JPPIPA 8(5) (2022)

Jurnal Penelitian Pendidikan IPA

Journal of Research in Science Education

http://jppipa.unram.ac.id/index.php/jppipa/index

Revitalization of Disaster Mitigation Management and Community Empowerment Through Community-Based Disaster Risk Reduction (CBDRR)

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Received: October 15, 2022
Revised: November 10, 2022
Accepted: November 29, 2022
Published: November 30, 2022

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DOI: 10.29303/jppipa.v8i5.2368

Abstract: Currently, there are still many people who are not aware of their disaster-prone areas. This is exacerbated by the lack of maximum community empowerment in disaster prevention and management. This study aims to determine the effect of the implementation of community-based disaster risk reduction (CB DRR) on the knowledge and skills of the community in disaster mitigation. This research is a quasi-experimental study, with a non-randomized control group pre-test - post-test design. The population and sample in this study were all community administrators who were aware of the disaster. The instrument used is a questionnaire that has been tested for validity and reliability. Research procedures include administrative procedures and technical procedures. Data processing is done through the process of editing, coding, scoring, processing, and cleaning. Data analysis techniques include univariate analysis, bivariate analysis (paired t-test), and multivariate analysis (General Linear Model Repeated Measure or GLM-RM). The p-value on the knowledge and skills variables were both 0.000 (<0.05). The value of the Greenhouse-Geisser sig analysis on the knowledge and skills variables has the same p-value of 0.000 (<0.05) or there is a difference in the average knowledge and skills of respondents after being given CB DRR training. Conclusion: The CB DRR program training influences the knowledge and skills of the community in carrying out disaster mitigation with a changing trend seen from the first measurement to the last measurement.

Keywords: CBDRR; Knowledge; Skills; Mitigation; Disasters

Introduction

Indonesian territory has a very high risk of various forms of natural disasters that threaten and disrupt people's lives and livelihoods. Natural disasters are events or series of events caused by nature such as earthquakes, tsunamis, volcanic eruptions, floods, droughts, hurricanes, and landslides (Saparwati et al., 2020). The high risk of disaster in Indonesia is a consequence of the country's geographical and geological location. Report of The United Nations Economic and Social Commission for Asia and the Pacific - The United Nations International Strategy for Disaster Reduction (ESCAP-UNISDR) revealed that the disasters in Indonesia over the last 20 years have caused economic losses of at least US$ 22.5 billion with the loss of 191,164 lives (BNPB, 2020; Saparwati et al., 2020).

In 2020, there were 2.939 disasters (1.070 floods), (879 tornadoes) and (575 landslides) and 6.4 million people were displaced and 370 people died, 42 thousand houses and two thousand facilities (education, health, offices, roads, and bridges) were damaged and the COVID-19 disaster which resulted in 200 thousand deaths 4. 237 urban districts are in t237 urban districts are in the medium risk index class (BNPB, 2020).

Flores Island in East Nusa Tenggara (NTT) is one of the areas with a fairly high level of disaster risk. According to a report by the National Disaster Management Agency (BNPB), the number of victims

How to Cite:
Paschalia, Y.P.M., Doondori, A.K., Sekunda, M.S., & Budiana, I. (2022). Revitalization of Disaster Mitigation Management and Community Empowerment Through Community-Based Disaster Risk Reduction (CBDRR). *Jurnal Penelitian Pendidikan IPA*, *8*(5), 2563–2574. https://doi.org/10.29303/jppipa.v8i5.2368

who died due to the flash flood disaster on the island of Flores in early 2021 reached 138 people. Meanwhile, the victims of the flash flood who have not been found or are missing reached 61 people (Suryani, 2021)

Seeing the series of events, it is necessary to undertake mitigation and disaster risk management efforts to reduce losses due to disasters. One of them is through the revitalization of disaster mitigation management and community empowerment through the Community Base Disaster Risk Reduction (CB DRR) disaster mitigation is a series of efforts to reduce disaster risk, through physical development as well as awareness and capacity building to deal with disaster threats.

The purpose of disaster mitigation is to reduce the impact, especially for the population, as a basis or guideline for development planning and to increase public knowledge in dealing with and reducing the impact or risk of disaster so that people can live and work safely (Ibrahim et al., 2020). The purpose of the study was to determine the effect of the implementation of Community Base Disaster Risk Reduction (CB DRR) on the community's capacity in community development based on participatory disaster risk reduction, then to analyze the differences in the impact of the implementation of the CB DRR program.

