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## The effect of disaster management education on citizen preparedness facing floods

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### Abstract

**Background:** Natural disasters, especially floods, have become a crucial issue in Indonesia. Indonesia's geographical position as an archipelagic country that crosses the equator makes it vulnerable to high rainfall, which often triggers hydrometeorological disasters such as floods.

**Purpose:** To determine the influence of health education about flood first aid on the mental readiness of the community in facing disasters.

**Method:** A quantitative design with a quasi-experimental approach type one group pre-test post-test design. The research sample consisted of 30 respondents selected from 85 heads of families in Nyunyai Village. Data was collected using a validated questionnaire. Data analysis included univariate analysis, normality test with Kolmogorov-Smirnov, and bivariate analysis with t-test.

**Results:** A significant increase in knowledge and skills after being given health education interventions. The average score of knowledge and skills increased from 11.60 on the pre-test to 15.47 on the post-test. The results of the t-test proved a significant influence with a p-value of 0.000 ( $< 0.05$ ).

**Conclusion:** Health education has a significant influence in increasing the knowledge and preparedness of the people regarding first aid during floods.

**Keywords:** Communities; First Aid; Floods; Health Education; Preparedness.

### INTRODUCTION

Natural disasters, especially floods, have become a crucial issue in Indonesia (Fernalia, Anggita, & Fefrylia, 2023). Indonesia's geographical position as an archipelagic country that crosses the equator makes it vulnerable to high rainfall, which often triggers hydrometeorological disasters such as floods (Duwila, Tilaar, & Warouw, 2020). Based on data from the National Disaster Management Agency (NDMA) in 2022, there were 1.794 natural disaster events that occurred in Indonesia during the period from January 1 to December 31, 2021, with floods being one of the most dominant types (Sulistya, 2022). Natural disasters

can have a significant impact on losses in various aspects, such as economic, social, and environmental. Damage to infrastructure can disrupt community activities at large, which ultimately has the potential to cause casualties, injuries, illnesses, and homelessness (Rusli & Ridayati, 2024). In addition, environmental damage is also seen through the destruction of forest areas which have an important role as soil protectors (Pontoh, Yang, Laura, Riantika, Arisanti, Winarni, & Gumelar, 2024). A similar phenomenon also occurred in Lampung Province, where flood events were recorded repeatedly during 2021 and 2022, recently

floods hit, on Thursday, April 4, 2024. The flood that occurred suddenly due to heavy rain submerged residents' houses with a height of up to 1-2 meters, causing dozens of residents to evacuate and suffer significant economic losses. In addition, public facilities are also affected and polluted environmental conditions trigger various health problems. Although the threat of flooding is very real, the level of knowledge and preparedness of the community in dealing with disasters, especially related to first aid, is still very low. A lack of understanding of proper actions during flooding can worsen the condition of victims and hinder rescue efforts. Often, people do not know how to evacuate safely, provide first aid to drowning or injured victims, or prevent disease transmission. This situation shows a gap between high disaster risk and low levels of public health literacy (Roudini, Khankeh, & Witruk, 2017).

This event highlights the gap between high disaster risk and low levels of public health literacy, particularly related to first aid. Although the threat of flooding is very real, the results of a pre-survey conducted on December 10, 2024 show that the level of understanding of the community, which is routinely hit by floods, is still low. Of the 10 respondents, as many as 70% admitted that they did not know the definition of flooding and its prevention measures. A lack of understanding of appropriate measures, such as how to evacuate safely, provide first aid to drowning or injured victims, or prevent disease transmission, can worsen the condition of victims and hinder rescue efforts. This situation shows the need for continuous education and socialization efforts to build a culture of prevention and increase awareness of potential disasters. Therefore, structured and community-based interventions are needed to increase community capacity, and health education is considered one of the most effective methods. Health education is defined as a process that aims to improve an individual's knowledge, attitudes, and skills in order to be able to respond effectively to emergencies (Nugroho, Istiada, Nisa, & Hermawan, 2025). The importance of this intervention is strengthened (Ibrahim, Emaliyawati, Yani, & Nursiswati, 2020). Which emphasized that disaster simulation

socialization and training activities are important elements in building community preparedness. Disaster education is a fundamental mechanism to reduce risk and foster a responsive attitude (Tahmidaten & Krismanto, 2019). Community routine experiences in dealing with floods can be a source of practical knowledge (Erlia, Kumalawati, & Aristin, 2017). A good knowledge of first aid is crucial, as improper handling can have fatal consequences, contradicting its primary goal of saving lives, preventing disability, and reducing pain (Waladani, Suwaryo, & Suliyanti, 2022). The effectiveness of disaster management is largely determined by the level of preparedness, which includes increasing knowledge and attitudes (Haristiani, Setioputro, Yunanto, Al Alawi, & Zahra, 2023). A preliminary study found that residents, had limited knowledge of first aid in flood situations, and inappropriate responses during floods were a key indicator of their low level of preparedness (Darsini, Fahrurrozi, & Cahyono, 2019).

