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RESEARCH ARTICLE

Development of Disaster Management Mitigation Model Based On Local Food Sources: Modified Casava Flour in Indonesia

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ABSTRACT

The researcher aims to determine the effect of developing emergency food based on local food sources in increasing community knowledge and attitudes towards disaster preparedness. Quantitative research method with pre-experimental design one group pretest-posttest design from 60 research samples. Findings: The research results demographic characteristics of village, and the test before and after being given behavior in the form of local emergency food training. Conclusion: The study's conclusion based on the t-test 0.000 < 0.05, there was an effect of developing disaster emergency food based on local food sources of Mocaf Flour on improving people's living standards and knowledge of community preparedness for disasters. Originality/value: In addition to providing knowledge about disaster, preparedness for facing disasters by making food emergencies food products based on local food.

INTRODUCTION

Disaster is an extraordinary event that occurs beyond human control. Without knowing when it will occur and how big the impact of the losses will be. The impact of a disaster can be in the form of environmental damage and cause mass deaths. The magnitude of the impact makes it important for the entire community to be prepared to face a disaster (Sinaga, 2015; Mani et al., 2024). According to Hardinsyah, et al., in determining the Energy Adequacy Rate (AKE) nationally, it states that based on the results of the calculation of AKE for each age group and gender, as well as the composition of the population from the 2012 Population Census, the average national AKE at the consumption level is 2100 kcal/capita/day (Hardinsyah, 2015; Yaikaew et al., 2024). Insufficient food supplies are also the beginning of the process of declining health levels which in the long term will directly affect the level of fulfillment of nutritional needs for disaster victims. The existing shelters often do not meet health requirements so that directly or indirectly they can reduce the body's immune system and if not addressed immediately will cause problems in the health sector (Tumenggung, 2017; Mohammad et al., 2024). The food crisis during a disaster often cannot be resolved only with a public kitchen procurement strategy. The very limited disaster conditions, not only face the lack of clean water supplies, but also the difficulty of carrying out food processing activities for disaster victims. The

scarcity of food during a disaster will have a negative impact on a person's body's resistance due to lack of nutrition in the body.

Observation results in Trenggalek Regency show that Trenggalek is an area prone to disasters (multi-disasters), this is because the characteristics of the area in the Regency are hilly areas, and have a very steep slope. This condition results in frequent disasters, main road access is cut off, and hinders the entry of logistical assistance (food) from outside.

As far as researchers know, there has been no innovation in making emergency food for disasters. The Central Statistics Agency stated that the production of cassava farming in Trenggalek Regency reached 246,430 tons/year. In fact, cassava is one of the local commodities that can be used as raw materials for emergency food because it is rich in carbohydrates and has abundant raw materials.

The general objective of this study is to develop a disaster-based emergency food management model using local products, namely mocaf flour. This aims to improve community food resilience management in dealing with disasters. This activity is an effort to implement the Sendai Framework for Action 2015-2030 framework, namely investment in disaster risk reduction for community resilience in dealing with disasters. The development of this emergency food is an innovation that is in line with the Sendai Framework for Action 2015-2030 framework, namely Investment in disaster risk reduction for community resilience in dealing with disasters (UNDRR, 2015). Food products that are able to meet the needs of disaster victims are commonly known as emergency food. Emergency food is deliberately designed to be able to meet human daily energy needs in an emergency and can be consumed immediately (Ekafitri & Faradilla, 2011; Pandin, et al., 2022). Thus, researchers propose to develop emergency food products from Mocaf Flour with the aim of increasing community resilience in dealing with disasters.

Theoretical Framework

The calculation of food needs for the hunger problem and malnutrition in disaster-affected areas is based on the number of residents (Burtha *et al*., 2013). Not all regions in Indonesia have good infrastructure facilities and easy access to provide good and healthy food assistance, especially in a disaster that causes secure access to food. This condition encourages the need for *emergency food* or food to fulfill food for victims of natural disasters.

Emergency food is processed food specifically designed to meet human daily energy needs and is consumed in emergency situations (IOM, 1995). Based on the Number of Nutritional Adequacy, human needs 2,100 kcal/day of emergency food (*Institute of Medicine*, 1995). According to Zoumas *et al*. (2002), to achieve these total calories, the recommended amount of macronutrients contains protein, fat, and carbohydrates, respectively, by 10-15%, 35-45%, and 40-50%.

