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Earthquake Disaster Mitigation To Improve Community Preparedness In Betungan Village

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Abstract. Indonesia is a country prone to natural disasters, especially earthquakes, due to its location at the meeting point of three major tectonic plates. The lack of education and awareness among the public regarding disaster risks often exacerbates the impact of such events. This Devotion aims to enhance public understanding and preparedness for earthquakes through poster-based disaster mitigation awareness campaigns. The activities were conducted in Betungan Village, Selebar Subdistrict, Bengkulu City, using a qualitative approach. The three stages of the activity included the development of disaster management documents, community organisation, and direct outreach in the field. The results showed an increase in public awareness and knowledge of evacuation and disaster mitigation measures. Despite some technical and social challenges, the activity successfully fostered active community participation and served as an effective model for disaster education at the community level.

Keywords: *Disaster Mitigation, Earthquakes, Community Education, Posters, Preparedness.*

INTRODUCTION

Indonesia is a country with a high level of vulnerability to natural disasters. Its geographical location at the confluence of three major tectonic plates—the Eurasian Plate, the Indo-Australian Plate, and the Pacific Plate—makes the region highly vulnerable to geological activity, particularly earthquakes (Kajian et al., 2021). According to Nursyabani et al. (2020), a disaster is an event or series of events caused by natural, non-natural, or human-induced factors that can result in physical and material losses, loss of life, and psychological distress. Globally, disasters such as earthquakes, floods, and famines demonstrate that humanity is increasingly vulnerable to the forces of nature (Arif, 2020).

One of the most frequent disasters in Indonesia is earthquakes. According to data from the United States Geological Survey (USGS), 683 earthquakes with a magnitude of 4 or greater and a depth of 300 km or less occurred in Indonesia from January to May 2025 (Shabibah, 2025). Earthquakes not only cause physical damage to buildings but also impact the social, economic, and psychological well-being of communities. For example, a 6.1 magnitude earthquake that struck southern Malang Regency, East Java, damaged thousands of homes and public facilities, killed eight people, and injured dozens more (Pradina et al., 2021).

Historical records show that Indonesia accounts for approximately 10% of the world's earthquakes (Abbas et al., 2022). Besides earthquakes, other disasters such as coastal erosion also pose a threat, particularly to coastal areas and marine ecosystems. However, a lack of access to information and education means many people lack understanding of appropriate mitigation measures (Puturuhu et al., 2024).

This lack of public understanding of disaster risks and mitigation contributes to the high number of casualties. Lack of awareness of emergency measures often leads to panic when disasters occur (Abbas et al., 2022). Geological factors such as weak rock structures, complex geology, and steep slopes also increase an area's vulnerability to earthquakes (Kajian et al., 2021). Communities who are unaware of their environmental conditions generally fail to take preventative measures (Kajian et al., 2021).

On the other hand, many regions in Indonesia still lack adequate disaster management systems. The lack of disaster hazard maps, village-level disaster response institutions, and disaster budget documents, as well as low community participation, are serious obstacles (Izharsyah et al., 2020). The impact of unmanaged disasters can spread to various sectors of life, including housing, infrastructure, and health services (Arif, 2020).

Disaster education and training are also not evenly distributed across all levels of society. Many educational institutions have not yet included disaster preparedness materials in their curriculum (Atmojo, 2020). Yet, early disaster mitigation education is crucial for fostering a culture of disaster preparedness among both children and adults (Arif, 2020).

Disaster mitigation encompasses more than just technical or social aspects; it must also be integrated into spatial planning and regional policies. Unfortunately, this integration is still suboptimal in many regions in Indonesia (Arif, 2020). For example, in May 2023, the southern region of Java experienced 105 earthquakes in just one week (Maryani, 2023). This phenomenon should be a primary consideration in developing regional development strategies.

Therefore, disaster mitigation must be comprehensive, encompassing increasing public awareness, strengthening local institutions, early disaster education, and aligning development policies with potential disaster risks. This strategy is highly relevant for local contexts, such as in Betungan Village, Selebar District, Bengkulu City. This area is also vulnerable to earthquakes, so promoting earthquake mitigation is crucial for improving community preparedness and responsiveness in emergency situations.