## RESEARCH METHOD

A quantitative design with a quasi-experimental design approach that is a type of one group pre-test post-test design. This approach was chosen to measure the effectiveness of the intervention provided by comparing the conditions before (pre-test) and after (post-test) treatment. The research was conducted in Nyunyai Village, Rajabasa District, Bandar Lampung, in May 2025.

The population in this study is the entire community which often experiences flood disasters, with a total of 85 Heads of Families. The determination of the number of samples is based on the principle of quantitative research, where the minimum sample for each group is 15 to 30 subjects. Therefore, this study assigned 30 respondents as a sample to obtain representative data. The sampling technique used is purposive sampling or judgement sampling, where respondents were selected based on certain criteria set by the researcher. The main instrument used for data collection is a questionnaire that has gone through a validation process and reliability test.

This questionnaire uses the Guttman scale and

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consists of 25 questions. The validity of the instrument is confirmed because the r-calculated value exceeds the r-table (0.329). The questionnaire is scored using a binary system, which is a score of 1 for the answer "Yes" and 0 for "No" on a positive question, and vice versa on a negative question. This questionnaire measures the level of knowledge categorized as follows: High (76%-100%), Adequate (56%-75%), and Less (below 56%). The stages of statistical data analysis include: Univariate Analysis: Used to describe the characteristics of each variable, including calculating the average value of knowledge and skills before and after the intervention; Normality Test: Using the

Kolmogorov-Smirnov test to check the distribution of data. With a p-value of 0.266 for knowledge and 0.175 for skill (both > 0.05), the data was declared to be normally distributed, making it eligible for the next parametric statistical test. Bivariate Analysis: Used to test the presence or absence of an intervention's influence. Once the data is normal, this analysis can use the t-test to compare the average difference between the pre-test and post-test data. However, if there are variables that are ordinal, the analysis can also use the Spearman correlation test to assess the relationship between the two variables.

## RESEARCH RESULTS

**Table 1. Characteristics of Respondents (N= 30)**

| Variable                               | Results            |
|----------------------------------------|--------------------|
| <b>Age (Mean±SD)(Range)(Year)(n/%)</b> | (54.8±13.0)(20-70) |
| 20-64                                  | 15/50.0            |
| ≥65                                    | 15/50.0            |
| <b>Gender (n/%)</b>                    |                    |
| Male                                   | 21/70.0            |
| Female                                 | 9/30.0             |
| <b>Education (n/%)</b>                 |                    |
| Bachelor                               | 2/6.7              |
| Diploma                                | 1/3.3              |
| Senior High School                     | 16/53.3            |
| Junior High School                     | 7/23.3             |
| Elementary School                      | 4/13.3             |
| <b>Occupation (n/%)</b>                |                    |
| Laborer                                | 7/23.3             |
| Housewife                              | 9/30.0             |
| Trader                                 | 5/16.7             |
| Private Employees                      | 4/13.3             |
| Self Employed                          | 5/16.7             |

The majority of respondents were evenly distributed between the age groups 20–64 years (50.0%) and ≥65 years (50.0%), with a mean age of  $54.8 \pm 13.0$  years (range 20–70 years). Most participants were male (70.0%). In terms of education, more than half had completed senior high school (53.3%), followed by junior high school (23.3%),

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elementary school (13.3%), bachelor's degree (6.7%), and diploma (3.3%). Regarding occupation, the largest proportion were housewives (30.0%), followed by laborers (23.3%), merchants (16.7%), self-employed (16.7%), and private employees (13.3%).

**Table 2. Average Value of Knowledge and Skills Before And After Treatment**

| Knowledge and Skills | Mean  | SD    | OR    | CI; 95%     |
|----------------------|-------|-------|-------|-------------|
| Pre                  | 11.60 | 1.773 | 0.324 | 10.94-12.26 |
| Post                 | 15.47 | 1.570 | 0.287 | 14.88-16.05 |

Table 2 shows the average value of knowledge and skills before the implementation of health education with a mean of 11.60, and the average value of knowledge and skills after health education with a mean of 15.47.

