

Research Article

Education and Singing On Earthquake Disaster Emergency Response Skills

(Pre-Experimental Study on Students in Rejoagung, Jombang)

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Abstract: Indonesia, based on its geographical location, is a country that is difficult to escape from the threat of natural disasters, one of which is earthquakes. The high number of casualties from natural disasters indicates that the community's emergency response abilities are still very poor, especially among children who lack basic knowledge in disaster management. The purpose of this research is to determine the impact of education and singing to earthquake emergency response abilities among students at MI Rejoagung. This study used a pre-experimental research design with a one-group pretest-posttest approach. The sampling technique resulted in 30 respondents. Data collection was done through interviews and observations, and data analysis used the Paired T-Test. The research findings showed that before the intervention, the majority (57%) of respondents had sufficient abilities with a mean of 10.96. After the intervention, almost all (83%) of the respondents had good abilities with a mean of 24.78. The analysis result yielded a p-value of 0.000 ($\leq \alpha 0.05$), indicating that there is an influence of education and singing to disaster earthquake response abilities. The education and singing to makes it easier to understand the material and procedures, makes learning more interesting, and is easy to remember. Respondents are advised to continue improving their knowledge and abilities in disaster preparedness through various sources of information and active participation in disaster training or education.

Keywords: Education; Respond to disaster; Sing

1. Introduction

Indonesia is an archipelagic country with 17,001 islands spread from Sabang to Merauke. Disaster problems seem to be inseparable from a region, as evidenced by Indonesia's geographical location, which is a country that is difficult to escape from the threat of natural disasters. Based on facts according to Labudasari & Rochmah in 2020 regarding Indonesia's geographical position, Indonesia is located in the most active disaster-prone area in the world. Indonesia is an archipelagic country that is geographically located at the meeting point of four tectonic plates, namely the Asian Continent, the Australian Continent, the Indian Ocean and the Pacific Ocean. In the southern and eastern parts of Indonesia there is a volcanic belt (volcanic arc) that extends from the islands of Sumatra, Java, Nusa Tenggara

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to Sulawesi, whose sides are volcanic mountains and lowlands, most of which are dominated by swamps. These conditions have the potential to be prone to earthquakes (Monardo, 2022).

Earthquake disaster is a natural disaster that causes vibrations or shocks on the earth's surface due to movement or friction between the earth's plates, active faults, volcanic activity or rock collapse. Earthquakes caused by tectonic plate movement are called tectonic earthquakes. Meanwhile, earthquakes caused by volcanic activity are called volcanic earthquakes (Raden et al., 2023). Earthquakes not only cause material losses but also have an impact on physical, psychological and social health (Natsir et al., 2021). According to data from the International Monetary Fund (IMF) in 2021, Climate change has resulted in a significant increase in the frequency of natural disasters, with 390 natural disasters hitting the world throughout 2021. This number increased by 5.7% compared to the previous year, which was 369 natural disasters. This figure also increased by 32.7% compared to the period a decade ago (Adi et al., 2023). According to BNPB (National Disaster Management Agency) from (source of Indonesian Disaster Infographic Data dated December 31, 2022), the number of disasters was 3,544 incidents in 2022 consisting of 1,531 floods (43.1%), 634 landslides (17.8%), forest and land fires 252 incidents (7.1%), earthquakes 28 incidents (0.79%), extreme waves and abrasion 26 incidents (0.73%), drought 4 incidents (0.1%) and volcanic eruption 1 incident (0.02%). Indonesia recorded 8,264 tectonic earthquakes in 2020 and there was a significant increase of 10,570 times (22%) in 2021. Over the past two decades, the earthquake that occurred in 2021 was the most destructive earthquake that resulted in loss of life, especially in vulnerable groups, namely children, building damage, environmental damage and property losses. Of the total earthquakes in 2021, the most occurred in December, reaching 1,348 times (12%). Because Indonesia is considered to have a high possibility of geological disasters, especially earthquakes, which resulted in 6,144,324 people suffering and being displaced, 861 people died, 46 people were missing, and 8,727 people were injured due to the impact of natural disasters in 2022. From the disaster victim data, the most vulnerable victims are the elderly and children (Adi et al., 2023).

