

Education, Health Screening, and Distribution of Functional Emergency Food for Health Recovery for the Elderly After the Cianjur Earthquake

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ABSTRACT

In a disaster situation, hunger conditions have a very critical impact, so that it must be balanced with sufficient food availability. If the availability of food is not sufficient, it can be the beginning of a decline in health which will further affect the nutritional status of disaster victims. Especially in the elderly group that requires more serious attention and treatment. This community service aims to improve the health of disaster victims through providing education, as well as distributing functional biscuit product assistance made from local food in the context of fulfilling post-disaster food and nutrition in the Cianjur region. The community service method is carried out in three stages, namely (1) education for disaster victims, (2) health screening, and (3) consumption monitoring programs. Participants are a group of elderly (age ≥ 60 years), with a total of 23 participants. Face-to-face activities were carried out for education and health screening, which took place in Mekarsari Village, Cianjur District, Cianjur. The results of the activities showed an increase in the knowledge of the elderly as evidenced by the results of observation and active participation in discussion sessions after providing education. The increase in consumption has also increased, judging by the results of the evaluation of the functional biscuit consumption monitoring card which received a consumption score of 70-100%. The conclusion in community service activities in the form of education, health screening, and consumption monitoring can increase the knowledge and consumption of the elderly after the Cianjur earthquake.

Keywords: Disaster, Elderly, Emergency Food, Functional Food, Health Screening

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INTRODUCTION

Indonesia is a country with disaster-prone areas, both natural disasters and man-made disasters. Based on data from the National Disaster Management Agency, as of mid-2023, 2,041 natural disasters have been recorded in Indonesia, consisting of floods, landslides, earthquakes and others (NBDM, 2023). The disaster that occurred caused various serious

detrimental impacts, both in terms of material and economic, environmental, as well as physical and psychological impacts on humans.

At the end of 2022, there was a natural earthquake disaster that hit the Cianjur area, West Java. The main earthquake (mainshock) Mw 5.6 had an impact and was felt in the city of Cianjur with an intensity scale of V-VI MMI (Modified Mercalli Intensity), namely the category of potential light damage. As a result of the earthquake, 268 people were killed and more than 2,000 houses were damaged (NBDM, 2023). By mid-2023, 140 aftershocks had been recorded with a magnitude of 1.2-4.2 and an average depth of around 10 km, of which 5 earthquakes were felt by the surrounding community (MCGA, 2022).

Disaster events often result in disaster victims having to protect themselves by evacuating. Existing evacuation conditions are usually created in an emergency, so they exist simply with limitations. This condition can have an impact on the physical and psychological condition of refugees. Physical conditions include changes in the health and nutritional status of refugees, especially vulnerable groups, namely infants, toddlers, pregnant women, breastfeeding mothers and the elderly. Meanwhile, psychological conditions can attack due to feelings of loss due to disasters, up to boredom received during evacuation (Indonesian Health Ministry, 2016).

In many previous activities, providing education has been proven to be able to increase the understanding of the elderly community regarding disaster preparedness. This is evidenced by the pre-post test scores of elderly participants which increased after being given education (Faisal and Manalu, 2023; Malini et al., 2023; Lukvianti et al., 2023). However, there has been no practical improvement in food consumption, so in addition to providing education, participants should also be given training in making emergency food.

In disaster situations, hunger is a very common impact of disasters. Availability of food is one of the things that is very important to fulfill because if it is not sufficient, it can be the beginning of a decline in health status which in the long term will directly affect the level of meeting the nutritional needs of disaster victims. However, in practice, existing refugee camps often do not meet health requirements so directly or indirectly they can reduce health status (immunity) and nutritional status, and if not addressed immediately will cause other health problems.

Victims of natural disasters, especially the elderly group, require special attention and treatment because they are not only in an emergency, but also the physiological condition of the elderly group is vulnerable. Therefore, this community service activity aims to participate in improving the health of disaster victims by providing education on tips for maintaining health in the post-disaster period, as well as distributing aid for functional biscuit products with local food ingredients to fulfill post-disaster food and nutrition in the region. Cianjur. This community service program is one of the activities in the context of transferring knowledge to the general public which involves the university community (lecturers and students).

METHODS

The methods used in this community service activity are divided into two types, namely (1) education for disaster victims, (2) health screening, and (3) consumption monitoring programs. The targets are victims of the Cianjur earthquake disaster who still live in the local area. Participants were selected through purposive sampling technique, namely determining samples that have the appropriate criteria. The sample criteria are as follows: have been affected by an earthquake, residents of permanent housing in Candipuro Lumajang, aged ≥ 60 years (elderly category). Based on these criteria, the number of participants collected was 23 people. All activities were carried out directly or offline in a

classroom belonging to one of the nearest schools in Mekarsari Village, Cianjur District, Cianjur Regency (the school name has been disguised).