Method

This research is a quasi-experimental study (quasi-experimental), with a non-randomized control group (pre-test - post-test design) where pre-test and (post-test) were carried out in the intervention and control groups). The intervention group was given treatment in the form of implementing the CB DRR program, while in the control group the researchers did not provide intervention. The population in this study were all members of the caring community in Ende Regency, East Nusa Tenggara Province. While the samples in this study were members of the disaster-aware community in Ende Regency who met the inclusion criteria. The inclusion criteria in this study were being registered as an administrator or member of a disaster-aware community, being willing to be involved, and supporting research activities. Sample calculation was used using the Federerformula based on the total group (t) used in the study (Notoatmodjo, 2012).

According to the formula, the sample size in this study reached 60 respondents with details of 30 respondents in the intervention group and 30 respondents in the control group. The sampling technique used is probability sampling with a simple random sampling approach, that is, the sampling is done randomly(Notoatmodjo, 2012). The instrument used in this study was a questionnaire containing input, process, output, and outcome indicators. Before being used, the instrument went through a validity and reliability test on a sample and a population of 30 people (Notoatmodjo, 2012).

Data collection and processing procedures consist of administrative procedures and technical procedures. Pre-test in both groups, then intervention in the intervention group in the form of implementing the CBDRR program, and post-test in both groups. The measurement of the intervention results was repeated 8 times. Measurements 1 and 2 are carried out in the 1st year of the 1st semester, measurements 3 and 4 are carried out in the 1st year of the 2nd semester, measurements 5 and 6 are carried out in the 2nd year of the 1st semester, and measurements 7 and 8 are carried out in the 2nd year of the 2nd semester.

Data processing through the process of editing, coding, scoring, processing, and cleaning. Data analysis techniques include univariate analysis, bivariate analysis (test dependent t-test or paired t-test), and multivariate analysis (General Linear, Model Repeated Measure (GLM-RM). While research ethics include the Right to self-determination, the Right to privacy and dignity, Right to the anonymity and confidence in all, the Right to fair treatment, Right to protection from discomfort and pain.

Result and Discussion

Univariate analysis: Characteristics of Respondents

Based on Table 1, shows the distribution in the three group aged 20 to 25 years, namely 11 respondents (47.80%), and in the control group, the majority aged 15 to 20 years as many as 10 respondents (43.50%). As for gender, the majority of respondents in the intervention group were male as many as 19 respondents (82.60%), and in the control group, the majority were male as many as 1.90 respondents (82.60%). Based on the level of education, the distribution of respondents in the intervention group showed that most of the respondents had a high school education, namely 19 respondents (82.60%) and in the control group, the majority of respondents had a high school education, namely 15 respondents (65.20%) and the distribution of respondents based on the occupation of the majority of respondents in the group. The intervention has a job as a student or college student, which is 9 respondents (39.10%) and the majority of respondents in the control group have a job as a student or college student, which is 10 respondents (43.50%).

Table 1. Distribution of respondents by age, gender, education, and occupation

Variable	Group			
	Intervention		Control	
	F	%	F	%
Age (Year)				
10-15	0	0	1	4.30
15-20	3	13.00	10	43.50
20-25	11	47.80	4	17.40
25-30	6	26.10	5	21.70
>30	3	13.00	3	13.00
Total	23	100.0	23	100.00
Sex				
Male	19	82.60	19	82.06
Female	4	17.40	4	17.40
Total	23	100.00	23	100.0
Education				
Not completed in primary school	0	0	0	0
Primary school	0	0	0	0
Junior high school	0	0	1	4.30
Senior high school	19	82.06	15	65.20
High Education	4	17.40	7	30.40
Total	23	100.0	23	100.0
Work				
Student	9	39.1	10	43.50
Self-employed	6	26.10	5	21,7
Farmer	3	13.00	1	4.30
Other	5	21.70	7	30.40
Total	23	100.0	23	100.0

Table 2. Distribution of respondents based on knowledge and skills before intervention

Variable	Group			
	Intervention		Intervention	
	F	%	F	%
Knowledge				
Not enough	16	69.60	2	8.70
Enough	7	30.40	15	65.20
Well	0	0	6	26.10
Total	23	100.0	23	100.0
Skills				
Not enough	23	100.0	9	39.10
Enough	0	0	13	56.50
Well	0	0	1	4.30
Total	23	100.0	23	100.0

Research Core Data

The core data of the study include data on the frequency distribution of respondents' knowledge and skill variables before being given treatment in Nangapanda District, Ende Regency, East Nusa Tenggara Province, which can be seen in Table 2.

Based on Table 2, shows that the frequency distribution of the respondent's knowledge variable before being given an intervention in the form of Community-Based Disaster Risk Reduction (CB DRR) training in the intervention group shows that the majority of respondents have less knowledge, namely 16 respondents (69.60%) and in the control group as many as 15. respondents (65.20%) have sufficient category knowledge. Meanwhile, the variable skill of respondents in the intervention group was the majority of respondents in the poor category as many as 23 respondents (100.0%) and the majority were in the sufficient category in the control group, namely 13 respondents (56.50%).

