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The Relationship between Disaster Knowledge and Disaster Preparedness Attitudes in Medical Students of Universitas Negeri Gorontalo

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ABSTRACT

Introduction: The incidence of natural disasters worldwide is increasing and unpredictable. As one of the high-risk disaster countries, good knowledge and disaster preparedness in Indonesia residence are needed to reduce the risk of a disaster. As agents of change, students should have competent skills in disaster situations. This study aims to determine the relationship between disaster knowledge and disaster preparedness attitudes among medical students at Universitas Negeri Gorontalo (UNG).

Method: This research is a descriptive study with a cross-sectional design and uses a total sampling technique on active UNG medical students during the research period. The research was conducted at the UNG Faculty of Medicine from September to November 2022. The research instrument used a questionnaire that had been used in previous studies. The independent variable is disaster knowledge, while the dependent variable is disaster preparedness attitudes. Bivariate analysis was carried out using the chi-square test to determine the relationship between the two variables.

Results: Of the 208 respondents, most have a high level of disaster knowledge of 81.7%. The description of disaster preparedness attitudes shows that most respondents have a good attitude towards disaster preparedness, namely 52.4%. There is no significant relationship between disaster knowledge and preparedness attitudes (p-value 0.160).

Conclusion: There is no relationship between disaster knowledge and disaster preparedness attitudes among UNG medical students. It is hoped that the institution will continue to develop disaster education so that students can have better disaster knowledge and be able to deal with disaster situations.

Key words: Attitude, disaster, knowledge, preparedness

Introduction

Disasters in various parts of the world are currently increasing.[1] Indonesia is a country that is prone to disasters. According to the Indonesian Disaster Information Data (DIBI), compiled by the National Disaster Management Agency (BNPB), in 2021, 2,032 disaster events were recorded, both natural and non-natural disasters. Whereas in 2022 until the middle of this year, there have been recorded as many as 1,814 disasters.[2] Disasters have the potential to occur in unpredictable circumstances and times. Disasters can impact damage in all areas, including the economic, social, and environmental sectors.[3,4]

Disaster management essentially seeks to reduce and prevent people from disasters and overcome vulnerabilities. The disaster management cycle is divided into three stages, namely the pre-disaster stage, the stage when a disaster occurs, and the post-disaster stage. The magnitude of the potential for disaster events can be minimized by preparedness from groups who are vulnerable to disasters.[5] Preparedness is a series of activities in an effort to anticipate disasters and provide an adequate response to the possible impacts of the threat of disasters.[6]

Disasters have the potential to occur in unpredictable circumstances and times. Disasters can impact damage in all areas, including the economic, social, and environmental sectors. Educational environments such as universities are not immune to areas that can be affected by a disaster. Gorontalo State University, which is one of the largest universities in Gorontalo, also has great potential for disasters to occur so that the community, in this case students, is a group that is vulnerable to disasters, so disaster management is needed to reduce the risk of a disaster occurring.

The Faculty of Medicine, State University of Gorontalo (UNG) is one of the medical education institutions in Indonesia that has excellence in disaster emergency medicine. As a group that is vulnerable to disasters, medical students at Gorontalo State University are required to have good knowledge and attitudes in dealing with a disaster. Many factors can affect student knowledge, including good education and individual experience in dealing with disasters. Research from Abhinav Sinha et al., which involved 375 medical students from Netaji Subash Chandra Bose Medical College, Jabalpur, India, showed that the knowledge and attitudes of respondents towards disaster preparedness were still lacking.[7,8]

The existence of a disaster management curriculum at the UNG Faculty of Medicine cannot guarantee that medical students have good knowledge and attitudes about disasters which are needed as capital when these students become doctors and also support the achievement of the vision and mission of the UNG Faculty of Medicine. Based on this,

research is needed related to the relationship between disaster knowledge and disaster preparedness attitudes. So, the aim of this research is to see the relationship between disaster knowledge and disaster preparedness attitudes among medical students at Gorontalo State University.

Methods

This research is a descriptive study with a cross-sectional research design. The research was conducted at the UNG Faculty of Medicine in September-November 2022 using a total sampling technique with a sample of 208 medical students. The independent variable in this research is disaster knowledge where students' knowledge measured is related to disasters and disaster risk, which includes the understanding of disasters, environmental vulnerability, and the vulnerability of public facilities to disaster emergencies. The dependent variable in this research is disaster preparedness attitudes, which measure student responses regarding preparedness in facing disasters, including attitudes and concern for disaster risks.

