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Disaster Preparedness in Elementary Schools: An Analysis of the Level of Knowledge and Preparedness towards Flood Disaster

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ABSTRACT

Indonesia is one of the 4,444 disaster-prone countries, both in terms of natural and man- made disasters. Indonesia is one of the countries prone to flooding because it has high rainfall. Flood is a natural disaster where drainage cannot accommodate excessive water that occurs in an area so that it can cause inundation that is detrimental to the area. Floods can occur in all regions including Malang Regency. The Regional Disaster Management Agency (BPBD) of Malang Province recorded 71 natural disasters in 2018, most of which were floods and landslides. Disaster drills or preparedness are fundamental training to build a safe and strong culture, especially for children. Disaster preparedness measures can be taken early on through socialization conducted at SDN 4 Tumpang, Malang Regency. The purpose of this research is that the students are expected to understand how the steps of disaster preparedness including flood disaster. The type of research used in this study is experimental with pre-experimental research methods. This data comes from primary data obtained from pre-test and post-test scores. The population in this study were some students of SDN 4 Tumpang from class 3 as many as 7 people and class 4 as many as 10 people, with a total population of 17 respondents. The results of this study were obtained data that the average value of student knowledge before being given education was 53.74 and after being given education increased to 66.35. It shows that there is an increase in knowledge after being given education.

KEYWORDS

Disasters, Flood , Preparedness, Schools, Knowledge.

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INTRODUCTION

The World Health Organization (WHO) defines a disaster as an event in an area that results in ecosystem damage, loss of life, or significantly reduced health and medical services and requires special external support (Mizam, 2012). The National Disaster Management Agency in Indonesia noted that throughout 2015-2024 there were 29,194 disasters that occurred in Indonesia including floods, landslides, tidal waves and abrasion, extreme weather, drought, fires, earthquakes, tsunamis, and volcanic eruptions. Indonesia is one of the 4,444 disaster- prone countries, both in terms of natural and man-made disasters. Indonesia is an archipelago that is geographically located at the confluence of three major plates: Eurasian Plate in the north, Eastern Pacific Plate in the south, and Indo-Australian Plate which makes it more vulnerable to disasters. On the other hand, disasters are events that people are very familiar with, especially floods.

Indonesia is one of the countries prone to flooding due to its high rainfall. In addition, rapid urban growth and inadequate flood management infrastructure are among the factors that cause flooding. The impact of flooding can be very detrimental as it can cause damage to infrastructure such as roads, bridges and buildings. In addition, floods can also threaten the safety of human life and cause the spread of disease. Flooding is a natural disaster where drainage cannot accommodate excessive water that occurs in an area so that it can cause inundation that is detrimental to the area. Flooding occurs due to high rainfall with an inadequate drainage system so that it can occur. Floods can occur in all regions including Malang Regency. The Regional Disaster Management Agency (BPBD) of Malang Province recorded 71 natural disasters in 2018, most of which were floods and landslides. In early 2020, floods routinely occurred in South Malang Regency (BPBD, 2020). The impact of disasters is usually in the form of unwanted events that occur suddenly and cause casualties.

Flood disasters are very detrimental to the community and the affected areas, promotive and preventive actions that can be done comprehensively are disaster management. Disaster management is a series of activities aimed at preventing disasters by organizing and taking appropriate and effective actions in the face of disasters (Aminuddin, 2013). Therefore, a disaster management plan or preparedness for natural disasters including floods is needed. Preparedness is done to identify how to respond to an event quickly and appropriately. Disaster drills are fundamental training to build a safe and strong culture, especially for children. Flood disaster preparedness training includes education about flooding and the correct ways to evacuate during a disaster and how to avoid flooding. This is done as an effort to mitigate the risks and reduce the impact of the disaster. With good preparedness, the community and government can be better prepared for flood disasters, can respond quickly, and can reduce the losses caused. Disaster preparedness measures can be carried out from an early age through socialization held at SDN 4 Tumpang, Malang Regency, it is hoped that students can understand how to prepare for disasters including floods. Thus, the impact of flood disasters can be minimized.

