Poltekita: Jurnal Ilmu Kesehatan
http://jurnal.poltekkespalu.ac.id/index.php/JIK

Vol.17 No.3 November 2023: Hal. 715-721
p-ISSN: 1907-459X e-ISSN: 2527-7170

Original Article

The Role of Schools in Improving Abilities Disaster Preparedness: Nursing Perspective

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ABSTRACT

Earthquake disasters can occur at any time and humans are not yet able to detect when they can occur. Children are included in a group that is vulnerable to the impact of disasters because of their lack of knowledge regarding disaster mitigation. To minimize the impact of disaster events, education on disaster mitigation is needed. To determine the influence of the school's role in increasing students' disaster preparedness abilities in junior high schools in Ternate City. Quasi-experimental research type with a one-group pre-post test design. Data were analyzed using the non-parametric Wilcoxon signed-rank test. The research subjects consisted of teachers (seven respondents) and students (90 respondents). The data were processed using the non-parametric Wilcoxon signed-rank test. The analysis results showed that asymp. sign. (2-tailed) The teacher's score is 0.018 and the student's score is 0.000, where the value of 0.000 is smaller than p value = 0.05, so it can be concluded that there is an increase in disaster preparedness abilities among schoolteachers and students. The role of schools is very important in disseminating disaster mitigation education as basic knowledge that requires learning as early as possible, so that a culture of disaster mitigation grows both before, during, and after a disaster. There was an increase in the ability of teachers and students at school after a disaster preparedness simulation was carried out at a junior high school in Ternate City.

Keywords: *Role of Schools, Disaster Mitigation, Disaster Preparedness, Capacity Building*

https://doi.org/10.33860/jik.v17i3.3220

INTRODUCTION

Man-made disasters have serious impacts, including disruption to communities, many casualties, and financial, environmental, social, and economic losses [1]. The number of disasters and their destructive effects are increasing worldwide. Acquiring and using knowledge is considered the most effective way to prevent disasters or reduce impacts by relying on technological advances [2]. Disasters cannot be avoided; however, their impact can be reduced by changing the system and disaster management [3,4,5].

There is evidence that most injuries, damage, and deaths from disasters are preventable and that disaster preparedness measures, such as adapting housing to risks, reduce losses resulting from disasters. It will be more effective if people in a community have good cooperation in allocating resources and carrying out appropriate recovery after a disaster [6,7,8]. Officials and policymakers have focused on developing new approaches to persuade the public and make a leap in disaster risk reduction as training for children, the general public, and especially vulnerable

groups, considering the increasing disaster risk and vulnerability due to climate change, development, increasing income inequality, and low level of readiness of housewives [3,9,10,11,12]. Education for vulnerable groups aims to provide knowledge, skills, and motivation to individuals and groups to take action to reduce their vulnerability to disaster. Educating vulnerable communities will result in effective action for other people or communities [13]. Over the decades, several studies have shown that trained people can prepare for disasters and respond well to them. Additionally, others have reported that disaster education is a functional, operational, and cost-effective tool for risk management[14]. Furthermore, some people confirmed that low awareness and inadequate understanding of risks negatively impact community preparedness, response to hazard warnings, personal protection actions, and recovery[15].

Data from the BMKG Ternate states that almost every time an earthquake occurs in several areas, it is just a small scale, so it does not have much of an impact on damage and loss of life. Earthquake data for the last four years. In 2018, North Maluku experienced 970 tectonic earthquakes. In 2017, there were 852 tectonic earthquakes and 2,809 cluster earthquakes in West Halmahera. In 2016, there were 862 earthquakes; in 2015, there were 964 tectonic earthquakes and 1,164 cluster earthquakes in West Halmahera [16]. The impact of an earthquake is not only physically damaging, such as cracking or collapsing buildings, but can also have a psychological impact on children in the form of trauma. Shortly after a disaster occurs, children generally show physical symptoms, emotions, thoughts, and disturbing behaviors. Physical symptoms include difficulty sleeping, not feeling well, and being easily startled. Emotional symptoms appear in the form of fear or anxiety, sadness, feeling guilty. For example, mental symptoms include confusion, difficulty in concentrating, frequent flashbacks to events, and nightmares. Meanwhile, behavioral symptoms include crying easily, withdrawing from social interactions, fear of being separated from parents, and getting angry easily [17]. Children are included in a group that is vulnerable to the impact of disasters because of their lack of knowledge regarding disaster mitigation. To minimize the impact of disaster events, education on disaster mitigation is needed.

Mitigation is a series of efforts to reduce disaster risks, both through physical development and awareness, and by increasing the capacity to face disaster threats. Disaster mitigation needs to be provided to all people, including children, who have the potential to become disaster victims. Children are members of a society that is still unstable. Therefore, every time they experience a psychological disaster, children experience a downturn [18].

Many children spend their time at school. This requires special attention from schools and other policymakers to minimize the negative impact of disasters. A school's ability to implement disaster preparedness will certainly have a tremendous impact on school residents, including the ability to minimize casualties among schoolchildren. Efforts to increase students' disaster preparedness abilities can also be carried out by empowering school components. From the statement above, researchers are interested in conducting research on " the role of schools in increasing students ' disaster preparedness capabilities in junior high schools in Ternate City".