Daniyal in 2023 reported the community's ability to respond to earthquake disasters before being given socialization, the community was included in the medium category, namely 62.5% of respondents, the high category 27.8% of respondents and the low category 9.7% of respondents with an average value of 72.93 from all respondents. However, the community is reluctant to socialize to children who are vulnerable to disaster situations. According to Syarif & Mastura in 2018, the results of their research on children before being given education about earthquake disaster emergency response showed that 20 students (57.14%) had low self-efficacy for earthquake disaster emergency response and as many as 15 students (42.86%) had high self-efficacy for earthquake disaster emergency response so that education is needed for vulnerable groups, namely children due to lack of preparedness in disaster emergency response.

Based on a preliminary study conducted at MI AL-Ilahiyah Payak Mundil Rejoagung Ngoro Jombang on March 18, 2024, researchers conducted direct interviews and observations on several MI AL-Ilahiyah students regarding their emergency response capabilities for earthquakes. The results of the interviews obtained from 10 students who had been interviewed and observed were that 70% of 100% of students at MI AL-Ilahiyah were less prepared to face an earthquake disaster because students said they did not know

what the emergency response capabilities for an earthquake were, students were unable to mention steps to save themselves when in an earthquake disaster situation, students only knew to take shelter under the table when an earthquake disaster occurred, so that almost 70% of students were less able to carry out an emergency response to an earthquake disaster. One of the factors that influences a disaster situation is a vulnerable condition due to low emergency response capabilities for a disaster. Therefore, the earthquake disaster caused an increase in fatalities that impacted the psychological health of the community, especially in vulnerable groups, namely children who became victims of the disaster by showing trauma and psychological stress attitudes, such as feelings of fear of separation, fear of others, difficulty sleeping, loss of appetite, bedwetting, thumb sucking and frequent crying. In addition, the earthquake also caused physical impacts in the form of infrastructure damage and fatalities. As a result, the community experienced a socio-economic decline which meant they lost their property and paralyzed the community's economic activities.

The community must make efforts to prepare for emergency response to disasters to reduce the impacts caused by a disaster such as loss of life, damage to public facilities and so on. Children are the most vulnerable group in disaster situations because they do not have the skills and resources needed to control or prepare themselves when they feel afraid so they are very dependent on others to recover from disaster situations. According to Law on Child Protection Number 23 of 2002, it explains the importance of education and protection specifically for children which shows that the level of school preparedness is low compared to the community and government. Disaster preparedness is defined as an action aimed at improving life safety when a disaster occurs. Contingency plans, simulations and standby training, preparation of resource support, and preparation of information and communication systems are some of the preparedness actions that can be taken to anticipate or minimize the possibility of the impact of natural disasters so as to ensure the safety and well-being of individuals and communities (Daniyal et al., 2023).

Preventive efforts are needed to reduce the risk of losses during natural disasters, one of which is providing demonstration and singing education to children to improve children's disaster preparedness and emergency response skills when facing earthquake disaster situations because children are the most vulnerable group in disaster situations and there needs to be special education and protection for children comprehensive (Damayanti et al., 2023). So children need to be given education about earthquake disaster emergency response with the hope that children have the ability to respond to disaster emergencies in controlling themselves when in a disaster situation. The delivery of education also needs to be considered by looking at the developmental tasks of elementary school children with information delivery methods that attract children's interest in learning, namely demonstrations and singing which aim to stimulate brain activity in children to learn.

Based on the description above, the researcher is interested in conducting research with the aim of analyzing "Education and Singing on Earthquake Disaster Emergency Response Skills (Pre-Experimental Study of Students at Mi Al-Ilahiyah Payak Mundil Rejoagung Ngoro Jombang)".

2. Proposed Method

This research design uses pre-experimental with one group pretest-posttest design approach. This research was conducted at Mi Al-Ilahiyah Payak Mundil Rejoagung Ngoro Jombang. The sampling technique used total sampling so that 23 respondents were obtained. Data collection used interview and observation sheets, data analysis used the Wilcoxon test with an error rate of $\alpha = 0.05$.