The content can be obtained by hammering local commodities in their respective regions. The local commodities in Village are very diverse, namely cassava, sweet potatoes, taro, and corn. However, the major commodity in the village is cassava because the production is abundant, cheap (500 / kilogram), and follows the appetite of the local community. According to Jarwoto (2021), almost every resident's house in Village grows cassava, both in the house's yard and on his farmland. The community often uses cassava to be processed into Mocaf Flour *(Modified Cassava Fluorine*) which can substitute wheat flour. One hundred grams of Mocaf flour contains 82.90% carbohydrates, 0.83% fat, 3.32% protein, and 2.30% fiber (Salim Emil, 2011).

The nutritional value content of Mocaf flour is very well used for the essential ingredients of making emergency foods with a high carbohydrate content. The development of emergency food made from local food crops is one of the alternatives to strengthening the community in the face of disasters. In line with the Sendai Framework for Action 2015-2030 framework on Investment in preparing people's preparedness for disasters. (UNDRR, 2015) is by preparing the community to provide basic

needs (food) from existing local food sources to anticipate the occurrence of a food crisis at the time of the disaster.

According to Sutton and Tierney (in Zakarias, 2015), preparedness activities should be based on knowing the potential impacts of disaster hazards on health and safety. According to ISDR (2006), the first parameters of critical preparedness factors for anticipating natural disasters are knowledge and attitudes towards disaster risk. Knowledge is a significant factor and the key to preparedness. The knowledge possessed can usually affect attitudes and concerns to be ready to be alert in anticipating disasters. Based on the description above, the purpose of this research is to examine the influence of the development of emergency food based on local food sources in improving knowledge and attitudes toward community preparedness for disasters.

The Conceptual Framework is to explain the influence of interventions on the development of emergency food based on local food sources in improving knowledge and preparedness attitudes to the community about the importance of preparing spare food needs before disasters occur; based on the above analysis, the framework of this research concept is described as follows in figure 1.3:

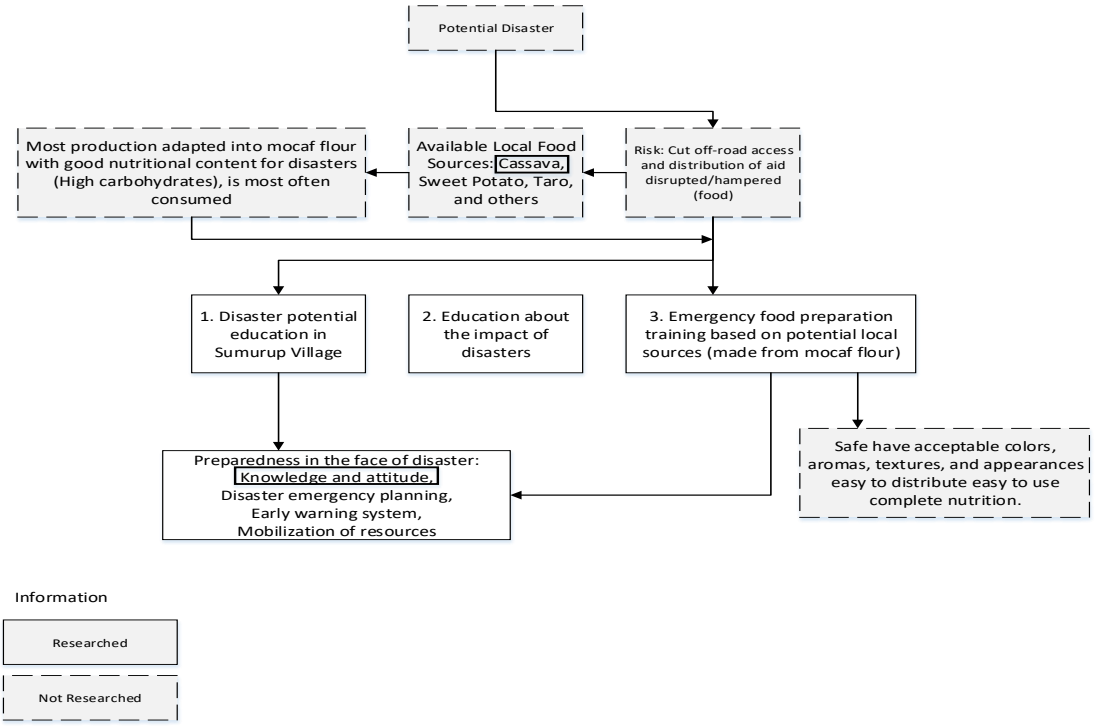

Figure 1 Conceptual Framework of This Research

2. MATERIALS AND METHODS

The study was conducted using *the pre-experimental design* method of type *one group pretest-posttest* (the initial-test end of a single group test) (Arikunto, 2010). The design form in this study is as follows: subject = P; Pre-test = O1; Treatment = X; and post-test = O2. The population in this study is the population of members of woman community in Village, which is 146 / person. The sampling technique used is *random sampling*.