METHOD

The research subjects consisted of seven teachers and 90 students at Albina IT Middle School in Ternate City. The type of research is a quasi-experiment with a one-group pre-post test design. The research procedures received recommendations from the Health Research Ethics Commission of the Health Polytechnic of the Ministry of Health of Ternate (No.UM.02.03/6/358/2023. Analysis of the research results was carried out using the non-parametric Wilcoxon signed-rank statistical test. The research was carried out from August to October 2023, covering three stages (Pre, Intra and Post-disaster) at the Integrated Islamic Junior High School (SMP-IT) Albina, Ternate City. The research stages started with research location exploration activities, meetings with teachers regarding the school's preparedness for earthquake disasters, the learning curriculum, learning methods and strategies, and the process of evaluating learning outcomes. Next, together with the teacher, efforts to increase school preparedness through safety briefing activities at the start of every lesson or meeting, providing acrylic information boards in the form of disaster management, including pre-disaster,

intra- and post-disaster, installing evacuation routes and gathering points, providing light fire extinguishers (APAR), provision of first aid kits, and hand washing facilities without water/hand sanitizers. All research requirements were installed in the school environment by researchers, and then simulation activities and post-test assessments were scheduled. The research target was 90 SMPT IT albina-level students and 7 teachers.

The implementation of the research began with an explanation of the procedures and research information. In the first stage (pre-test), an assessment was conducted regarding disaster preparedness capabilities in the school environment for both teachers and students. Next, treatment is carried out by installing disaster mitigation in the school environment, including disaster preparedness education, including pre-, intra-, and post-disasters in all classrooms and teachers. Installation of evacuation routes, gathering point locations, first aid equipment and materials for accidents, fire extinguishers, and waterless hand washing equipment (Hand Sanitizer). An introduction to mitigation was conveyed to schoolteachers and students, including strengthening the safety brefing activities carried out at the start of every teaching and learning activity. In the lead up to the final assessment of research activities, a simulation was carried out by students regarding the management of earthquake disasters, including how students were able to save themselves when an earthquake occurred by taking shelter under a hard table or chair during strong earthquake shaking, and then leaving the classroom following the evacuation route. which have been installed in every room while still protecting their heads with school bags to the designated gathering point, students are also trained to help friends who are victims of the earthquake to be evacuated to more adequate health facilities. Subsequently, teachers and students were assessed regarding disaster preparedness capabilities in the school environment after being given treatment (post-test).

RESULTS AND DISCUSSIONS

Based on Table 1, the gender characteristics of the teacher respondents are 4 respondents female (57.1%) and three male respondents (42.9%). Meanwhile, there were 71 female respondents (78.9%) and 19 male respondents (21.1%). characteristics of respondents who had attended earthquake disaster management training, 5 respondents (71.4%) had never attended training and 2 respondents (28.6%) had attended training. Meanwhile, 62 respondents (68.9%) had never attended disaster management training and 28 respondents (31.1%) had never attended training.

Table 1. Frequency distribution based on gender of respondents

Respondent	Sex	N	%
Teacher	Male	3	42,9%
	Female	4	57,1%
	Total	7	100
Student	Male	19	21,1%
	Female	71	78,9%
	Total	90	100
Responden	Disaster Management Training	N	%
Teacher	Never	5	71,4%
	Ever	2	28,6%
	Total	7	100
Student	Never	62	68,9%
	Ever	28	31,1%
	Total	90	100

From Table 2, the Wilcoxon signed-rank test results show the pre- and post-test scores for both students and teachers. The data found in the form of student scores whose post-test results were smaller than the pre-test (negative ranks) were from 14 respondents. The post-test results were greater than the pre-test results (positive ranks) for the 71 respondents. The post-test results were the same as the pre-test scores (Ties) for five respondents, so the total number of respondents was 90. Meanwhile, there were 0 respondents whose post-test scores were lower than the pre-test (negative ranks). The post-test results were greater than the pre-test results (positive ranks) for the seven respondents. The post test results were the same as the pre test scores (Ties) for 0 respondents so that the total number of respondents was 7 people.

Table 2. Distribution of respondents based on treatment results

Respondent	Value	Ranks	N	Mean Rank	Sum of Rank
Teacher Student	Post test-Pre test	Negative Ranks	14[a]	24,82	347,50
		Positive Ranks	71[b]	46,58	3307,50
		Ties	5[c]		
		Total	90		
Teacher	Post test-Pre test	Negative Ranks	0[d]	.00	.00
		Positive Ranks	7[e]	4.00	28.00
		Ties	0[f]		
		Total	7		

Based on Table 3, where the results of the Wilcoxon Signed Rank Test calculation, the Z value obtained from the student's post test score minus the pre test score is -6.495 with a p value (asymp. sig 2 tailed) of 0.000 which is less than the critical limit of the research 0.05 so the hypothetical decision is to accept H1. Meanwhile, the Z value obtained from the teacher's post-test score minus the pre-test score was -2.371 with a p-value (asymp. sig 2 tailed) of 0.018, which is less than the critical research limit of 0.05; thus, H1 is accepted. Thus, the results of the statistical tests show a significant difference between the pre-test and post-test scores for students and teachers at Albina IT Middle School, Ternate City. Therefore, it can be concluded that schools play a role in increasing disaster preparedness capabilities in the Albina IT Middle School environment in Ternate City.