MATERIALS AND METHODS

The type of research used in this study is experimental with pre-experimental research methods. This research was conducted at SDN 4 Tumpang, Malang Regency on Friday, May 3, 2024. This data is sourced from primary data obtained from pre-test and post-test scores. The population in this study were some students of SDN 4 Tumpang from class 3 as many as 7 people and class 4 as many as 10 people, with a total population of 17 respondents.

The research model used was One Group Pretest Posttest Design. This research model is an experimental method carried out only on one treatment or one group without a comparison group. (Fauziyah & Anugraheni, 2020). In this model, there is a dependent variable that is measured before (pretest) and after (posttest) a treatment is given. Then, the scores from the pretest and posttest of a treatment are compared using a questionnaire. The advantage of this experiment is that it can find comparisons and can compare scores before (pretest) with after (posttest) treatment on the same participants and also the same tools. (Banuwa & Susanti, 2022).

Furthermore, the data was processed using SPSS software to determine the p-value on the pre-test and post-test results. Then the data analysis technique in this study used the Paired Sample T-Test, which aims to see the effect of counseling whether there is an increase in knowledge

RESULTS

The activity was held on May 3, 2024, at SDN 4 Tumpang, Malang Regency. The counseling activities began with the distribution of questionnaires (pretests), which were directed to be filled in by the team, then providing material using poster and leaflet media, and finally filling in the post-test sheet. The results of the analysis can be seen in the table below:

1. Distribution of respondent characteristics based on gender

Gender	N	(%)
Male	8	47
Female	9	53
Total	**17**	**100**

Table 1 shows that there are more female students than male students, namely 9 people (53%), while there are 8 male students (47%).

2. Distribution of respondent characteristics based on class

Class	N	(%)
III (3 SD)	7	41,1
IV (4 SD)	10	58,8
Total	**17**	**100**

Based on Table 2, the number of students who are in class IV is more than class III students, namely 10 people (58.8%), while class III students are 7 people (41.1%).

3. Results of knowledge improvement

Category	Before (Pre-Test)		After (Post-test)		P-Value
	N	(%)	N	(%)	
Good (>70)	6	35,3	11	64,7	0,01
Less (<70)	11	64,71	6	35,3	0,01
Total	17	100	17	100	0,01

Based on Table 3, the results of statistical test analysis using paired samples show a p-value = 0.01 or p-value <0.05, which means there is a significant difference between the pretest and posttest.

Many students' knowledge before being given material or the results of the pretest were classified in the poor category, namely 11 students (64.7%), and in the good category, as many as 6 students (35.3%). Meanwhile, students' knowledge increased after being given the material, as indicated by the post-test results, which were classified in the good category as many as 11 students (64.7%) and the poor category as many as 6 students (35.3%)

4. Average pretest and post-test results

Questionnaire	Mean
Pre-test	53,74
Post-test	66,35

Based on Table 4, it was found that the average score of students' knowledge before being given education was 53.74, and after being given education, it increased to 66.35. This shows that there is an increase in knowledge after being given education

DISCUSSION

Characteristics of Respondents

Based on the results obtained, it shows that the characteristics of respondents based on gender are mostly found in the female gender, totaling 9 people (57%) and 8 people (43%) for men. The sample in this study were students of SDN 4 Tumpang who were in class III as many as 7 people and class IV as many as 10 people.