3. Results

General Data

Table 1 Frequency distribution of demographic data of respondents at MI Al-Ilahiyah Payak Mundil, Rejoagung Village, Ngoro District, Jombang Regency

Respondent Characteristics	Frequency	%
Gender		
Male	12	52
Female	11	48
Total	23	100
Age		
7 Years	0	0
8 Years	14	61
9 Years	6	26
10 Years	3	13
Total	23	100
Information		
Ever	1	4
Never	22	96
Total	23	100
Experienced dealing with a disaster situation before		
Ever	22	96
Never	1	4
Total	23	100

Based on the research results, it shows that the majority (52%) of respondents were male, the majority (61%) of respondents were 8 years old, almost all (96%) of respondents had never received information about earthquake disaster emergency response, and almost all (96%) of respondents had experience dealing with disaster situations before.

Special Data

Table 2 Pre-Test Table of earthquake disaster emergency response capability before being given educational and singing intervention at MI Al-Ilahiyah Payak Mundil Rejoagung Ngoro Jombang.

Skor Ability	Pre-Test	
	F	%
Good (22-32)	0	0
Fair (11-21)	13	57
Poor (≤10)	10	43
Total	23	100
Mean: 10,96		

Based on the table above, the respondents' ability in responding to earthquake disasters before being given a education and Singing tp shows that in dealing with earthquake disaster situations, most (57%) respondents have sufficient ability with a score of 11-21, and almost half (43%) of respondents have insufficient ability with a score of ≤10, with an average ability of 10.96 (less).

Table 3 Post-Test Table of earthquake disaster emergency response capability before being given educational and singing intervention at MI Al-Ilahiyah Payak Mundil Rejoagung Ngoro Jombang.

Skor Ability	Pre-Test	
	F	%
Good (22-32)	19	83
Fair (11-21)	4	17
Poor (≤10)	0	0
Total	23	100
Mean: 10,96		

Based on the table above, the respondents' ability in responding to earthquake disasters after being given education and singing shows that in dealing with earthquake disaster situations, almost all (83%) respondents have good abilities with a score of 22-32, and a small portion (17%) of respondents have sufficient abilities with a score of 11-21, with an average ability of 24.78 (good).

Table 4 The Effect of Education and Singing on Earthquake Disaster Emergency Response Skills (Experimental Study on Students at MI Al-Ilahiyah Payak Mundil Rejoagung Ngoro Jombang)

Skor Ability	Pre-Test		Post-Test	
	F	%	F	%
Good (22-32)	0	0	19	83
Fair (11-21)	13	57	4	17
Poor (≤10)	10	43	0	0
Total	23	100	23	100
Mean	10,96		24,78	
<i>Wilcoxon Test = P values 0,000 < 0,05</i>				

Based on the table above, it shows that before the intervention was given, most (57%) respondents had sufficient ability with a score of 11-21, and almost half (43%) of respondents had insufficient ability with a score of ≤ 10 . While after the intervention was given, almost all (83%) respondents had good ability with a score of 22-32, and a small portion (17%) of respondents had sufficient ability with a score of 11-21. So it can be concluded that after the provision of educational and singing interventions, respondents experienced an increase in their abilities as evidenced by the results of the mean data on the Pre-Test, which was 10.96 (less) and on the Post-Test, which was 24.78 (good) so that there was an increase of 13.82. Based on the calculation of the Wilcoxon Test data, the data obtained was sig q value = 0.000 with sig α = 0.05 so that q value $\leq \alpha$ indicating that H1 is accepted, meaning that there is an influence of education and singing on the ability to respond to earthquake disasters (experimental study on students at MI Al-Ilahiyah Payak Mundil Rejoagung Ngoro Jombang).

4. Discussion

Identifying the Emergency Response Ability of MI Students in Facing Earthquake Disasters Before Educational and Singing Interventions at MI Al-Ilahiyah Payak Mundil Rejoagung Ngoro Jombang.