The instrument in this research uses a questionnaire that has been used previously by Fadhil Alwan 2019, and tested for validity and reliability. This questionnaire has a validity value of r calculated > r table, that is, the calculated r-value ranges from 0.269 – 0.680 with an r table value of 0.2709, making this questionnaire can be said to be valid and the reliability value with Cronbach's alpha on this questionnaire is 0.611.[9]

Univariate analysis of disaster knowledge is categorized as high knowledge if the score is ≥ 60% and low knowledge if the score is <60%, while univariate analysis related to disaster preparedness attitudes is categorized as good attitude if ≥ mean and poor attitude if < mean. Bivariate analysis was performed using the chi-square test to determine the relationship between disaster knowledge and disaster preparedness attitudes. If the p-value is less than 0.05, it can be concluded that there is a significant relationship between these variables, whereas on the contrary, if the p-value is more than 0.05, it can be concluded that there is no significant relationship between these variables.

Results

Based on the research results, the subjects obtained from this study amounted to 208 respondents. Based on Table 1, regarding the frequency distribution of research respondent data which includes age and gender, it shows that most gender was female (72.1%), while based on age, most respondents were 20 years old (26.4%). The youngest respondent was 16 years old (0.05%) and the oldest respondent was 22 years old (5.3%). Based on the analysis of Figure 1, it shows that most respondents had a high level of knowledge about disasters, namely 170 people with a percentage of 81.7%.

Table 1. Data on Respondent Characteristics

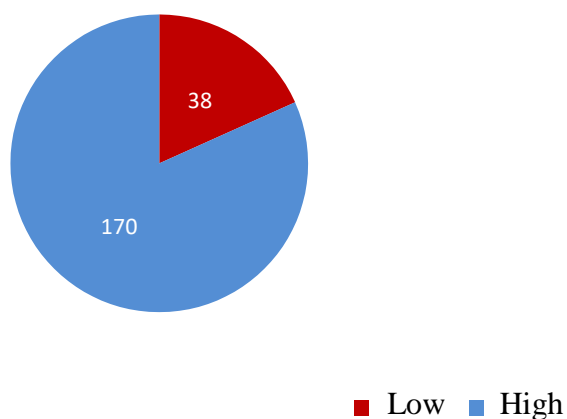| Characteristics	N	%
Gender		
Male	58	27.9
Female	150	72.1
Age		
16	1	0.05
17	13	6.2
18	45	21.6
19	46	22.1
20	55	26.4
21	37	17.8
22	11	5.3

Disaster Knowledge

Figure 1. Distribution of Respondents' Level of Knowledge about Disasters

Table 2 shows the level of disaster knowledge by class of students. The highest level of knowledge was the class of 2019 (91.8%), and the lowest level of knowledge was the class of 2022 (71.2%).

Table 2. Level of Disaster Knowledge by Class of Students

Class	Disaster Knowledge				Total
	Low		High		
	N	%	N	%	
2019	4	8.2	45	91.8	49
2020	8	17.0	39	83.0	47
2021	9	17.0	44	83.0	53
2022	17	28.8	42	71.2	59
Total					**208**

Table 3 shows knowledge level of Disaster Medical Assistance Team (MAT). Regarding the level of disaster knowledge of medical students who are members of the Cutaneus Medical Assistance Team (Tim Bantuan Medis, TBM), it was shown that most

TBM members have a high level of knowledge (90.7%). Their proportion was higher than the students who do not incorporate in TBM membership (78.6%). Based on the analysis of Figure 2, it was found that the majority of respondents had a good attitude towards disaster risk, namely 109 people with a percentage of 52.4%.