Table 3. Distribution of respondents based on knowledge and skills after being given treatment

Variable	Group			
	Intervention		Intervention	
	F	%	F	%
Knowledge				
Not enough	4	17.40	1	4.30
Enough	2	8.70	17	73.90
Well	17	73.90	5	21.70
Total	23	100.00	23	100.0
Skills				
Not enough	10	43.50	16	69.60
Enough	2	8.70	6	26.10
Well	11	47.80	1	4.30
Total	23	100.0	23	100.0

Based on Table 3, show that the frequency distribution of the respondent's knowledge variable after being given an intervention in the form of Community-Based Disaster Risk Reduction (CB DRR) training in the intervention group shows that the majority of respondents have good knowledge, namely 17 respondents (73.90%) and respondents in the control group. have sufficient knowledge category that is 17 respondents (73.90%). Meanwhile, the variable skill of the respondents in the intervention group was in the good category with 11 respondents (47.80%) and the majority in the poor category in the control group as many as 16 respondents (69.60%).

Table 4. Distribution of Disaster Management Knowledge in the Intervention and Control Group by Measurement (Measurement 1 to Measurement 4)

Variable	Mean	N	SD	SE	Min-Max	95% CI
Intervention						
Measurement 1	83.04	23	20.130	4.197	20-125	74.34 - 91.75
Measurement 2	90.13	23	34.456	7.185	21-125	75.23 - 105.03
Measurement 3	109.96	23	38.493	8.026	14-163	93.31 - 126.60
Measurement 4	206.74	23	120.065	2.035	0-374	154.82 - 258.66
Control						
Measurement 1	123.30	23	27.018	5.634	80-184	111.62134.99
Measurement 2	126.70	23	26.491	5.524	80-191	115.24-138.15

Based on Table 4, it was found that the knowledge of respondents in the intervention group and the control experienced a positive increase, meaning that the intervention provided consistently and continuously went hand in hand with the knowledge of the respondents both in the intervention group and in the control group. This can be seen in the mean value for each measurement starting from the first measurement to the last measurement in each group.

Based on Table 5, it is found that the skills of respondents in the intervention group have increased with a positive trend, meaning that the interventions provided are consistently and continuously running in line with the average value of the disaster management skills of the respondent group in the intervention group. Meanwhile, in the control group, on the contrary, there was a decrease in the average value of disaster management skills. This can be seen in the mean value for each measurement starting from the first measurement to the last measurement.

Table 5. Distribution of Disaster Management Skills in Control Groups Based on Measurement (Measurement 1 to Measurement 2)

Variable	Mean	N	SD	SE	Min-Max	95% CI
Intervention						
Measurement 1	6.96	23	8.720	4.197	0-29	3.19-10.73
Measurement 2	14.43	23	15.305	7.185	045	11.35-2639
Measurement 3	18.87	23	17.382	8.026	1-57	11.35-26.39
Measurement 4	81.70	23	74.184	25.035	0-191	49.62-113.78
Control						
Measurement 1	123.30	23	23.775	23.775	0-84	21.55-42.11
Measurement 2	20.654	23	23.775	24.7	0-92	15.76-33.63

Table 6. Average Distribution of Disaster Management Knowledge and Skills in the Intervention and Control Group

Variable	Mean	N	Sd	Se	Min-max	95% ci
Knowledge						
Intervention						
Pre-test	83.04	23	20.130	4.197	20-125	74.34 - 91.75
Post-test	206.74	23	120.065	25.035	0-374	154.82 - 258.66
Control						
Pre-test	123.30	23	27.018	5.634	80-184	111.62 - 134.99
Post-test	126.70	23	26.491	5.524	80-191	115.24 - 138.15
Skills						
Intervention						
Pre-test	6,96	23	8.720	4.197	0-29	3.19 - 10.73
Post-test	81.70	23	74.184	25.035	0-191	49.62 - 113.78
Control						
Pre-test	123.30	23	23.775	23.775	0-84	21,55 - 42,11
Post-test	20.654	23	23.775	24.7	0-92	15.76 - 33.63

Based on Table 6 above, shows that the average value of the knowledge variable in the intervention group before being given the intervention (pre-test) was 83.04 with a standard deviation of 20.130 with an estimated interval of 74.34 to 91.75 and the average value of knowledge after intervention (post-test) was 206.74 with a standard deviation of 120.065 with an estimated result of 154.82 to 258.66. The results of the analysis showed that the distribution of knowledge in the intervention group had different proportions before (pre-test) and after (post-test) the provision of interventions in the form of CB DRR training. While the average value of the knowledge variable in the control group before the intervention was given was 123.30 with a standard deviation of 27.018 with an estimated interval of 111.62 to 134.99 and the average value of knowledge after the intervention was 126.70 with a standard deviation of 26.491 with the estimation results are 115.24 to 138.15. The results of the analysis showed that the distribution of knowledge in the intervention group increased before (pre-test) and after (post-test) giving the intervention.