Based on the results of the study obtained before being given educational and singing interventions to students, it showed that 1 respondent had a minimum ability score, namely getting a score of 5 (less), and 1 respondent had a maximum score, namely getting a score of 16 (enough), with an average value of 10.96 (less). Ability basically consists of two factors, namely intellectual ability and physical ability (Megawaty, 2019) so that each individual must have the ability and skills to be able to face a problem. This shows that an action requires stimulus so that a person has the effectiveness in carrying out the skills that the individual has to carry out his duties. Ability is a person's ability to master a skill to complete something that can be obtained from experience or brought from birth on the basic principles of heredity (parents) (Rohim, 2021). Often, the ability that is seen in a person is in psychomotor ability because the psychomotor ability element in the taxonomy according to Bloom in 2018 focuses more on the process of behavior or skills that reflect the values obtained by his cognition and internalized through his feelings, so that the psychomotor domain can regulate and apply these values in real terms. Based on the experts above, it can be concluded that ability can increase to be better if the individual has the desire and motivation to hone the skills they have and obtain information from various trusted sources. The results of this study showed that the ability to respond to earthquake disaster emergencies before being given educational and singing interventions in the cognitive aspect regarding the concept of responding to earthquake disaster emergencies was still in the poor category with an average value of 2.13, this happened because the respondents had not exposed to information or receive any training on earthquake disaster emergency response procedures, so that any information in any form can be a very useful source of insight. In this study, the affective aspect possessed by respondents was sufficient with an average value of 2.87, this happened because respondents when a disaster situation occurred only showed a sense of panic in themselves and were confused about what to do. In the psychomotor aspect, it was sufficient

with an average value of 5.96, this was because the cognitive aspect had not been fulfilled because they had not been exposed to information, where the intelligence possessed by respondents also affected psychomotor abilities and respondents had never received training specifically on earthquake disaster emergency response.

Explanation of the 3 aspects above, the psychomotor aspect has the highest average value, this is because respondents when an earthquake occurs only know to take cover under the table and run to a safe place without paying attention to the surrounding environment that might endanger them because they do not know what to pay attention to when an earthquake disaster situation occurs. The cognitive aspect is the aspect with the lowest average because they do not have basic knowledge about earthquake disaster emergency response so that it affects their psychomotor aspect.

The factors that influence the ability in the results of this study include gender, age, sources of information about earthquake disaster emergency response, and experience in dealing with earthquake disaster situations.

In terms of gender characteristics, this study found that most (52%) were male. Gender affects a person's ability, knowledge, and intelligence, because physiologically there are differences between the brains of men and women. This is in line with the theory according to Fatimah's 2017 research that men have abilities that exceed those of women, because in this case women are more dominant in their affective aspects so they are good at memorizing to achieve their goals, while men are more dominant in the psychomotor aspect so they are more applicable which is good in terms of acting directly. Based on the explanation above, it can be concluded that the results of the study almost all female respondents had a low level of psychomotor ability before being given intervention on earthquake disaster emergency response, this happened because women were lacking in the psychomotor aspect so they tended to be confused and did not know what to do when an earthquake disaster occurred. In this study, the age distribution of most (61%) respondents was 8 years old. According to Mertha's research, (2022) said that age can affect a person's ability to grasp and think in receiving information, where the older they are, the more developed their mindset is in capturing information so that they become more mature in thinking and there is an increase in the knowledge and abilities they have. According to the researcher's opinion, the older a person is, the more they can affect the ability due to the stimulus obtained in cognitive thinking in receiving new information and experiences to increase and improve. Based on the explanation above, the information factor influences the respondent's ability in responding to earthquake disasters. In this study, almost all (96%) of respondents had never received information related to education about earthquake disaster emergency response. In line with Beze's 2020 research, it was stated that information sources are media that play an important role in someone determining the decision to act, because from a lack of exposure to information, someone does not know and understand the earthquake disaster emergency response procedures, both from print media, social media, and direct health education. Thus, according to the researcher's opinion, information sources are important things that become all intermediaries in conveying information so that they affect a person's abilities, skills and knowledge, because this is related to the theory that at the age of 8 children have begun to be able to think logically so that if they have never received information, the level of ability they have will not increase.

Experience factors in disaster situations can also affect the ability to respond to earthquake disasters. In this study, almost all (96%) of respondents had experience in dealing with disaster situations, one of which was an earthquake. In line with Addiarto's 2019 research, experience can be a foundation for becoming better than before, thus influencing the maturity of thinking in doing something. Based on the explanation above, the longer someone has experience in dealing with disaster situations, the more they can increase their abilities and knowledge. However, if the experience is not based on knowledge and information related to earthquake disaster emergency response, the ability will still not increase.