RESEARCH METHODS

This community service project employed a qualitative approach, using posters as a means of educating the community about potential earthquakes in Betungan Village, Selebar District, Bengkulu City. This approach was chosen to gain a deeper understanding of the implementation process and impact of the outreach activities. This activity was conducted in Betungan Village, involving the local community, community leaders, and KKN students as the outreach participants.The method used in this activity was implemented in three stages: the initial stage was compiling a Disaster Document, which was then disseminated to the community. The purpose of this activity was to ensure all activities were well documented, including budgeting examples and other information. The second stage was assisting the local community in gathering residents so they could properly participate in the outreach activities. The final stage was disseminating information about disaster mitigation to the community by providing warning signs of disaster danger.

RESULTS AND DISCUSSION

The earthquake mitigation outreach program held in Betungan Village, Selebar District, Bengkulu City, was conducted with the active participation of the local community. The outreach process consisted of three stages: preparing disaster documents, organizing the community, and delivering educational materials through posters. This activity not only served as a means of conveying information but also as an effort to build collective awareness of the importance of disaster preparedness.

Disaster Document Development

In the initial stage, the implementation team developed a Disaster Document containing basic information on types of disasters, particularly earthquakes, as well as mitigation measures that can be implemented in residential areas. This document also included a simple disaster budgeting simulation at the neighborhood/neighborhood unit (RT/RW) level, which can serve as a reference for the community and local government in developing community-based emergency response plans. This document provided a form of structural education that is applicable and can be replicated in other areas.

Community Organization

The second stage involved community leaders and KKN (Community Service Program) students in the community mobilization process. This strategy proved effective because the interpersonal and cultural approach was able to reach various groups, including vulnerable groups such as the elderly and housewives. Residents' participation in this activity demonstrated a high level of interest and need for disaster information, a level previously underserved. Observation data showed that residents were more enthusiastic when information was presented directly, especially through visualizations such as easy-to-understand posters.

Mitigation Outreach and Danger Signage

Mitigation outreach included explaining how to respond to earthquakes, such as safe positions during an earthquake, evacuation routes, and the importance of a disaster preparedness bag. The posters used simple illustrations and concise information, effectively conveying the key message. Furthermore, the team placed visual signs at vulnerable or strategic points in the community, such as open areas, post-earthquake gathering places, and locations with potential debris. This helped increase the community's spatial awareness of their surroundings in the context of a disaster.

Impact of Activities

Table 1. Initial Conditions, Treatments, and Final Conditions in the Field

Initial State	Treatment	Final State
Prior to the activity, residents of Betungan Village generally lacked adequate understanding of earthquake disaster mitigation. There were no evacuation signs, hazard maps, or disaster documentation in their neighborhood. Furthermore, the majority of residents were unaware of how to protect themselves during an earthquake. This lack of education and the perception that earthquakes are rare events have led to a tendency for people to be passive in the face of potential disasters.	The outreach activities were conducted through three main stages: preparing disaster documents, organizing the community, and delivering mitigation materials using posters. The documents included basic information about earthquakes, evacuation plans, and disaster budgeting simulations. KKN students, along with community leaders, directly invited residents to attend the outreach. The core activities included education on self-rescue methods and the installation of hazard signs and evacuation points at several strategic locations.	Following the activities, community understanding of earthquake risks and mitigation measures has improved. Residents are now familiar with evacuation routes and emergency actions during an earthquake. Several strategic locations have been marked with hazard markers and safe assembly points, and disaster documents are now available as a baseline. These activities demonstrate positive changes in community awareness and preparedness, although follow-up is needed to strengthen institutions and ensure the program's sustainability in the future.

This activity had a positive impact on increasing public understanding of earthquake disasters. This was evident in the open discussion following the outreach, where most residents were able to reiterate the evacuation steps and preventive measures that had been discussed. Furthermore, the presence of posters in public places also served as long-term visual reminders for the community. This finding aligns with the statement (Arif, 2020) that disaster education presented visually and in a participatory manner can foster a culture of preparedness in the community.

Challenges in the Field

However, this activity also faced several obstacles. These included limited visual aids, a lack of initial understanding of technical disaster terminology among the community, and a lack of formal disaster documentation at the village level. Some residents also still perceived disaster information as something remote from their daily lives, necessitating a more sustainable and contextual approach to delivering mitigation materials.