Extension Activities

The counseling was conducted using lecture and discussion (question and answer) methods by Malang State University students by delivering disaster mitigation counseling material to third and fourth grade students of SDN Tumpang, Malang Regency, which was packaged with media in the form of posters and leaflets. A poster is a large image object as a teaching medium that is given a strong color and the meaning contained in it so that students who see it easily remember it. Posters made for education are, in principle, ideas that are realized in the form of illustrations of simplified image objects and are made large (Megawati, 2017). Meanwhile, according to (Sari et al., 2021) leaflets are a source of information in the form of sheets equipped with pictures so that readers are more interested in seeing them. Leaflets are usually designed using vocabulary or language that is easily understood by the readers. Leaflet media is one of the media that makes it easier for teachers to convey subject matter to students, so that learning becomes more interesting, innovative, and, most importantly, increases student learning outcomes (Kasman et al., 2017).

Image 1. Educational Leaflet Media

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Image 2. Educational Poster Media

The material presentation was themed flood disaster prevention and mitigation. The material provided includes the definition of flood disasters, the causes of flooding, the consequences of flooding, flood prevention, attitudes that must be taken during a flood, and also when the disaster has been declared safe. The results of the data analysis in Table 3 show that there was an increase in knowledge. This indicates that counseling through the lecture method using poster and leaflet media tools can increase students' knowledge level.

Image 3. Presentation of Material

Student Knowledge Level Before and After Being Educated About Disaster Mitigation

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Students' knowledge before being given education shows that the majority of knowledge about disaster mitigation is in the poor category, with as many as 11 students with a percentage of 64.7%, while in the good category there are only 6 students with a percentage of 35.3%. It is known that the p-value obtained using the paired samples test in Table 3 is 0.01, which means that the p-value <0.05 indicates a significant difference between the pretest and post-test. The post-test was conducted by distributing the same questionnaire that was used during the initial evaluation (pretest) after counseling. This shows that there is a significant effect on the provision of the material that has been given. It can also be seen from the mean or average value of the pretest and post-test scores that there is an increase after the provision of material, so that students' understanding and knowledge of disaster mitigation have increased.

Image 4. Post-Test Administration

Supporting Factors

The activity went smoothly and succeeded in achieving the main goal of providing disaster mitigation material so as to increase student understanding. The presentation of this material is also supported by the existence of poster media and leaflets that contain many pictures so that students who see them can be interested and easier to understand. The students who participated in this activity looked so enthusiastic; it can be judged from their activeness during the question and answer discussion process who raised their hands and always answered when given questions, because the age group of elementary school children is very interested in learning new things and information and understanding the events that occur around them. In addition, there was also support from the school by facilitating infrastructure to support extension activities in the form of projectors, sound systems, microphones, and tarpaulins.

Inhibiting Factors

The planned program has been implemented well according to the specified schedule. However, it was realized that in its implementation there were still some obstacles and barriers, such as the situation that was not conducive because the elementary school children were too active and sometimes did not pay attention to the speaker. In addition, the sound that collided between one group and another also made students less focused on the delivery of the material. Also, not all students could participate in this community service activity because it was only given to classes III and IV, so not all students gained the same knowledge about flood disaster mitigation efforts

CONCLUSIONS

Indonesia is one of the countries prone to flooding due to its high rainfall. The Regional Disaster Management Agency (BPBD) of Malang Province recorded 71 natural disasters in 2018, most of which were floods and landslides. Disaster preparedness measures can be done early through socialization held at SDN 4 Tumpang, Malang Regency, it is expected that students can understand how disaster preparedness measures including floods. The type of research used in this study is experimental with pre-experimental research methods. Counseling was conducted using lecture and discussion (question and answer) methods by Malang State University students by delivering disaster mitigation counseling materials to third and fourth grade students of SDN Tumpang, Malang Regency packaged with media in the form of posters and leaflets. Students' knowledge before being given the material or the results of the pretest many are classified in the category of less as many as 11 students (64.7%) and the good category as many as 6 students (35.3%). Meanwhile, students' knowledge increased after being given the material, in the post-test results which were classified in the good category as many as 11 students (64.7%) and the poor category as many as 6 students (35.3%). This shows that there is an increase in knowledge after being given education.

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Conflict of Interest

No Conflict of Interest

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