Identifying the Emergency Response Ability of MI Students in Dealing with Earthquake Disasters After Educational and Singing Interventions at MI Al-Ilahiyah Payak Mundil Rejoagung Ngoro Jombang.

Based on the research results, an increase in the ability to respond to earthquake disasters after intervention was given to students was obtained, showing that 1 respondent had a minimum ability score, namely a score of 18 (sufficient), and 1 respondent had a maximum score, namely a score of 32 (good), with an average value obtained of 24.78 (good).

Based on the results of the study through interview and observation sheets, it was found that in the cognitive aspect there was an increase in the average value of 4.30, this happened because respondents had received information and knowledge about the concept of earthquake disaster emergency response. In the affective aspect, after being given intervention, there was an increase with an average value of 4.65, this happened to respondents because after being given education, they were able to behave correctly when they knew about the earthquake disaster situation and understood what to do. While in the psychomotor aspect, there was also a significant increase with an average value of 15.83 because respondents gained knowledge and skills by being given demonstration education and singing about earthquake disaster emergency response so that respondents could do it directly so that it could provide a strong stimulus to improve their abilities. Ability will increase if it continues to be honed so that they are able to master the skills they are interested in. Changes in respondents' abilities after being given intervention or health education are one of the efforts to motivate targets to be able to improve the right way of behaving in a better direction than before. Increased ability can occur because it is influenced by several factors including: respondent enthusiasm, concentration, motivation and environmental conditions.

According to Astuti in 2018, high enthusiasm from respondents will tend to increase concentration. So that respondents are able to be motivated to do and complete tasks well where concentration has a significant influence in increasing understanding in receiving material. Someone who is highly motivated will make more effort to achieve their desires without any coercion. In addition, calm and comfortable environmental conditions can increase concentration. This is proven by respondents who are able to understand and are able to follow activities from start to finish well. The efforts of educators can also influence the success of the target in receiving the information provided. The abilities, behavior, and interesting materials of an educator can provide stimulus to the target, so that the target is interested and able to pay attention in remembering the material (Wahyu et al., 2024). Based

on the explanation above, the researcher's opinion can be concluded that education and singing are one of the intervention methods that can be used to improve a person's abilities and knowledge because education can increase knowledge and understand how to demonstrate emergency response steps in dealing with disaster situations, one of which is an earthquake. In addition, the singing method can also improve the psychomotor abilities of respondents because it can provide stimulus so as to increase the attraction and beautify the atmosphere in the education or health education process. Because this is also influenced by several factors including the characteristics of the gender and age of the respondents, although the results obtained vary because there are differences in the growth process in the process, namely the speed and responsiveness in receiving information and the motivation of each individual is different.

Proven by special data analysis after being given intervention in this study, the highest increase of 100% was in respondent number 2, who was male, aged 8 years. This is because the respondents have high motivation to participate in this activity. In addition, respondents also showed their enthusiasm by offering to try first before being appointed.

The results of the least increase in ability were in respondent number 18, female, aged 8 years. The increase in ability in these respondents only reached the sufficient criteria which was caused by respondents tending to be passive and not focused when delivering the material when the research was taking place, so that the material delivered could not be received optimally. When the demonstration and singing were carried out, respondents could not follow the directions correctly because they did not pay attention, so that respondents were a little confused during the post-test.

Information factors and sources of information can also affect ability. The many sources of information that can be accessed make it easy for someone to get information so that they can add new knowledge and insights. Education and singing also have an influence in increasing information, so by providing these interventions about earthquake disaster emergency response, it has an effect on increasing information for respondents which can improve their understanding and abilities. In addition, experience when facing disaster situations is also a factor that can affect the ability to respond to earthquake disasters. Where according to Sujanto's research in 2017, someone who has experience will be more motivated and able to understand the situation that occurs so that they can hone the abilities and knowledge and skills of someone who is alert, fast, and precise in dealing with disaster situations.

Analyzing the effect of Education and Singing on the ability to respond to earthquake disasters in MI students at MI Al-Ilahiyah Payak Mundil Rejoagung Ngoro Jombang.