Table 3. Knowledge Level of Disaster Medical Assistance Team (MAT)

| Member | Disaster Knowledge | | | | Total |
| | Low | | High | | |
	N	%	N	%	
TBM	5	9.3	49	90.7	54
Non **TBM**	33	21.4	121	78.6	154
Total					**208**

Disaster Preparedness Attitude
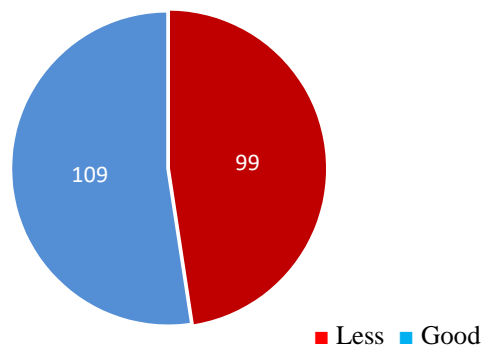

■ Less ■ Good

Figure 2. Distribution of Respondents' Attitudes towards Disaster Preparedness

Table 4 shows the disaster preparedness attitudes based on class of students. The best attitude was the class of 2019 (57.1%). In contrast, the lacking attitude was the class of 2022 (47.5%).

Table 4. Disaster Preparedness Attitudes Based on Force

| Class of | Preparedness attitude | | | | Total |
| | Less | | Good | | |
	N	%	N	%	
2019	21	42.9	28	57.1	49
2020	21	44.7	26	55.3	47
2021	26	49.1	27	50.9	53
2022	31	52.5	28	47.5	59
Total					**208**

Table 5 shows the disaster preparedness attitudes based on MAT participation. Most of TBM members had good and better attitudes when compared to students who were not members of the TBM.

Table 5. Disaster Preparedness Attitude of the Medical Assistance Team (MAT)

| Member | Preparedness Attitude | | | | Total |
| | Less | | Good | | |
	N	%	N	%	
TBM	24	44.4	30	55.6	54
***Non* TBM**	75	48.7	79	51.3	154
Total					**208**

Table 6 shows the relationship between disaster knowledge and disaster preparedness attitudes. From the table, a p-value of 0.160 was obtained, which means that the value was greater than 0.05 (H0 was accepted). This illustrates no significant relationship between knowledge about disasters and attitudes toward disaster preparedness.

Table 6. The relationship between disaster knowledge and disaster preparedness attitudes

| Disaster Knowledge | Preparedness Attitude | | Total | *p-value* |
	Less	Good		
Low	22	16	38	
	10.6%	7.7%	18.3%	
High	77	93	170	0.160
	37.0%	44.7%	81.7%	
Total	99	109	208	
	47.6%	52.4%	100%	

Discussion

The results of univariate analysis regarding the description of the level of disaster knowledge among UNG medical students show that the majority have a high level of expertise. This is supported by various aspects, including because the UNG Faculty of Medicine has a superior vision in disaster emergency medicine so that students are exposed to emergencies and disasters from the start of college. The curriculum regarding emergency education and disaster management provided at the UNG Faculty of Medicine significantly influences medical students' high level of knowledge. Apart from that, to support understanding regarding emergencies and disaster management, the UNG Faculty of Medicine has a student organization, the Cutaneous Medical Assistance Team (TBM). This organization operates in medical emergencies and non-emergencies, which has a role in training and developing each member's knowledge and skills, especially in emergencies. The process of emergency education and disaster education, which is often exposed to medical students, significantly influences their disaster knowledge level.

Disaster Management is an indicator that shows the best results regarding student knowledge. Disaster management attempts to reduce and prevent communities from disasters and overcome vulnerabilities. These results show that the curriculum regarding disaster

management provided at the UNG Faculty of Medicine has had a significant influence on the high level of knowledge of medical students, especially in disaster management.[8]

The description of the level of disaster knowledge by TBM Cutaneus members shows that their understanding of disasters is very high compared to students who are not members of TBM Cutaneus. In running the organization, TBM has exceptional staff, namely Education and Training Staff, who play a role in training and developing the knowledge and skills of all TBM members, especially in emergencies. At that time, there were 54 TBM members, or around 19% of all active medical students. The education and training system by TBM members is carried out in stages, gradually and continuously, which is standardization. TBM members' abilities include knowledge and skills for emergency and non-medical emergencies. Students who are members of TBM Cutaneus also have much experience directly involved in disaster simulation activities and social service when a disaster occurs. The experience of attending training and being directly involved in disaster activities influences their cognitive abilities so that their knowledge level is excellent. The results of this study align with research conducted by Hoffman et al. in 2017, where it was stated that experience can increase one's awareness.[10]

The results of univariate analysis regarding the description of disaster preparedness attitudes among UNG medical students show that most students have good disaster preparedness attitudes. This is because students are often directly involved in disaster activities by the Faculty of Medicine and other student organizations such as TBM. All TBM members are active in disaster activities. Disaster simulation activities carried out in the disaster management and disaster response social service blocks, which are often participated in by Medical Faculty students, bring a tendency to act in a good direction.