In addition, the average value of the skill variable in the intervention group before being given the intervention (pre-test) was 6.96 with a standard deviation of 8.720 with an estimated interval of 3.19 to 10.73 and the average skill score after the intervention (post-test) is 81.70 with a standard deviation of 74.184 with an estimated result of 49.62 to 113.78. The results of the analysis show that the distribution of skills in the intervention group has different proportions before (pre-test) and after (post-test) the provision of interventions in the form of CB DRR training. While the average value of the knowledge variable in the control group before the intervention was given was 123.30 with a standard deviation of 27.018 with an estimated interval of 111.62 to 134.99 and the average value of knowledge after the intervention was 126.70 with a standard deviation of 26.491 with the estimation results are 115.24 to 138.15. The results of the analysis showed that the distribution of knowledge in the intervention group increased before and after the intervention. Meanwhile, the coup multiplied the decrease without the same intervention. In addition, the average skill score of the control group before the intervention was 123.30 with a standard deviation of 23.775 with an estimated interval of 21.55 to 42.11, and the average skill score of the control group after the intervention was 20.654 with a standard deviation of 23.775 with an estimate of intervals from 15.76 to 33.63. The results of the analysis show that the average skill distribution of respondents in the control group has different proportions before (pre-test) and after (post-test).

Normality and Homogeneity Test: Normality test

The results of the normality test showed that the Shapiro-Wilk score in the pre-test measurement in the intervention group was 0.782 and the post-test measurement score in the intervention group was 0.127. While the pre-test measurement score in the control group was 0.058 and the post-test measurement score in the control group was 0.306. The results of the normality test showed that pre-test and post-test data in the intervention grand up, pre-test and post-test data in the control group had data that were normally distributed ($p>0.05$). The data were normally distributed in the pre-test and post-test measurements in the intervention group and the pre-test in the group was the result of eliminating data outliers or data that had extremely high or low extreme values.

Table 7. Normality Test Results of Shapiro-Wilk

	Group	Shapiro-Wilk		
		Statistic	df	Sig.
Community Capacity: (Knowledge and skill)	Pre Test Intervention	.827	23	.782
	Post Test Intervention	.903	23	.127
	Pre Test Control	.897	23	.058
	Post Test Control	.951	23	.306

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Table 8. Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Community Capacity: (Knowledge and skill)	Based on Mean	2.360	3	84	.077
	Based on Median	1.691	3	84	.175
	Based on the Median and with adjusted df	1.691	3	82.179	.175
	Based on trimmed mean	2.348	3	84	.078

The test results above indicate that the test has a significance (p>0.05), it can be said that the variance of two or more groups of population data in this study is the same (homogeneous).

Bivariate Analysis: Knowledge and Skills of Respondents Before and After CB DRR Training

The training was tested using the Dependent Sample t- Test (Paired t-test) with the results as illustrated in the Table 9.

The results of the analysis above show that the p-value of the knowledge variable in the intervention group is 0.041 so it can be concluded that there is a significant difference between the knowledge of the respondents in the intervention group before and after being given the intervention (<0.05). This shows that there is a significant effect on the treatment given in the form of CB DRR training. While the knowledge variable in the control group showed a p-value of 0.862 so it was concluded that there was no significant difference between the knowledge of the respondents in the control group before and after the intervention was given or there was no significant effect on the treatment given in the form of CB DRR training (>0, 05). In addition, the pre-and post-test p-values on the skill variable both in the control group and in the intervention group showed p-value >0.05, namely 0.999 in the intervention group and 0.514 in the control group. So it was concluded that there was no significant difference between the skills of the respondents in the control group or that there was no significant effect on the treatment given in the form of CB DRR training (> 0.05) on the disaster management skills of the respondents.

Differences in Knowledge and Skills of Respondents in the Intervention Group and Control Group

Knowledge and skills in the intervention group and the control group after being given intervention in the form of CB DRR training have been tested using the Independent T-test and got the results as illustrated in Table 10.