The inclusion criteria of the population: (a) Willing to be a respondent; (b) The respondents were members of the woman community village; (c) Respondents are household individuals who have participated in mocaf training; (d) The last level of education is at least elementary/equivalent; and (e) Can read and write.

In the population of 101-1000, the sample is 10%. The population in this study was 146 members of Woman Community village. Then the sample calculation is as follows (Riwidikdo, 2016)

$$n = \frac{N}{1 + N(e)^2}$$

n: Number of samples; N: Population; e: error in sampling; so that it is obtained; n = 146 / 1 + 146 $(0.1)^2$; n = 59.34; n = 59; So the respondents needed at least 59 respondents.

The data Collection and Collection Procedures described as followed:

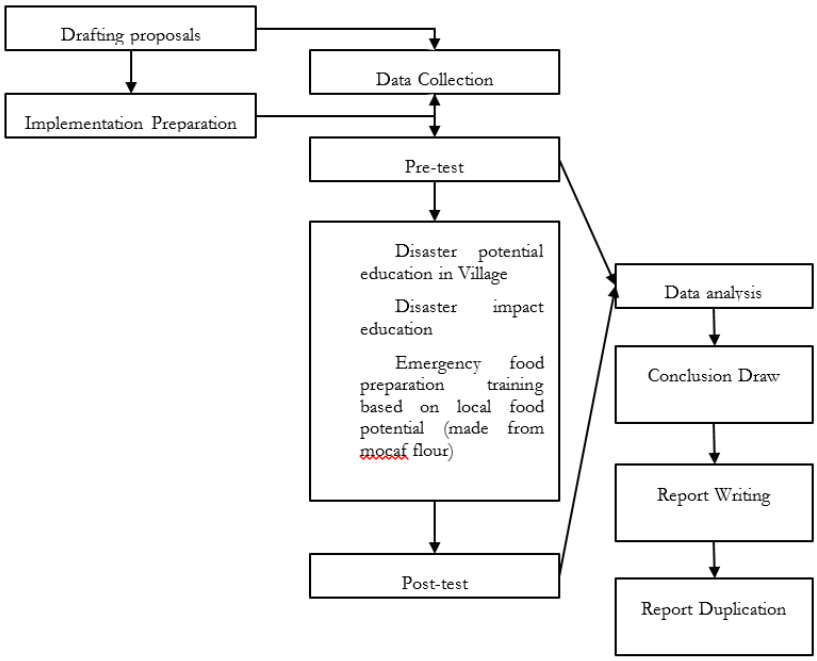

Figure 2 Research Procedures

The steps of this research procedure are as follows: (a) Data collection: the data were collected with questionnaires before *(pre-test)* and after *(post-test)* given treatment in this study; (b) Training: The training provided to the community is as follows: raising awareness of potential disasters, training in potential disaster impacts on food, and emergency food preparation training based on local food potential (making mocaf as an emergency foodstuff from many ingredients in place); (c) Final analysis and conclusion drawdown initial and Final analysis conducts to organize and sort data in the basic description so that a conclusion can be drawn and followed by recommendations as a solution to research problems; and (d) Report writing and report propagation from the data compiled, the research report will be taken as a scientific work, which previously went through the testing process.

Data Analysis

The data analysis technique used is quantitative analysis, following: (a) Pre-Test Requirement: the results of this study were analyzed using statistical analysis that requires normality and homogeneity tests. The normality test uses the Smirnov Kolmogorov test in the SPSS 21.0 program with a significant level of 5% or 0.05. The statistical requirement of multivariate manova is the fulfillment of the distribution of normality with the hypothesis *of the Smirnov Kolmogorov* test as follows: If the sig value., then Ho is accepted; If the sig value., then H1 is rejected; Ho is accepted, then the data is distributed normally; and H1 is rejected, then the data is not distributed normally. It stated that the homogeneity of variance if the p-value of Sig >0.05. Sig *p-value* is the calculation value of homogeneity test results. Ridwan, 2015).