**Table 3. Normality Test**

| Knowledge And Skills | Shapiro-Wilk |    |       |
|----------------------|--------------|----|-------|
|                      | Statistics   | Df | Sig.  |
| Pre                  | 0.957        | 30 | 0.266 |
| Post                 | 0.951        | 30 | 0.175 |

In this study, normality tests were carried out to ensure that the data used in statistical analysis, especially for t-tests, were distributed normally. This test is very important as a prerequisite for the validity of parametric analysis. The method used was Shapiro-Wilk, which was chosen due to the relatively small number of study samples (less than 50 respondents). The results of this test are Pre-test Knowledge: Significance value (Sig.) is 0.266 and Post-test Knowledge data: Significance value (Sig.) is 0.175. According to statistical rules, if the Sig. (p-value) is greater than 0.05, then the data is considered to be distributed normally. Since both the Sig. values obtained (0.266 and 0.175) were greater than 0.05, it can be concluded that the respondents' knowledge and skill level data, both before and after the intervention, met the assumption of normality.

**Table 4. The Influence of Health Education on First Aid in Flood Situations**

| Variable           | SD Mean±    | OR    | t      | P-value* |
|--------------------|-------------|-------|--------|----------|
| Knowledge & Skills | 11.60+1.773 | 0.324 | 10.023 | 0.000    |

Based on table 4, it shows the average value of knowledge and skills before the implementation of health education about first aid in flood situations in the community with a mean of 11.60 and after being given health education, the mean increased by a mean of 15.47. The results of bivariate data analysis using the t-test obtained a p-value of  $0.000 < 0.05$ , so it can be

concluded that there is an influence of health education about first aid in flood situations in the community.

## DISCUSSION

The results showed a significant difference between the conditions before and after the intervention. Univariate analysis on pre-intervention conditions

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recorded an average value of community knowledge and skills of 11.60. This figure indicates a low level of understanding, in line with a pre-survey that showed 70% of respondents had limited knowledge about flood prevention and management. Lack of information is the dominant factor causing this low level of knowledge, which makes people vulnerable and unprepared to deal with emergency situations (Huzaifah, 2017). After the implementation of health education, there was a significant increase in the level of knowledge and skills, with the average score rising to 15.47. This improvement proves that the education provided is effective in transferring information and forming more adaptive behaviors. These results are consistent with research (Rasyida, Pamukhti, Yani, & Al Husain, 2024). Which also found a similar improvement in people's knowledge levels after receiving counseling. These findings confirm that the provision of structured education can be a vital instrument in building people's awareness and self-capacity (Rahma, Rianto, & Woestho, 2024).

The results of this study show that health education has a strong impact on improving community knowledge and skills in disaster preparedness. The increase in post-intervention scores indicates that the information provided was well received and understood, leading to a better awareness of the importance of preparedness. This also reflects that structured education is an effective way to change the level of understanding from low to adequate, thereby reducing vulnerability in emergency situations (Mubarak, Akhir, & Mohamad, 2025). In addition, the significant statistical results demonstrate that health education can directly influence changes in community behavior. With better knowledge, people are more prepared to face disasters, including the ability to recognize evacuation routes and perform first aid when needed (Jacobs, Gray, Erickson, Gonzalez, & Quevillon, 2016). This readiness not only strengthens individual capacity but also supports collective resilience in the community, making them more adaptive in responding to potential risks (James, Welton-Mitchell, Noel, & James, 2020).

To prove the effect of the intervention statistically, a bivariate analysis was carried out using the t-test. The

results showed a p-value of 0.000, which is much smaller than the significance limit of 0.05. This finding statistically proves that health education has a positive and significant influence in improving first aid knowledge and skills in the community. Knowledge is an important domain in shaping one's actions. With increased knowledge, people began to have better preparedness, including an understanding of evacuation routes and first aid measures when a disaster strikes. This preparedness includes increasing knowledge and attitude capacity, preparing emergency procedures, and strengthening the early warning system (Kang & Choi, 2021).

## CONCLUSION

Interventions in the form of health education have a positive and significant influence in improving the knowledge and skills of the people in dealing with flood situations. This improvement is critical to building a culture of prevention and awareness of potential disasters, which can ultimately reduce the impact and losses caused by disasters.

## REFERENCES

- Darsini, D., Fahrurrozi, F., & Cahyono, E. A. (2019). Pengetahuan; artikel review. *Jurnal Keperawatan*, 12(1), 13-13.
- Duwila, N. M., Tilaar, S., & Warouw, F. (2020). Identifikasi Identifikasi Kawasan Rawan Banjir Di Amurang Kabupaten Minahasa Selatan. *Spasial*, 7(1), 104-113.
- Erlia, D., Kumalawati, R., & Aristin, N. F. (2017). Analisis kesiapsiagaan masyarakat dan pemerintah menghadapi bencana banjir di Kecamatan Martapura Barat Kabupaten Banjar. *JPG (Jurnal Pendidikan Geografi)*, 4(3).