Table 9. Knowledge of Respondents Before and After CBDRR Training

Variable	Mean	N	SD	SE	P Value
Knowledge					
Intervention					
Pre-test	83.04	23	20.130	4.197	0.041
Post-test	206.74	23	120.065	25.035	
Control					
Pre-test	83.04	23	20.130	4.197	0.862
Post-test	206.74	23	120.065	25.035	
Skills					
Intervention					
Pre-test	83.04	23	20.130	4.197	0.999
Post-test	206.74	23	120.065	25.035	
Control					
Pre-test	83.04	23	20.130	4.197	0.514
Post-test	206.74	23	120.065	25.035	

* Meaning to α = 0,05

Table 10. Differences in Knowledge and Skills of Respondents in the Intervention Group and Control Group

Variabel	Mean	N	SD	SE	P Value
Knowledge					
Intervention	206.74	23	120.065	25.035	0.000
Control	126.70	23	26.491	5.524	
Skills					
Intervention	81.70	23	74.184	15.468	0.000
Control	24.70	23	20.654	4.307	

* Meaning to α = 0.05

The results of the independent t-test statistic (independent t-test) obtained a p-value of 0.000 on the knowledge variable and a p-value on the skill variable 0.000 (<0.05). So it can be concluded that there is a significant difference between the knowledge and skills of respondents in the intervention group and respondents in the control group. So it can be concluded that Ha failed to be rejected.

Multivariate Analysis

In efforts to get a picture of the difference in values in the respondent's knowledge and skills variables that were measured repeatedly after being given intervention in the form of Community-Based Disaster Risk Reduction (CBDRR) training, the researchers used the General Linear Model Repeated Measure analysis method or commonly abbreviated as GLM- RM by going through the following conditions test.

Normality Test

The normality test conducted by the researcher was using the Shapiro-Wilk test. The results of the normality test can be seen in the Table 11. It shows the results of the normality test for group and control data that are normally distributed because the p-value is > 0.05. So it can be concluded that the six measurements of respondents' knowledge and skills are normally distributed.

Table 11. Normality Test of Respondents' Performance Data in the Intervention Group and Respondents' Performance in the Control Group

Group	Variable	df	P -Value	Conclusion
Intervention	Measurement 1	23	0.189	Normal
	Measurement 2	23	0.405	Normal
	Measurement 3	23	0.127	Normal
	Measurement 4	23	0.070	Normal
Control	Measurement 1	23	0.218	Normal
	Measurement 2	23	0.098	Normal

Covariant Homogeneity Test

From the value of the Box's M test, a significance of 0.056 > 0.050 was obtained, which means Ho is accepted. So, it can be concluded that the assumptions between groups are equal (equal).

Variant Homogeneity Test

The results of the homogeneity test of the respondent's performance variance in the intervention group and control group can be seen in the Table 12.

Table 12. Results of Homogeneity Test of Knowledge and Skills Variants in the Intervention and Control Group

Variable	F-Value	P –Value	Conclusion
Knowledge			
Measurement 1	0.112	0.742	Normal
Measurement 2	0.063	0.804	Normal
Measurement 3	2.351	0.143	Normal
Measurement 4	0.132	0.721	Normal
Skills			
Measurement 1	0.112	0.442	Normal
Measurement 2	0.063	0.304	Normal
Measurement 3	2.351	0.243	Normal
Measurement 4	0.132	0.421	Normal

Based on Table 12, it is obtained that the significant number of Levene's test for 2 variables with each of the 4 levels of measurement is well above 0.05, which means that the measurement of 1 to the measurement of 4 levels of measurement of each variable is homogeneous.

General Linear Model-Repeated Measure Uji Test Results

a. Mauchly's Test of Sphericity

The sphericity test showed the P value in the knowledge variable was 0.00 (<0.05). While the results of the sphericity test on the skill variable show a P value of 0.00 (<0.05), it can be concluded that the sphericity test of the knowledge and skills variable is not met or the data is not proportional.

b. Tests of Within –Subjects Effects

Greenhouse-Geisser sig analysis shows that the knowledge and skills variable has a P value of 0.000 (<0.05), so it can be concluded that there is a difference in the average knowledge and skills of respondents after being given CB DRR training.

c. Profile Plots

Efforts to determine changes in knowledge and skills of research respondents using the profile plots analysis method on the General Linear Model Repeated Measure (GLM-RM) test. The results of the analysis are illustrated in Figure 1.

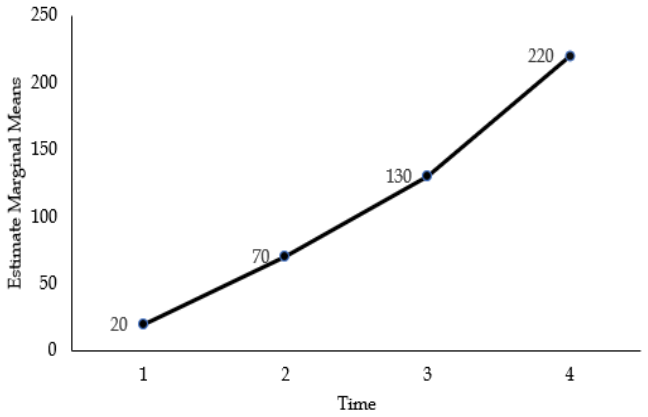

Figure 1. Graph of Trends in Changes in knowledge and skills of respondents in the intervention group and the control group after treatment

Based on figure 1, it can be seen the trend of changes in the knowledge and skills of respondents between the intervention group and the control group starting from measurement 1 to measurement 4.