The hypothesis test was done with Univariate Analysis and Bivariate Analysis. Bivariate analysis was conducted using the *Paired Sample T-Test* statistical test to see the influence of *motion pictures* media extension on knowledge and attitudes with the formula:

$$t = \frac{\overline{X_1} - \overline{X_2}}{\sqrt{\frac{{s_1}^2}{n_1} + \frac{{s_2}^2}{n_2} - 2r\left(\frac{s_1}{\sqrt{n_1}}\right)\left(\frac{s_2}{\sqrt{n_2}}\right)}}$$

*x*1: Average sample before treatment; *x* 2: Average sample after treatment; s1: Standard deviation before treatment; s2: Standard deviation after treatment; n1: Number of samples before treatment; n2: Number of samples after treatment; r: Correlation value

3. RESULTS

Characteristic of 60 samples from Village's Woman Community were divided into several characteristics according to age, occupation, education, and experience in obtaining disaster preparedness training and emergency food manufacturing training. It shows that the percentage of respondents with age < 30 years is greater (46%), and the age over 50 years is the most minor (2%). The frequency of respondents according to the most dominating occupations is Housewives, almost half (48%), self-employed 32%, Farer or planter 17%, and the least are Village Devices (2%) and Honorers (1%).

It shows that the education level of respondents is most prevalent at the high school or MA or Vocational level (33%), junior high school level (47%) and the least at the elementary / MI (10%) and Academy / University (10%) levels. Within the samples, the distribution of frequency of counseling or training of disaster preparedness respondents who have received counseling or disaster preparedness training (20%) and respondents who have never received counseling activities (80%). Based on the data of the Disaster Emergency Food Manufacturing Training from Local Food Sources Respondents frequency have never (100%) participated in emergency food manufacturing training from local food sources.

Univariate Analysis

The preparedness knowledge measurement data outlined regarding Data measurement of respondents' knowledge before being given training, respondent knowledge after being given training, and *paired test t-test samples* between before and after the training. The distribution of community preparedness knowledge before training is found such as is quite good, 53 (88%), more than half, while the excellent category is at least 2 (3%). While the distribution of community preparedness knowledge after the training is carried such as Good (53%), and Enough (47%). The distribution of Respondents' Knowledge After Training shows that the distribution of the frequency of public preparedness knowledge after the training conduct has an excellent average score of 32 (53%), more than half of the respondents; enough 47%.

Pre-test and *Posttest* Results of Community Preparedness Attitudes showed outlined data measuring respondents' knowledge before being given training, respondents' attitudes after being given, and *paired test t-test samples* between before and after the training. The distribution of community preparedness attitudes before training is contained shows that the frequency distribution of people's preparedness attitudes before the training is quite good, 52 (87%) more than half, while the excellent

category is at least 1 (2%). While the distribution of community preparedness attitudes after the training is contained in shows that the frequency distribution of people's preparedness attitudes after the coaching practice has a good avantage good 29 (48%), and moderate average value of 31 (52%), more than half of the respondents.

Bivariate Analysis

*Paired Sample T-Test o*f Preparedness Knowledge

Based on table 1 shows an increase in the average knowledge of respondents after treatment, from 33.92 to 40.80, with an average difference of 6.88. Based on the *paired sample t-test* above, it is known that *the pre-test* and *post-test* values of preparedness knowledge were obtained sig values (2-tailed) of 0.000 < 0.05, then Ho was rejected, and Ha was accepted, meaning the hypothesis states that there is a difference in the average result of the value of preparedness knowledge between before and after being given treatment.

Table 1. Pretest Knowledge Values and Posttest Preparedness Knowledge

Knowledge	Mean	Std. Deviation	Std. Error Mean	P-value	N
Pre-test	33.92	3.099	0,400	0,000	60
Posttest	40.80	1.894	0,244		

Based on the data analysis, it can be said that there are significant differences in the development of disaster emergency food based on local food sources from Mocaf flour influential in increasing knowledge of community preparedness for disasters. In other words, $t_{numera} > t_{tabel}$, which means Ha is accepted, and H_0 is rejected. So it can be concluded that there is an influence on the development of disaster emergency food based on local food sources from mocaf flour in increasing the knowledge of community preparedness for disasters.

Paired Sample T-Test Preparedness Attitude

Based on Table 2 shows an increase in the average attitude of respondents after treatment, from 28.55 to 32.95, with an average value of 4.40. From the *Paired Sample T-Test* test results, *the pre-test* and *post-test* values of preparedness attitude were obtained sig scores (2-tailed) of 0.000 < 0.05 then Ho is rejected, and Ha is accepted, meaning the hypothesis states that there is a difference in the average result of preparedness between before and after treatment.

Based on the analysis of the data, it can be said that there are significant differences in the development of disaster emergency food based on local food sources from mocaf flour that has an effect on improving people's preparedness attitudes for disasters. In other words, $t_{numera} > t_{tabel}$, which means Ha is accepted, and H0 is rejected. So, it can be concluded that local food sources from mocaf flour influence emergency food development in improving community preparedness for disasters.