The description of the disaster preparedness attitude of each class shows that the best attitude is possessed by the class of 2019. It was because all medical students of the type of 2019 have passed the disaster management and emergency block courses. In the disaster management course, students are also involved in disaster simulation activities besides getting disaster knowledge education. Apart from that, students from the class of 2019 have often participated in disaster response social service activities since the beginning of their studies, whether carried out by the Faculty of Medicine or in collaboration with other agencies. This involvement encourages a good attitude towards disaster preparedness in the class of 2019.

The description of the attitude of disaster preparedness by TBM Cutaneus members shows that most TBM members have a good perspective of preparedness. This good attitude

arose because all TBM members were required to receive training on emergencies and be directly involved in disaster emergency response activities. This factor triggers TBM members to tend to act in a good direction because of their experiences.

Based on the results of statistical tests related to the relationship between disaster knowledge and disaster preparedness attitudes, it was found that there was no significant relationship between the level of disaster knowledge and disaster preparedness attitudes. This research is in line with research conducted by Fadhil in 2020 which stated that there was no significant relationship between knowledge of disaster preparedness for Andalas University Medical Professional students.[9]

Researchers assume that knowledge of disasters is one of the factors that influences disaster preparedness attitudes in this research. Knowledge obtained from various sources of information can be stored in natural form (explicit knowledge) and described in actions or attitudes. However, researchers also assume that medical students' high level of knowledge will not necessarily provide a good attitude toward disaster preparedness because many factors, including personal experience, can influence a person's perspective. Individual experiences greatly influence how a person behaves towards something because attitudes are usually driven by direct involvement, or the person has experienced something similar.[10] This is in line because not all medical students have experienced disaster situations, such as being directly involved in disaster activities or living in disaster-prone areas, even though they have relatively high knowledge of disasters. In research conducted by Azwar in 2012, it was stated that a person's attitude can be influenced by personal experience, the influence of other people, and the influence of the environment and culture around them.[11]

Researchers also assume that there is no significant relationship between disaster knowledge and disaster preparedness attitudes due to the different perceptions of each medical student. In responding to the same situation, each person's perception will differ. Still, it will vary depending on how someone assesses the situation based on cognitive and affective factors and their tendencies to act. According to Yayat, factors directly related to knowledge are cognitive factors that can be obtained from the information received and then digested by the brain to produce a situation that is judged true or not by the person who receives it.[12]

However, a person's response is not only influenced by cognitive factors. There are affective factors and also tendencies to act. This affective factor is a person's tendency towards sensitivity in receiving and responding to something that exists.[10] Even though medical students already know something they are experiencing, they cannot guarantee that

medical students will act or react to it. This difference in perception causes various variations between the knowledge possessed by medical students and the attitude of these medical students.

However, the results of research conducted by Rana Rofifah in 2019 showed the opposite result, where knowledge greatly influences attitudes towards disaster preparedness.[13] A person's attitude directly involves their knowledge, influencing feelings and emotions, which can trigger a response or tendency to act.[14] Based on this, knowledge can be the initial influence in directing an attitude or action. Good knowledge and supported by previous experience can form a good attitude in dealing with a disaster. With good knowledge and attitudes, good preparedness aspects can also be realized.[12,15]

The limitation of this research is that the further factors other than knowledge and attitudes had not been measured. Those factors could influence the research results. Apart from that, in the data collection process, the answers given by respondents in the questionnaire may not show the actual opinions of the respondents due to differences in thinking, differences in understanding, and also the honesty factor of the respondents.

Conclusion

The level of disaster knowledge and disaster preparedness attitudes of students in the Medical Study Program at the UNG Faculty of Medicine is classified as good, and there is no significant relationship between disaster knowledge and disaster preparedness attitudes in students of the UNG Medical Study Program. Furthermore, institutions can continue developing a curriculum regarding disaster management so that the disaster management learning process at the Faculty of Medicine can improve.

Conflicts of Interest

Funding sources

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