Discussion

Univariate Analysis: Characteristics of Respondents

Distribution of respondents in the intervention group aged 20 to 25 years, namely 11 respondents (47.8%), and in the control group the majority aged 15 to 20 years, namely 10 respondents (43.5%). As for gender, the majority of respondents in the intervention group were male as many as 19 respondents (82.6%), and in the control group, the majority were male as many as 19 respondents (82.6%). Based on the level of education, the distribution of respondents in the intervention group showed that most of the respondents had a high school education, namely 19 respondents (82.6%) and in the control group, the majority of respondents had a high school education, namely 15 respondents (65.2%) and the distribution of respondents based on the occupation of the majority of respondents in the group. The intervention has a job as a student or college student, which is 9 respondents (39.1%) and the majority of respondents in the control group have a job as a student or college student, which is 10 respondents (43.5%). Several factors influence the level of community capacity in dealing with landslides, namely age (0.00), gender (0.00), education level (0.00), income (0.00), type of house (0.00), and experience dealing with disaster events (0.027) (Setiawan, 2014).

The factor of total income and education level has a positive constant value, which means, the higher the level of education and income, the higher the level of capacity. The constant in the house type variable is negative, which means that residents with permanent housing types have a higher capacity level than residents with non-permanent or semi-permanent housing types (SCDRR, 2008). Another study stated that there was a positive correlation between family income and life insurance measures (r = 0.154; sign < 0.01) and property insurance (r = 0.232; sign < 0.01). (Sinaga & Nurmawan, 2015). The findings of the field study also show that insurance service providers generally do not want to provide loans or insurance to residents who live in the study location due to the history of floods that often hit this area. Second, there is a positive correlation between the level of education with the act of dividing the task (r = 0.190; sign < 0.01) and the act of preparing various emergency equipment (r = 0.167; sign < 0.01). This means that residents who have higher education (junior high school, high school, and bachelor's degree) tend to take preparedness actions by dividing tasks for each family member and preparing various emergency equipment (Setyowati, 2019) .

The study findings show that education affects the community in taking preparedness actions. Third, there is a positive correlation between the age of the population and the act of preparing land/houses elsewhere (r = 0.162; sign < 0.01) and preparing life insurance (r = 0.163; sign < 0.01). This means that relatively mature people tend to take preparedness measures by preparing land/houses in other places and insuring their lives. The findings of the study on the effect of age are the length of time they have lived in the study location which encourages them to prepare for a new location that is safer and free from disasters (Krishna et al., 2014).

Distribution of respondents based on knowledge before and after being given the CB DRR training intervention.

The distribution of respondents based on knowledge before being given an intervention showed that the majority of respondents had less knowledge,

namely 16 respondents (69.6%) and in the control group, 15 respondents (65.2%) had sufficient knowledge. Meanwhile, the knowledge of respondents after being given intervention in the intervention group showed that the majority of respondents had good knowledge, namely, 17 respondents (73.9%), and respondents in the control group had sufficient knowledge, 17 respondents (73.9%). Factors influencing community disaster preparedness consist of 1) knowledge of disaster preparedness, 2) attitudes towards disaster preparedness, 3) policies and guidelines, 4) plans for disaster emergencies, 5) disaster warning systems, and 6) resource mobilization (Kaelan et al., 2020).

Distribution of respondents based on skills before and after being given the CB DRR training intervention.

Respondents' skills before being treated in the intervention group were the majority of respondents in the poor category as many as 23 respondents (100.0%) and the majority were in the sufficient category in the control group, namely 13 respondents (56.5%). While the skills of the respondents after the intervention in the intervention group, the majority were in a good category as many as 11 respondents (47.8%) and the majority were in the poor category in the control group as many as 16 respondents (69.6%). Lack of community skills for preparedness in dealing with disasters, namely due to lack of human resource capacity, skills are skills that must be possessed by someone to do their work in their respective fields of duty Kaelan et al., 2020).

1) Distribution of respondents' knowledge and management skills in the intervention group and control group based on measurement.