Table 2. Values of Pretest Attitudes and Posttest Preparedness Attitudes

Attitude	Mean	Std. Deviation	Std. Error Mean	P-value	N
Pre-test	28,55	2.480	0,320	0,000	60
Posttest	32,95	2.507	0,324		

Pre-Test Requirements

Normality Test

The Normality Test is done to determine whether the research data is distributed normally or not. Average data is an absolute requirement before analyzing parametric statistics (*paired sample t-test*). There are 2 types of normality tests often used in parametric statistics: the Kolmogorov-Smirnov test and the Shapiro-Wilk test. For this normality test, researchers used SPSS 21.0. The results of *the pre-test* normality test and *post-test* knowledge and attitude toward community preparedness in the face of disasters can be seen in the table below, with a level of significance (**α**) of 0.05. Ha = Normal distributing data, if the significance value (Sig) > **α** (0.05). H0= Abnormally distributed data if the significance value (Sig.) < α (0.05).

Table 3. Results of the Preparedness Knowledge Normality Test

	Knowledge	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistics	Df	Sig.	Statistics	Df	Sig.
Community Preparedness	Pretest Knowledge	0.090	60	0.200*	0.983	60	0.560
	Knowledge Posttest	0.107	60	0.083	0.952	60	0.069

a. Lilliefors Significance Correction

*. It is a lower bound of the true significance.

Based on the normality test results above, it is known that the significance value of the public preparedness knowledge pre-test data on the Kolmogorov-Smirnov test is 0.200 > 0.05, and the Shapiro-Wilk test is 0.560 > 0.05, then the normal distribution. Furthermore, the *post-test* data of public preparedness knowledge on the Kolmogorov-Smirnov test was 0.083 > 0.05, and the Shapiro-Wilk test was 0.069 > 0.05, then the data were distributed normally. Because the data is distributed normally, Ha's hypothesis is accepted, and Ho is rejected. The results of the normality test of community Preparedness Attitudes can be seen in the following Table 4:

Table 4. Results of the Propagandism Normality Test

	Attitude	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistics	Df	Sig.	Statistics	Df	Sig.
Community Preparedness	Attitude Pre-test	0.101	60	0.200*	0.974	60	0.224
	Attitude Posttest	0.103	60	0.185	0.973	60	0.203
*. It is a lower bound of the true significance.							
a. Lilliefors Significance Correction							

Based on the normality test results above, it is known that the significance value of the community preparedness attitude from the pre-test data on the Kolmogorov-Smirnov test is 0.200 > 0.05, and the Shapiro-Wilk test is 0.224 > 0.05 then the normal distribution. Furthermore, the *post-test* data on public preparedness attitudes on the Kolmogorov-Smirnov test was 0.185 > 0.05, and the Shapiro-Wilk test was 0.203 > 0.05, then the data were distributed normally. Because the data is distributed normally, Ha's hypothesis is accepted, and Ho is rejected.

Homogeneity Test

The basis of decision-making inhomogeneity tests is still looking at the value of its significance. If the sig value > 0.05, then the variable is homogeneous, and in reverse, if the sig value < 0.05, then the variable is not the same or homogeneity (levene statistic = 11.822; df1 = 1; df3 = 0.182. Based on data, the sig value is 0.182, more significant than 0.05. Then it can be said that the development of emergency food based on local food sources towards increasing knowledge of disaster preparedness is homogeneous. While the Test of Homogeneity of Variaces shows) the sig value is 0.716, more significant than 0.05. It can then be said that the development of emergency food based on local food sources towards increasing the attitude toward disaster preparedness is attributed to home.

4. DISCUSSION

The comparative analysis of the value of respondents' preparedness knowledge before and after being given treatment showed significant results that meant that there was an influence on the development of disaster emergency food based on local food sources from mocaf flour in improving

public preparedness knowledge for disasters. The respondents' knowledge of disaster preparedness before treatment has obtained a value of 63%, which means that people's knowledge is quite good. The value of respondents' knowledge of disaster preparedness after being given treatment obtained a score of 88%, which means higher than before being given treatment.

The changes in respondents' knowledge before and after treatment can be seen in the results of the respondent questionnaire. It stated that before being given treatment, most people do not realize that the area they live in until now is an area with a high risk of disaster. Even few people do not know the risk of what disasters are likely to occur around them. After the education and training, treatment is related to the potential and risk of what disasters are likely to occur in the environment they live in. So that the response or results obtained after being given treatment by the community begins to understand what a disaster is, what potential disasters are likely to occur around the area where they live, as well as what risks or impacts of it; such as damage to facilities and infrastructure so that it can interfere with the distribution of aid, especially food assistance. Moreover, respondents began to be able to map the location of clues or tools that can be used to get to a safer location in the event of a disaster.