Counseling or educational activities are provided at the start of the activity to increase public awareness and knowledge regarding efforts to maintain and improve health in the post-disaster period. The material is specifically created on the topic of elderly health because it adapts to the activity targets. Educational media includes image displays and material points created in PowerPoint files.

Furthermore, the second activity contained health screening which was carried out to determine the health status of post-disaster earthquake victims. Health screening includes anthropometric measurements (weight, and height), blood pressure, and disease history. Anthropometric results are calculated to determine the body mass index (BMI) in the underweight category if the calculation results are <18.5 (Indonesian Health Ministry, 2020). Blood pressure is categorized as high if the systolic is >140 mmHg, and the diastolic is <80 mmHg (Indonesian Health Ministry, 2018). Meanwhile, disease history is obtained from interviews. Measuring body fat percentage serves to determine the distribution of fat in the body. The weighing tool used is Tanita brand Bio Impedance Analysis (BIA), categorized as over fat if the percent value is $>35\%$ for women, and $>24\%$ for men (Gallagher et al., 2000; McCarthy et al., 2006).

The third activity, namely monitoring the consumption of disaster victims, aims to control and monitor food intake patterns. All elderly participants were given PMT assistance in the form of functional biscuits. Functional biscuit products were developed from the results of research that have been carried out by combining functional local food in the form of catfish flour (*Clarias gariepinus*), nutmeg powder (*Myristica fragrans*), and fermented garlic (*Allium sativum* L.) which produces quality emergency food (Adi et al., 2022). The three main components of local food have benefits as a source of energy, protein, and antioxidants which can maintain nutritional status, and increase immunity and psychological health. Consumption monitoring is carried out for 1 month, with a recommended consumption of 9 pieces per day. Evaluation is carried out by a team of enumerators using consumption monitoring cards.

RESULTS

The community service activities were attended by elderly residents residing in the Cianjur district. The selected participants were also victims of the earthquake that occurred in Cianjur in November 2022. The total number of participants involved in the activities was 23 individuals. The selection criteria were based on age (>60 years), earthquake victims, residence in Mekarsari Village, Cianjur, and willingness to participate in the entire program. The characteristics of the participants are shown in the following Table 1.

Table 1. Participants Characteristics in Community Service Activity in Mekarsari Village, Cianjur

Variables	Subject (n)	Percentage (%)
Gender		
Male	8	34,8
Female	15	65,2
Total	23	100

Education

The first activity commenced with an educational session focusing on efforts to maintain and improve health and nutrition for the elderly in the post-disaster period. The chosen theme

aligned with the target audience, which consisted of the elderly population. The material was presented using educational media, including key points complemented by images stored in a PowerPoint file. Two speakers, comprising an expert in nutrition (a nutrition lecturer) and a Master's student in Community Health Nutrition (Figure 1), facilitated the session. The educational activity proceeded smoothly, evident from the participants' calm engagement with the material and their active involvement in posing questions during the discussion session.

Figure 1. Nutrition and Health Education for Elderly



The assessment of participants' knowledge improvement was based on the researcher's observations. Before and after the material presentation, the speakers posed questions related to nutrition and the health of the elderly. Before the presentation, only a few participants raised their hands to answer questions, and their responses were somewhat imprecise. Conversely, after the material presentation, approximately 50% of the participants actively raised their hands and provided answers that aligned with the presented material. This indicates that the educational intervention successfully enhanced the participants' knowledge. These outcomes align with other studies that report increased knowledge among the elderly after exposure to education, whether through visual presentations or leaflets (Ariyanti et al., 2020; Nurhasanah & Nurdahlia, 2020).

Health Screening

The second stage involves health screening activities, which include anthropometric measurements (weight, height), blood pressure, body fat percentage, and medical history, conducted through direct measurements and interviews (Table 2).

The results of anthropometric screening are used to determine the nutritional status of participants, with 8.70% of participants experiencing underweight nutritional status. The reference for the elderly BMI formula used is the normal category if BMI is between 18.5 – 25. However, other research suggests that for individuals aged 65 and above, if BMI is slightly above normal, it may not cause significant health problems. The elderly are given flexibility with a slightly higher normal BMI than adults due to the decline in muscle tissue in old age, making them more susceptible to weight loss. According to this research, the elderly with BMI <23 and >35 kg/m² have a higher risk of mortality. Therefore, it is recommended for the elderly to have a BMI that is not too thin or obese. The recommended BMI for the elderly is in the range of 25 – 35 kg/m² (Kısaç et al., 2022; Porter Starr & Bales, 2015).

Table 2. The Results of Health Screening for Participants in the Community Service Activity in Mekarsari Village

No	Variable	Female		Male		Total	
		n	%	n	%	n	%
1	Underweight Nutritional Status	1	6,67	1	12,50	2	8,70
2	Hypertension	9	60,00	4	50,00	13	56,52
3	History of diabetes	1	6,67	0	0,00	1	4,35
4	High Body Fat (Overfat)	6	40,00	1	12,50	7	30,43

In Figure 2, the blood pressure measurement activity is shown, and the results indicate that 56.52% of participants experienced hypertension or high blood pressure (>140/90 mmHg), predominantly among female elderly participants (60.00%). Out of 23 participants, only 1 person (a female) had a history of diabetes. Body composition measurements, specifically high body fat percentage, were found in 30.43% of participants, predominantly among female elderly participants (40.00%).