The knowledge of respondents in the intervention group and the control group experienced a positive increase, meaning that the intervention provided consistently and continuously went hand in hand with the knowledge of the respondents both in the intervention group and in the control group. This can be seen in the mean value for each measurement starting from the first measurement to the last measurement in each group. Meanwhile, the skills of respondents in the intervention group increased with a positive trend, meaning that the interventions provided were consistently and continuously running in line with the average value of the disaster management skills of the respondent group in the intervention group. Meanwhile, in the control group, on the contrary, there was a decrease in the average value of disaster management skills. This can be seen in the mean value of each measurement starting from the first measurement to the fourth measurement. Factors that affect a person's preparedness in disaster management include cognitive abilities, attitudes (affective), and psychomotor (skills) (Gerungan, 2020). Capacity building and skills can be done through related training, training that is carried out continuously will make a person skilled so that the skills possessed related to disaster management can be used if needed at any time (Sudibyakto, 2018).

Average Distribution of Disaster Management Knowledge and Skills in the Intervention Group and Control Group

The average value of the knowledge variable in the intervention group before being given the intervention (pre-test) was 83.04 with a standard deviation of 20.130 with an estimated interval of 74.34 to 91.75 and the average value of knowledge after the intervention (post-test) was 206 .74 with a standard deviation of 120.065 with an estimated result of 154.82 to 258.66. The results of the analysis showed that the distribution of knowledge in the intervention group had different proportions before (pre-test) and after (post-test) the provision of interventions in the form of CB DRR training. While the average value of the knowledge variable in the control group before being given the intervention was 123.30 with a standard deviation of 27.018 with an estimated interval of 111.62 to 134.99 and the average value of knowledge after the intervention was 126.70 with a standard deviation of 26.491 with the estimation results are 115.24 to 138.15. The results of the analysis show that the distribution of knowledge in the intervention group increased before (pre-test) and after (post-test) giving the intervention.

Meanwhile, the average value of the skill variable in the intervention group before being given the intervention (pre-test) was 6.96 with a standard deviation of 8.720 with an estimated interval of 3.19 to 10.73, and the average value of skills after the intervention (post-test). is 81.70 with a standard deviation of 74.184 with an estimated result of 49.62 to 113.78. The results of the analysis show that the distribution of skills in the intervention group has different proportions before (pre-test) and after (post-test) the provision of interventions in the form of CB DRR training. While the average value of the knowledge variable in the control group before the intervention was given was 123.30 with a standard deviation of 27.018 with an estimated interval of 111.62 to 134.99 and the average value of knowledge after the intervention was 126.70 with a standard deviation of 26.491 with the estimation results are 115.24 to 138.15 (Anggun, 2020)

The results of the analysis showed that the distribution of knowledge in the intervention group increased before and after the intervention. Meanwhile, the control group multiplied the decrease without the same intervention. In addition, the average skill score of the control group before the intervention was 123.30 with a standard deviation of 23.775 with an estimated interval of 21.55 to 42.11, and the average skill score of the control group after the intervention was 20.654 with a standard deviation of 23.775 with an estimate of

intervals from 15.76 to 33.63. The results of the analysis show that the average skill distribution of respondents in the control group has different proportions before (pre-test) and after (post-test). Communities in general have local knowledge that has been passed down from generation to generation in anticipating landslide events with various coping strategies, both structural (physical) and non-structural (non-physical) (Setiawan, 2014)

Lindell and Whitney (2000) show that there is a positive correlation between knowledge of the sources of hazards encountered and the actions taken regarding these hazards. That is, the individual who knows the source of the danger he faces is at risk to himself, then he will take preventive action to avoid the risk of the danger. Pearson correlation analysis was conducted to determine whether there is a relationship between knowledge of disaster sources and preventive actions taken by individuals or communities. The results of the analysis did not show a correlation between the two (r = -.094; sign >0.05). This shows that respondents who know the source the cause of flooding, do not necessarily take preventive actions to reduce the risk of flood disasters (Krishna et al., 2014).

Bivariate Analysis

Respondent knowledge and skills before and after training on CB DRR

The results of the analysis above show that the p-value of the knowledge variable in the intervention group is 0.041 so it can be concluded that there is a significant difference between the knowledge of the respondents in the intervention group before and after being given the intervention (<0.05). This shows that there is a significant effect on the treatment given in the form of CB DRR training. While the knowledge variable in the control group showed a p-value of 0.862 so it was concluded that there was no significant difference between the knowledge of the respondents in the control group before and after the intervention was given or there was no significant effect on the treatment given in the form of CB DRR training (>0, 05). In addition, the pre-and post-test p-values on the skill variable both in the control group and in the intervention group showed p-value >0.05, namely 0.999 in the intervention group and 0.514 in the control group. So it was concluded that there was no significant difference between the skills in the control group or there was no significant effect on the treatment given in the form of CB DRR training (> 0.05) on the respondent's disaster management skills.