The knowledge of good preparedness is directly proportional to the preparedness behavior. It is based on the theory stated by Kurniawati and Suwito (2017), where the level of knowledge of a community about disasters is good, which will increase the community's ability to deal with disasters. Then, Twigg (2007) also stated that if public knowledge of hazards, vulnerabilities, risks, and risk reduction activities is sufficient, it will be able to create practical community actions (both alone and in collaboration with other stakeholders) in facing disasters.

According to Clust et al. (2007), education on disaster preparedness is very influential in realizing disaster preparedness. It is also supported by Marissa (2014) study. In this study, some treatments to improve people's knowledge in the face of disasters were given. First, education about the potential for disaster in the Village area; located in a high risk of disaster area, such as landslides. *Second,* education about disaster risk and preparedness measures. In this case, respondents are given exposure related to risks that may occur during disasters. Especially food supplies problems due to the damage to facilities and infrastructure. Then, the impact of it and what measures are taken in minimizing the risk of the impact of the disaster. *Third,* the training on preparing emergency food based on the potential of local food sources, namely mocaf flour (modified cassava flour). Based on the treatment mentioned above, the public's knowledge of disaster preparedness has increased.

Emergencies in disasters require special attention and treatment. Increased awareness and knowledge of what natural disasters are, environmental vulnerabilities (impacts), and how to deal with disasters, including preparing basic needs such as food, are fundamental to increasing community preparedness in the face of disasters. It is in line with Teja's research (2018) that people need to increase their knowledge capacity on dealing with disaster situations for themselves, their families, neighbors, and people in their environment. Disaster knowledge needs to be given to disaster-prone communities as early as possible, either through media or educational and counseling activities.

The influence of Disaster Emergency Food Development Based on Local Food Sources from Mocaf Mocaf Flour as a Disaster Mitigation Effort in Improving Community Preparedness Attitudes for Disasters could explain on the attitude is the reaction or response of a person who is still close to a stimulus or object (Notoatmodjo, S 2010). Fishbein and Ajzen (2000) define attitudes as the number of affections (feelings) a person feels to accept or reject an object or behavior and are measured by a procedure that places the individual on a two-pole evaluative scale, e.g., good or bad, agreeing or rejecting. The results of the univariate analysis of respondents' attitudes before being treated have enough attitude (87%), poor attitude (11%), and a good attitude (2%). It can be concluded that the respondent's preparedness attitude before being given treatment is not good. While the results of

the univariate analysis test on respondents' attitudes after being given treatment increased, namely having a good attitude (52%) and others having a bad attitude (48%). Thus, the respondent's preparedness attitude after treatment shows more significant results.

The results of the bivariate analysis confirmed the results of the univariate analysis showed there was an increase in the preparedness attitude of respondents after being given treatment, namely from 28.55 to 40.80 with an average score of 4.40, and obtained the results of the *Paired Sample T-Test* test, with *a pre-test* and *post-test* Sig score. (2-tailed) of 0.000 < 0.05, it can be revealed that there is an influence on the development of disaster emergency food based on local food sources from mocaf flour in improving people's preparedness for disasters.

The attitude of community preparedness before being given treatment is still quite good. It can be seen in the community attitude that the communities occupy a region prone to natural disasters and have a risk of damage to facilities and infrastructure such as roads, which can hinder assistance from coming at the time of disaster. However, none of the communities that store emergency foodstuffs as spare food supplies when disasters occur to consider it unnecessary to prepare for disasters and do not have evacuation readiness when disasters can suddenly come. Based on research from (Ridha & Husna, 2018), it can be explained that attitudes toward disaster management consist of two types, namely positive and negative. The positive attitude in this study is that the community can anticipate the occurrence of disasters, such as preparing emergency equipment that will be brought in the event of a disaster, preparing basic needs such as food and beverages, storing valuables in a safe place, actively involved in disaster risk reduction planning and responsive attitudes to make decisions to save money, self-esteem when there are signs of a flood disaster. One of the negative attitudes of the community in Village is the lack of action to store ready-to-eat emergency food because they assume that there will be assistance from the government, ignores the necessity to live clean and healthy, and do not determine the location of adequate evacuation.