Table 3. The role of schools in increasing disaster preparedness capabilities

	Post Test Student Scores – Pre Test Student Scores	Post Test Teacher Scores – Pre Test Teacher Scores
Z Asymp. Sig. (2-tailed)	-6.495[b]	-2.371[b]
	.000	.018

Wilcoxon Signed Rank Test
Based on negative ranks

Natural disasters are events that have detrimental impacts, such as economic losses, building damage, and loss of life, one of which is an earthquake. An earthquake is a shock that occurs on the surface of the earth owing to the sudden release of energy, which causes shifts [19]. Earthquakes in mechanical patterns are one of the natural disasters that will continue to repeat itself in a certain cycle [20]. To reduce losses due to disasters, awareness and holistic action are needed from all parties involved in disaster mitigation efforts [21]. According to [21], as a country that is very vulnerable to natural disasters, Indonesia still has major problems, namely low performance in disaster management, low attention to disaster mitigation, and the weak role of schools in introducing disaster mitigation education.

Based on the data found during the research, 71.4% and 68.9% of the teachers had never attended disaster management training. To provide real experience and hopefully attract training participants because it is something new and designed to resemble real conditions, a simulation of earthquake disaster management was carried out at school. One solution to minimize disaster risk is that schools can play a role in disaster mitigation education to build students' understanding and skills in disaster mitigation in the school and community environments [22]. When facing earthquake disasters that can occur suddenly, preparedness is the key to safety. It is hoped that having a preparedness plan in the face of earthquakes can minimize the losses that will occur [23].

Based on the research results, it was found that the scores of students and teachers after receiving treatment (post-test) were higher than the pre-test scores (positive ranks) for disaster management in the school environment. Earthquake disaster simulation can provide students with an experience that can

be directly felt because it is designed with a situation that is similar to actual disaster conditions and involves active participation by participants. This is in accordance with research conducted by [24] that disaster preparedness simulation activities, which were enthusiastically and actively participated in by the students, provided significant benefits and results. The simulation method is very effective in improving students' preparedness behavior during disasters [25].

In the Wilcoxon Signed Rank Test calculation, the student's post-test Z score minus the pre-test score was -6.495 with a p-value (asymp. sig 2 tailed) of 0.000. The same applies to the teacher's post-test Z score minus the pre-test score, which is -2.371 with a p-value (asymp. sig 2 tailed) of 0.018. From these data, the p-value is <0.05, for both students and teachers, so it can be stated that there is an influence of earthquake disaster management simulations on these two respondents. The results of this research are in line with research conducted by [26] among Soropia 1 Middle School students, Konawe Regency, Southeast Sulawesi Province, where as many as 91.9% of respondents with a p-value of 0.000 < 0.05, disaster simulation was effective for disaster preparedness in schools.

The influence of simulation on the disaster preparedness of teachers and students in this research shows that they have been able to carry out earthquake disaster management at the stages of prevention, mitigation, and preparedness pre-, intra-, and post-disaster. The involvement of teachers and students in disaster management simulations in schools is part of the school's role in efforts to raise awareness and increase the capacity of teachers and students as early as possible to deal with the impacts of disasters [27,28].

Increasing disaster preparedness capabilities in schools through teachers and students cannot be separated from the simulation methods used. Before conducting the simulation, disaster preparedness information boards were provided in each class, disaster mitigation in the form of evacuation routes and gathering points, provision of first aid kits, and fire extinguishers. Simulation activities carried out regularly with complete disaster mitigation provisions will be able to direct and bring participants to real situations, and will provide the ability to think and act effectively when an earthquake occurs. This is in accordance with opinion [29]. The importance of implementing disaster mitigation education in schools needs to be carried out from an early age, in order to provide deeper knowledge and readiness for actions that need to be taken before and during an unexpected natural disaster to minimize all impacts that will occur. This finding is in line with this opinion [28]. Currently, there is a change in the paradigm of disaster management in Indonesia, including the fact that disaster management no longer emphasizes the emergency response aspect, but emphasizes overall risk management, protecting society from the threat of disaster, and is not solely the government's responsibility. The role of schools is very important in disseminating disaster mitigation education as basic knowledge that requires learning as early as possible, so that a culture of disaster mitigation grows both before, during, and after a disaster.

CONCLUSION

There was an increase in the ability of teachers and students at school after a disaster preparedness simulation was conducted at a junior high school in Ternate City. The role of schools is very important to provide dissemination of disaster mitigation education as a basic knowledge that requires learning as early as possible, so that a culture of disaster mitigation grows both before, during a disaster and after a disaster.

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