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Doi: 10.56922/mhc.v4i4.1441

- Fernalia, F., Anggita, K. D., & Fefrylia, L. (2023). Pendirian Pos Kesehatan Pertama dan Bantuan Makanan bagi Korban Banjir Kelurahan Semarang Kota Bengkulu. *Jurnal Kreativitas Pengabdian Kepada Masyarakat (PKM)*, 6(2), 676-686.
- Haristiani, R., Setioputro, B., Yunanto, R. A., Al Alawi, R. I., & Zahra, A. (2023). Peningkatan pengetahuan kesiapsiagaan bencana banjir melalui edukasi video animasi dan simulasi di smpn 3 ambulu jember. *Dedikasi saintek jurnal pengabdian masyarakat*, 2(1), 26-35.
- Huzaifah, Z. (2017). Hubungan Pengetahuan Tentang Penyebab Gastritis Dengan Perilaku Pencegahan Gastritis. *Healthy-Mu Journal*, 1(1), 28-31.
- Ibrahim, K., Emaliyawati, E., Yani, D. I., & Nursiswati, N. (2020). Pelatihan dan simulasi penanggulangan bencana bagi masyarakat. *Media Karya Kesehatan*, 3(1).
- Jacobs, G. A., Gray, B. L., Erickson, S. E., Gonzalez, E. D., & Quevillon, R. P. (2016). Disaster mental health and community-based psychological first aid: Concepts and education/training. *Journal of clinical psychology*, 72(12), 1307-1317.
- James, L. E., Welton-Mitchell, C., Noel, J. R., & James, A. S. (2020). Integrating mental health and disaster preparedness in intervention: a randomized controlled trial with earthquake and flood-affected communities in Haiti. *Psychological medicine*, 50(2), 342-352.
- Kang, J. Y., & Choi, Y. J. (2021). Effects of a psychological first aid simulated training for pregnant flood victims on disaster relief worker's knowledge, competence, and self-efficacy. *Applied nursing research*, 57, 151348.
- Mubarak, N. P., Akhir, N. M., & Mohamad, M. S. (2025). Disaster preparedness module for resilience building among schoolchildren: A case study of floods in Kerala, India. *Psikohumaniora: Jurnal Penelitian Psikologi*, 10(1), 159-180.
- Nugroho, E., Istiada, A., Nisa, A. A., & Hermawan, D. Y. (2025). Health Education Model in Disaster Situations: Systematic Review. *Media Publikasi Promosi Kesehatan Indonesia (MPPKI)*, 8(1), 29-41.
- Pontoh, R. S., Yang, V. V., Laura, G. Y., Riantika, R. A., Arisanti, R., Winarni, S., & Gumelar, F. (2024). Assessing Sustainable Development in Community Welfare and Economic Resilience to Extreme Weather in Indonesia. *Sustainability*, 16(15), 6693.
- Rahma, N. H., Rianto, M. R., & Woestho, C. (2024). The Influence of Market Orientation, Entrepreneurial Orientation and Innovation on The Performance of Micro, Small and Medium Enterprises (Msmes) In Harapan Baru Sub-District. *Socius: Jurnal Penelitian Ilmu-Ilmu Sosial*, 1(12).
- Rasyida, Z. M., Pamukhti, B. B. D., Yani, L. P., & Al Husain, M. A. H. (2024). Influence of Health Promotion About Disaster Preparedness to the Level of Knowledge.
- Roudini, J., Khankeh, H. R., & Witruk, E. (2017). Disaster mental health preparedness in the community: A systematic review study. *Health psychology open*, 4(1), 2055102917711307.
- Rusli, C. R., & Ridayati, R. (2024). Dampak Ekonomi Akibat Kerusakan Infrastruktur Jalan di Desa Wisata Srikeminut Imogiri Bantul. *5TH CEEDRIMS 2024*, 5(1), 42-48.
- Sulistya, W. (2022). Belajar Dari Kejadian Bencana Alam Sepanjang Tahun 2021. *Jurnal Widya Climago*, 4(2), 84-90.

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Doi: 10.56922/mhc.v4i4.1441

Tahmidaten, L., & Krismanto, W. (2019). Implementasi pendidikan kebencanaan di Indonesia (sebuah studi pustaka tentang problematika dan solusinya). *Lectura: Jurnal Pendidikan*, 10(2), 136-154.

Waladani, B., Suwaryo, P. A. W., & Suliyanti, A. (2022). Peningkatan pengetahuan mitigasi bencana dalam pengurangan risiko bencana tanah longsor. *Jurnal Salingka Abdimas*, 2(2), 137-141.

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