According to the survey results, the response of training on how to use mocaf flour as a primary ingredient in making disaster emergency food showed a quite positive result. They were able to make disaster emergency food that is relatively easy, cheap, can be prepared by anyone, and easy to distribute during disasters. Furthermore, most respondents stated that they were able to update the emergency food supplies they had made within 6 months. According to Wiratmaja, quoted by Luice, several factors can improve one's attitude, namely through education and training, because the indications that can be seen by someone at each stage of adoption in the implementation of training or counseling are the conscious stage, the interest stage, the assessment stage, the trying stage and the acceleration stage (Bintaria, 2011). This implies that the training given can improve respondents' attitudes significantly.

The results of this study are in line with the results of Indonesian Institute of Science research (2006) showing that the most significant influence in calculating the level of preparedness is the level of knowledge and attitude of the community. According to Rante (2012), attitude variables affect household preparedness in the face of landslide disasters. It means that families who have a positive attitude (responding, appreciating, and being responsible) in household preparedness will be able to minimize losses and casualties due to disasters. Positive attitude, according to Azwar (2013), reflects positive behavior; the more positive the attitude, the stronger the preparedness intention.

Nevertheless, after being given three treatments, including disaster potential education, disaster impact, and risk education, especially food, and training in making disaster emergency food from local food sources, namely Mocaf, the value of respondents' attitudes is much better than before. The improvement can be seen from the attitude when the community could utilize existing local food sources as emergency food in the event of a disaster. Moreover, the nutritional content of disaster emergency food derived from Mocaf is better than donation food during disasters, such as instant noodles, groceries, and sardines.

People in affected areas can experience a decline in nutritional status due to a lack of energy caused by poor access to quality food. With the explanation above, respondents can respond and receive well, so there is an increase in respondents' attitudes to be more prepared in the face of disasters in their environment. This shows that persuasion with a *fear appeals* approach improves the knowledge and preparedness of respondents in dealing with disasters, especially in the preparation of emergency food from local food sources. The message of persuasion with a high threat and accompanied by high efficacy produces the most heightened motivation from the subjects of research, experiencing increased knowledge and attitude. Because this kind of persuasion message produces a high level of fear as well as convinces the study subjects that the threat (the occurrence of a food crisis during disaster time) can be avoided. The message of threat and efficacy are two aspects that cannot be separated. For the message of persuasion to be effective, it must be scary and give way out in the form of a recommendation that one can avoid the danger. Therefore, a compelling persuasion message must contain 2 elements at once. First, the message contained a terrifying threat. Second, the message assures the way out to avoid problems. In this study, researchers gave a message of persuasion in the form of education about the threat of potential disasters in the Village area, as well as disaster impact education, especially regarding food problems; consequently, respondents gave a positive response to find a solution to what should be done in the situation or conditions that occurred when the disaster occurred.

Thus, researchers present training in using local food sources in the form of mocaf flour as an essential ingredient in making disaster emergency food to provide alternative solutions for respondents to survive independently before food assistance comes. This study limits the examination on the basis of the effect of training on a group of communities in disaster-prone areas so that further studies can measure its effectiveness towards large communities.

5. CONCLUSION

Before being treated, the respondent's preparedness knowledge had an average score of 33.92, and after being treated to 40.80, with an average score difference of 6.88, which means an increase in the average value of respondents' preparedness knowledge after being given treatment. The *paired-sample t-test* resulted in a significance level of 0.000 < 0.05, then Ho was rejected, and Ha was accepted, meaning that there was an influence on the development of disaster emergency food based on local food sources from mocaf flour in increasing knowledge of community preparedness for disasters.

The preparedness attitude of respondents before being given treatment has an average score of 28.55 and after being given treatment to 40.80 with an average score of 4.40, which means an increase in the average value of the respondent's preparedness attitude after being given treatment. The *paired-sample t-test* resulted in a significance level of 0.000 < 0.05, then Ho was rejected, and Ha was accepted, meaning that there was an influence on the development of disaster emergency food based on local food sources from mocaf flour in improving people's preparedness for disasters.

AUTHORS' CONTRIBUTIONS

The authors contributed equally, to the design implementation of the research, to the analysis of the results and to the writing of the manuscript.

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REFERENCES

Ajzen, I., & Fishbein, M., 2007, *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*, 129-385, Addison-Wesley, Reading, MA.

Arikunto, Suharsimi. (2010). *Research Procedures of a Practical Approach*. Jakarta: Rineka Cipta.

Azwar S. 2013. *Human Attitudes: Theories and Measurements*. Yogyakarta: Library

BPBD Disaster Risk Index Book Trenggalek Regency in 2020, Taken from www.bnpb.go.id on [20 September 2020]

Burtha, E. K., Syarief, H., & Sunarti, E. (2008). Food Management for Disaster Management in West Lampung Regency. *Journal of Nutrition and Food*. 3(3): 250-256.

