on external aid, poor evacuation planning, and lack of concern for environmental health.

The people of Batumerah are accustomed to experiencing floods, and such experiences enhance their concern and awareness, shaping a more prepared attitude (Erlia, Kumalawati, & Aristin, 2017). Researchers also believe that attitudes are influenced by personal experiences, media exposure, emotional responses, and social interactions. The strong sense of vigilance and proactive behavior among Batumerah residents supports their high disaster preparedness.

## Conclusion

Based on the results of the research conducted, it can be concluded that; There is a good level of community knowledge on natural disaster preparedness in RT 01 Batumerah Village; There is a positive attitude that the community has towards natural disaster preparedness in RT 01 Batumerah Village; There is community preparedness for natural disaster preparedness in RT 01 Batumerah Village; There is a significant relationship between the level of community knowledge in natural disaster management in RT 01 Batumerah Village; There is a significant relationship between community attitudes in natural disaster management in RT 01 Batumerah Village.

## Acknowledgment

We express our gratitude to all parties involved in this research, both directly and indirectly.

## References

- Alfandi, M. (2019). *The relationship between knowledge and attitudes of disaster volunteers with the skills to triage the START method in the city of Bukittinggi* [Undergraduate thesis, STIKes Perintis Padang].
- Aprilin, H., Haksama, S., & Makhfludi. (2018). Journal of postgraduate biosciences. *Journal of Graduate Biosciences*, 20(2), 133–145. Graduate School of Airlangga University, Indonesia.
- Cahyani, W. A. (2017). *Early childhood education teacher education*, Faculty of Education [Undergraduate thesis, Semarang State University].
- Erlia, D., Kumalawati, R., & Aristin, N. (2017). Analysis of community and government preparedness to face flood disaster in West Martapura District, Banjar Regency. *Journal of Geography Education*, 4(3), 15–24.
- Firmansyah, I. (2014). The relationship of knowledge with preparedness behavior in facing floods and landslides in adolescents aged 15–18 years at Al-Hasan Kemiri High School, Panti District, Jember Regency. *Scientific Journal of Student Research Results*.
- Geo Disaster Data Portal. (2020). *BNPB Indonesia*. <https://gis.bnpb.go.id/>
- Greetings. (2014). *Nursing management: Applications in professional nursing practice*. Jakarta: Salemba Medika.
- Griffithi, S. S. (2019). *Participation of the Disaster Preparedness Group on the knowledge and attitude of flood preparedness of the community of Kalipancur Village* [Undergraduate thesis, Semarang State University].
- Hilmi, S. A. (2020). *The relationship between knowledge and community attitudes towards disaster management efforts in sub-districts* [Undergraduate thesis, University of Muhammadiyah Magelang].
- Lindawati, L., & Wasludin, W. (2017). The relationship of knowledge and attitudes about flood disasters to preparedness in health in the community RW 05 RT 01 and RT 03 Gondrong Village, Tangerang City. *Journal of Medicine (Health Information Media)*, 4(2), 195–202.
- Mas'ula, N., Siartha, I. P., & Citra, I. P. A. (2019). Community preparedness for flood disaster in Pancasari Village, Sukasada District, Buleleng Regency. *Journal of Geography Education Undiksha*, 7(3), 103–112.

- Millah, S. (2020, December 28). 13 bencana alam paling fenomenal di dunia sepanjang 2020. *Bisnis.com*. <https://teknologi.bisnis.com/read/20201228/84/1336157/13-bencana-alam-paling-fenomenal-di-dunia-sepanjang-2020>
- Noorratri, E. D. (2021). Overview of knowledge and attitudes of the Pucang Sawit community about flood disaster preparedness in Pucang Sawit. *Journal of Health Science and Technology*, 12(1), 21–26.
- Notoatmodjo, S. (2012). *Health research methodology*. Jakarta: Rineka Cipta.
- Notoatmodjo, S. (2014). *Health research methodology* (Rev. ed.). Jakarta: Rineka Cipta.
- Purwoko, A. (2015). *The influence of knowledge and attitudes about flood risk on the preparedness of adolescents 15–18 years old in facing flood disasters in Pedurungan Kidul Village, Semarang City* [Undergraduate thesis, Semarang State University].
- Ridha, R., & Husna, C. (2018). Knowledge and community attitudes towards flood management. *Journal*.
- Rofifah, R. (2019). *The relationship between knowledge and disaster preparedness in nursing students of Diponegoro University* [Undergraduate thesis, Diponegoro University].
- Sukesih, S., Usman, U., Budi, S., & Sari, D. N. A. (2020). Knowledge and attitudes of health students about COVID-19 prevention in Indonesia. *Journal of Nursing and Midwifery Sciences*, 11(2), 258.
- Umasugi, M. T. A. (2018). *Factors affecting disaster preparedness in Kepuharjo Village, Cangkringan District, Sleman Regency, Yogyakarta* [Undergraduate thesis, STIKes Bangsa Yogyakarta].
- Yatnikasari, S. (2020). The influence of knowledge and attitudes towards the preparedness of the head of the family in facing flood disasters. *Journal*, 18(2).