Figure 2. Health Examination of Elderly by Enumerator

Based on these screening results, hypertension is the most commonly found health issue among elderly participants. Hypertension is a multifactorial disease caused by various factors, including environmental, genetic, and lifestyle factors. Lifestyle factors play a significant role in causing hypertension, one of which is excessive salt consumption (Nuraini, 2015; Shapo et al., 2003). This finding aligns with the anamnesis results, where participants admitted to consuming high-salt foods, including preserved foods and fast food.

Victims of natural disasters typically receive aid in the form of fast food to facilitate consumption in emergency situations. The most commonly provided fast food is instant noodles. Instant noodles contain a high level of sodium, and excessive consumption can lead to its accumulation in the blood, making the body unable to excrete it and causing the heart to pump faster when delivering blood throughout the body (Siregar, Simanjuntak, Ginting, et al., 2020). Long-term consumption of instant noodles can influence the sodium level in the body, triggering an increase in blood pressure or hypertension (Siregar, Simanjuntak, Br. Ginting, et al., 2020; Wahyuni et al., 2020).

DISCUSSION

Emergency Food Consumption Monitoring

As part of the nutritional and health recovery efforts post-disaster, functional biscuits were distributed to all participants (Figure 4). The functional biscuit product was developed from a

combination of functional local ingredients, including catfish flour, nutmeg powder, and fermented garlic, processed into an emergency food product. After distribution to all participants, consumption monitoring was conducted for a duration of one month.

Figure 3. The Elderly Consume Functional Biscuits



Emergency Food Consumption Monitoring

Evaluation is conducted by the enumerator team through consumption monitoring cards (Figure 4). During the one-month monitoring period, participants are asked to fill out consumption monitoring sheets to facilitate the enumerator in monitoring.

Figure 4. Functional Biscuit Consumption Monitoring Card

KARTU PANTAU KONSUMSI BISKUIT BIDARI

Nama : Usia :

No.	Hari, Tanggal	Jumlah yang di konsumsi (Bungkus/Hari)	Cara konsumsi	No.	Hari, Tanggal	Jumlah yang di konsumsi (Bungkus/Hari)	Cara konsumsi
Minggu ke-1				Minggu ke-3			
1				1			
2				2			
3				3			
4				4			
5				5			
6				6			
7				7			
Minggu ke-2				Minggu ke-4			
1				1			
2				2			
3				3			
4				4			
5				5			
6				6			
7				7			

Tanggapan dan Saran terkait produk BIDARI :

Saran Konsumsi:
Balita dan Lansia: 1 bungkus (9 keping)
Sumi: 2 bungkus (18 keping)

Based on the number of consumption suggestions, which is one package containing 9 pieces of biscuits, the overall results indicate that participants claim to be able to consume 70-100% of one serving of biscuits each day. Participants who still cannot finish one serving of biscuits entirely attribute their challenges to factors such as forgetfulness or feeling full, rather than any shortcomings in the product's characteristics.

Responses from the elderly during the functional biscuit consumption monitoring program varied. The majority provided positive feedback regarding the assistance of functional biscuit supplementary food. Positive comments included unique taste and aroma due to the addition of nutmeg, the light size of the biscuits making them easy to consume and carry. In terms of benefits, some participants also commented on their experiences after consuming functional biscuits, such as feeling more relaxed and experiencing improved sleep compared to their usual difficulty sleeping, as well as reduced body discomfort.

However, some participants also provided criticism and suggestions related to the product, particularly the texture of the biscuits, which they found to be too hard, making it difficult to

bite or chew. This issue is also related to the physiological functions of the elderly, which may start to weaken. The suggestion given is to improve the biscuit's texture to make it softer. The functional biscuit assistance program is successful in increasing the consumption of the elderly, ensuring an adequate intake of food and nutrition.

CONCLUSION

Community service activities participated by elderly victims of the Cianjur earthquake disaster have gone well and produced relevant activity outputs. Educational activities related to efforts to maintain and improve health in the post-disaster period, health screening, and distribution of functional biscuit supplementary foods have succeeded in increasing participants' knowledge and consumption. This is evidenced by the results of participant participation observations, oral testimonials, and assessments of consumption compliance with a score of 70-100% indicating that the product was well received by participants. As a continuation, further cooperation is needed with related health institutions such as health centers and health offices to conduct education and health monitoring of vulnerable groups periodically. Through these routine activities, it is hoped that the health and nutritional status of the community after the disaster will improve. In addition, advocacy to local governments is needed to utilize local food as additional food ingredients, especially in emergency situations.

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