Based on the results of the Wilcoxon statistical test analysis, the sig- (2-tailed) p-value = $0.000 \leq \alpha 0.05$ was obtained, this indicates that H1 is accepted, which means that there is an effect of education and singing on the ability to respond to earthquake disasters (experimental study on students at MI Al-Ilahiyah Payak Mundil Rejoagung Ngoro Jombang). In this study, the intervention used was education and singing. This intervention is a method of activity used in health education or health education by explaining the material in general to the procedures for action related to earthquake disaster emergency response which are then sung. In this case, respondents easily understand the material and procedures and are more interesting, beautify the learning atmosphere and are easy for respondents to remember.

In Suhartiningsih's 2023 study, it was stated that the singing method can also improve abilities. This happens because when students are given a singing intervention, they become more enthusiastic and happy so that students' enthusiasm for learning increases because it is in accordance with the theory that the method that emphasizes the words that are sung creates a pleasant atmosphere so that children do not feel bored.

According to Damayanti's 2024 research entitled "The Effect of Combination of Edugames and Demonstration of Splint Wrapping on First Aid Skills for Traffic Accident Victims" states that there is an effect of the demonstration education method on skills. Providing a demonstration method can train skills in solving problems so that it can provide a stimulus for students to be creative. Thus proving that the demonstration method can increase knowledge and skills because this method involves the role of students to practice directly and provide a clear to detailed picture of what is given by the researcher so that respondents can see directly how when an earthquake disaster occurs by carrying out an emergency response to an earthquake disaster to reduce mortality and morbidity.

Research conducted by Wicaksono in 2022 entitled "Improving Cognitive Abilities through Singing Methods in Early Childhood" states that there is an influence of the singing method on abilities. Because this singing method is a teaching method that uses singing as a means of learning for children, because by singing children will learn to grasp the material presented faster and the system is also more effective and enjoyable, so that the material captured will be stronger in long-term memory. Singing has certain techniques in expressing thoughts and feelings, because the right brain will be more optimal in conveying messages that given and will be longer in long-term memory because it is closely related to pronouncing words with tempo and rhythm that can help children remember what they sing. The implementation of educational interventions and singing about earthquake disaster emergency response in this study was given 2 times in 1 week. To measure the respondents' assessment, a pre-test was carried out first at the first meeting using interview and observation sheets that had been prepared about the concept of earthquake knowledge and earthquake disaster emergency response procedures. Furthermore, educational interventions and singing about earthquake disaster emergency response were given which were explained and given examples by the researcher first and then followed by all respondents. At the second meeting, respondents were given a post-test to assess their abilities after being given the intervention, the results of the assessment showed a significant increase in the cognitive, affective, and psychomotor aspects of the respondents.

The stages of implementing the intervention began with an explanation of two material concepts, namely a review of the concept of earthquakes which includes the definition, causes, and impacts of earthquake disasters. The concept of emergency response to earthquake disasters which includes the definition, objectives, and steps for emergency response to earthquake disasters in accordance with SOP (Standard Operating Procedures) and then conducting a demonstration of emergency response to earthquake disasters combined with singing.

Thus, this is in line with the theory that health education using educational and singing methods that are carried out repeatedly can affect the ability of both cognitive, affective and psychomotor abilities in respondents in responding to earthquake disasters. The increase in ability occurs because interventions are given that can be understood and comprehended

and have an appeal to respondents related to earthquake disaster emergency response so that with this health education method respondents can learn and demonstrate how to respond to earthquake disasters independently with alertness, quickly and precisely which can improve the ability, knowledge, and experience of respondents in disaster situations and train critical thinking so that it can reduce mortality and morbidity rates. This is supported by the results of the study that the average ability to respond to earthquake disasters during the pre-test was 10.96, there was an increase after being given educational and singing interventions which were proven in the post-test of 24.78 so that it can be concluded that educational and singing interventions have a significant influence in improving the cognitive, affective, and psychomotor aspects of respondents.

Conclusions

Providing education and singing can improve the emergency response skills for earthquake disasters in MI students at MI Al-Ilahiyah Payak Mundil Rejoagung Ngoro Jombang.

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