Modeled the determination of a person's preparedness for natural hazards starting from one's perception to the cognitive processes that underlie behavior change and become a person's habit over time (Sunimbar, 2019). The preparedness process of a person in this model is divided into 3 phases, namely the motivation phase, the desire formation phase, and the phase of change from desire to preparation (Krishna et al., 2014). The community is required to have adequate disaster management skills. People skills are very important in the event of a disaster and disaster victims2. The purpose of community-based disaster management is to increase awareness and preparedness of the community, especially those living in areas prone to natural disasters, strengthen the ability to deal with disasters, especially in collaboration with various parties, develop disaster organizations adapted to local conditions, increase public knowledge about disasters (Ibrahim et al., 2020)

Differences in Knowledge and Skills of Respondents in the Intervention Group and Control Group

The results of the independent t-test statistic (independent t-test) obtained a p-value of 0.000 on the knowledge variable and a p-value on the skill variable 0.000 (<0.05). So it can be concluded that there is a significant difference between the knowledge and skills of respondents in the intervention group and respondents in the control group. So it can be concluded that Ha failed to be rejected. Improving community knowledge and skills in CB DRR training can not be separated from the role of leaflets as the main media for training. Leaflet media and picture card media are effective media in increasing people's knowledge and attitudes about preventing disasters or dengue outbreaks. Leaflet media is effective in increasing public knowledge and attitudes about dengue prevention. Picture card media is effective in increasing public knowledge and attitudes about dengue prevention (Surya, 2015).

Disaster education is an important education for people's lives because disaster is an event that has many negative impacts on human life. Although a certain area has absolutely no potential for disaster, disaster education must still be applied, because disasters can come anytime and anywhere (Saparwati et al., 2020). The form of counseling about disaster mitigation or preparedness is through health promotion, which is done by playing videos. Audiovisual media is media that is a combination of audio and visual or commonly called media of hearing. Examples of audio-visual media are educational video/television programs, instructional videos/television, and sound slide programs (Triyadi, 2008). Video media as electronic media that has audio-visual elements (narrative, music, dialogue, sound effects, pictures or photos, text, animation, graphics) aims to influence the attitudes and knowledge of the target in particular (Umin, 2019). Human knowledge of hazards, vulnerabilities, risks, and risk reduction activities is sufficient so that it will be able to create effective community action (either alone or in collaboration with other stakeholders) in dealing with disasters (Widosari, 2010)

Multivariate Analysis

The sphericity test showed the P value in the knowledge variable was 0.00 (<0.05). While the results of the sphericity test on the skill variable show a P value of 0.00 (<0.05), it can be concluded that the knowledge and skills variable sphericity test is not met or the data is not proportional to the researcher's uses of the Greenhouse-Geisser sig analysis shows that the knowledge and skills variables skills have a P value of 0.000 (<0.05), so it can be concluded that there is a difference in the average knowledge and skills of respondents after being given CB DRR training. The results of the previous statistical test analysis using Wilcoxon obtained a z-value of -5.712 with a p-value of 0.000. It can be seen that the p-value is 0.000 <α (0.05), this indicates that there is a significant difference between preparedness knowledge before and after being given learning using audio-visual (Saparwati et al., 2020). This proves that after being given information using audio-visual media about disaster management, there is an increase in knowledge of respondents' preparedness (Wulansari, 2017)

One of the factors that affect student preparedness is the knowledge factor. Knowledge about disaster preparedness can be increased by providing disaster management training. The results of this study are in line with the theory of Liesnoor o, (2019) where good knowledge about preparedness will form good behavior or attitudes regarding preparedness. Knowledge has an important role in changing and strengthening behavioral factors (predisposing, supporting, and motivating) to lead to positive behavior. The creation of disaster knowledge by someone who already has preparedness is indicated by an understanding of the conditions in the environment where the person lives (Wahyudi, 2015) The intended environmental conditions include knowledge of disaster events and disasters that may occur in their area, their impacts, and the physical vulnerability of the school. It is also important for students to know the actions that need to be taken during a disaster and how to deal with disasters (Saparwati et al., 2020).

Conclusion

Conclusions from the results of research on revitalizing disaster mitigation management and community empowerment through the Community-Based Disaster Risk Reduction (CB DRR) program indicate that the implementation of the CB DRR program training influences community capacity in disaster mitigation. The existence of this influence can be seen in the knowledge variable and the community skills variable. Meanwhile, the trend of changes in the value of knowledge and skills can be seen from the first measurement to the last measurement.

Acknowledgements

We would like to thank the Director of Poltekkes, Ministry of Health, Kupang, and the government of Ndoru Rea I Village, Nangapanda District, Ende, East Nusa Tenggara who have supported the implementation of the research.

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