Dedu Ghele Raja Zakarias, Hendarmawan and Sunardi, (2015). Efforts to Reduce Risk and Community Preparedness for the Threat of Landslides, Journal of Environment and Geological Disasters, 8(2)

Ekafitri, R., & Faradilla, R. H. F. (2011). Pemanfaatan Komoditas Lokal sebagai Bahan Baku Pangan Darurat. Pangan.

Febriani, W. (2013). *Sagon Formulation of Breadfruit-Based Composite Flour (Artocarpus altilis) as an Emergency Food Alternative for Children.* Bogor Agricultural Institute.

Hardinsyah, S. (2015). Buku Ilmu Gizi Teori dan Aplikasi. Penerbit buku kedokteran. Jakarta.

Hermayanti, M. E., Rahmah, N. L., & Wijana, S. (2016). Formulation of Biscuits as An Emergency Food Alternative Product. *Industrial: Journal of Agroindustry Technology and Management.* , 5(2):107-113

John, Twigg. 2007. *Characteristics of Disaster-Resistant Communities*, DFID Disaster Risk Reduction Interagency Coordinator Group.

Kurniawati, D., & Suwito. (2017). The Influence of Disaster Knowledge on Preparedness attitudes in facing disasters in students of the Geography Education Study Program of Tadulako University. *E-Journal Unikama*, *2*(2), 136–137. Taken from http://ejournal.unikama.ac.id [21 December, 2020]. Law No. 24 of 2007 concerning Disaster Management.

Mani, L. (2024). Gravitating towards the Digital Economy: Opportunities and Challenges for Transforming Smart Bangladesh. *Pakistan Journal of Life and Social Sciences*.

Mohammed, N. A., Ali, W. N., Younis, Z. M., Zeebaree, P. J., & Qasim, M. J. (2024). Response of Two Mint Cultivars Peppermint (Mentha piperita L.) and Curly Mint (Mentha spicata var. crispa) to Different Levels of Cadmium Contamination. Pakistan Journal of Life & Social Sciences, 22(2).

Notoatmodjo, S. (2012). *Concept of Health Behavior in health education, Revised Edition 2012* (2012 ed.). Jakarta: Rineka Cipta.

Pandin, M. G. R., Waloejo, C. S., Sunyowati, D., & Rizkyah, I. (2022). The Potential of Mocaf (Modified Cassava Flour) as Disaster Emergency Food. *IOP Conference Series: Earth and Environmental Science*, *995*(1), Article 012006. https://doi.org/10.1088/1755-1315/995/1/012006

Relief Food Product. Food and Nutrition Board: Institute of Medicine. National Academy Press, Washington DC.

Ridha, R., & Husna, C. (2018). *People's Knowledge and Attitude Towards Flood Management.*

Salim, Emil. 2011. *Processing Cassava Into Flour Mocaf Business Alternative Products substitutes Wheat*. Yogyakarta: Lily Publisher.

Sinaga, N. S. (2015) 'Peran Petugas Kesehatan Dalam Manajamen Penanganan Bencana Alam', Jurnal ilmiah "INTEGRITAS" Vol, 1(1).

Tumenggung, I., (2017). "Masalah Gizi dan Penyakit Menular Pasca Bencana", Health and Nutritions Journal Volume III / Nomor 1.

UNDP. (2009). *Disaster risk reduction* 2006-2009.

UNDRR. (2015). Sendai Framework for Disaster Risk Reduction 2015 - 2030 1. Third World Conference on Disaster Risk Reduction, Sendai, Japan, 14-18 March 2015. https://doi.org/A/CONF.224/CRP.1

UN-ISDR. (2002). Living with Risk: *A Global Review of Disaster Reduction Initiatives. Prepared as An Inter-Agency Effort Coordinated by the ISDR Secretariat with special support from the Government of Japan, the World Meteorological Organization and the Asian Disaster Reduction Center (Kobe, Japan)*. Geneva: ISDR Secretariat.

Yaikaew, C., & Ruangchoengchum, P. (2024). The Waste Reduction Caused by Delays in Registration Fee Revenue Recognition Process: A Case Study of Public University in Thailand. *Pakistan Journal of Life & Social Sciences*, *22*(2).

Zahra, K., M. Imran and F.O. O. Ostermann. 2017. Automatic Identification of Eyewitness Messages on Twitter During Disasters. Information Processing and Management.

Zoumas, B.L., L.E. Armstrong, J.R. Backstrand., W.L. Chenoweth., P. Chinachoti, B. P. Klein, H. W. Lane. K. S. Marsh., M. Tolvanen. 2002. *High-Energy, Nutrient-Dense Emergency*