Figure 1. Installation and Providing Danger Signs

Figure 2. Preparation of Disaster Documents

Figure 3. Group Photo with Local Community

CONCLUSION

An earthquake mitigation outreach activity conducted in Betungan Village, Selebar District, Bengkulu City, demonstrated that an educational approach using posters and direct community involvement can improve residents' understanding and preparedness for earthquake risks. Prior to the activity, the community lacked adequate knowledge regarding self-rescue measures, evacuation signs, and disaster documentation. Through three stages—document preparation, community organization, and direct outreach—positive changes occurred in the community's collective awareness.

This improvement was evident in residents' ability to recall mitigation information, identify safe assembly points, and begin to understand the importance of preparedness. Although challenges such as limited visual aids and uneven technical understanding persist, this activity demonstrated that participatory visual education can foster a culture of disaster awareness. Therefore, similar activities need to be expanded and supported by strengthening local institutions and integrating disaster policies into regional development planning.

REFERENCES

A Shabibah. (2025, June 6). *Sebaran Gempa Bumi RI Awal 2025, Wilayah Barat & Timur Perlu Hati-Hati*. Goodstats. https://goodstats.id/article/sebaran-gempa-bumi-ri-awal-2025-wilayah-barat-dan-timur-perlu-hati-hati-vg5bj

Arif, L. (2020). *MITIGASI BENCANA GEMPA DI KOTA SURABAYA (Kajian tentang Upaya Antisipatif Pemerintah Kota Surabaya dalam Mengurangi Resiko Bencana)*. https://www.researchgate.net/publication/341540433

Atmojo, M. E. (2020). Pendidikan Dini Mitigasi Bencana. In *Jurnal Pengabdian Kepada Masyarakat* (Vol. 3, Issue 2). http://ejournal.bsi.ac.id/ejurnal/index.php/abdimas

Hasriwiani Habo Abbas, K Asrina, & Andi. (2022). *Mitigasi Bencana Gempa Bumi dengan Metode Learning by Doing*.

Kajian, J., Dan, I., & Geografi, P. (2021). *ANALISIS BENCANA GEMPA BUMI DAN MITIGASI BENCANA DI DAERAH KERTASARI Iqbal luthfi nur rais*, Lili Somantri*. *4*(2).

Maryani, D. (2023). *Mitigasi Bencana Gempa Bumi di Padukuhan Karang, Kalurahan Girikarto, Kapanewon Panggang, Kabupaten Gunungkidul*.

Nursyabani, Putra Ekha Roni, & Kusdarini. (2020). Mitigasi Bencana Dalam Peningkatan Kewaspadaan Terhadap Ancaman Gempa Bumi Di Universitas Andalas. *JURNAL ILMU ADMINISTRSI NEGARA (AsIAN)*, *08*. https://doi.org/https://doi.org/10.47828/jianaasian.v8i2.12

Pradina, A. T., Mirza, M., Pratama, A., & Bencana, A. (2021). PENINGKATAN LITERASI MITIGASI BENCANA GEMPA BUMI MELALUI BOOKLET RINGKAS INOVATIF BAGI SISWA SDN

WONOAYU KECAMATAN WAJAK KABUPATEN MALANG. In *JURNAL PASOPATI* (Vol. 3, Issue 3). http://ejournal2.undip.ac.id/index.php/pasopati

Puturuhu, F., Ruman, R., Hatuala, S. H., & Tum Tomagola, R. (2024). *Journal of Community Practice PENINGKATAN KESADARAN MASYARAKAT MELALUI SOSIALISASI MITIGASI BENCANA ABRASI PANTAI (STUDI KASUS DI NEGERI LIMA) Article History*. https://doi.org/10.54373/empow.v1i1.21

Ridho Izharsyah, J., Hamzah Lubis, F., & Hardiyanto, S. (2020). *Penguatan Pengabdian Dalam Penerapan Mitigasi Bencana Tanah Longsor Dan Banjir Di Nagori Totap Majawa Kecamatan Tanah Jawa Kabupaten Simalungun*.