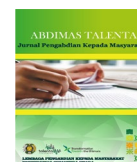


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Improving Community Preparedness Through Disaster Management Training in Sukaraja Village, Medan Maimun District, Medan City

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ABSTRACT

Disaster mitigation is generally implemented to reduce losses caused by potential disasters, including both loss of life and property damage, which can significantly impact human activities and livelihoods. In Sukaraja Village, the community's understanding of disaster response is limited to basic actions such as evacuating to higher and safer ground during floods. However, the community often faces challenges in evacuating vulnerable groups, such as women, the elderly, and children, due to the densely populated area and limited evacuation space. This service program aimed to address these challenges by conducting a comprehensive training on disaster mitigation, focusing on evacuation and first aid for flood victims by the members of the Disaster-Resilient Village Forum (Keltana). The method employed in this community service program included structured training sessions and simulations, comprising: (1) educational sessions on knowledge, attitudes, and actions required during flood emergencies, (2) hands-on training on evacuation procedures and first aid techniques for disaster mitigation, and (3) Communication, Information, and Education (CIE) activities on emergency response strategies targeted at Keltana members. The results showed a significant improvement in the participants' understanding and skills. The training increased the knowledge level of Keltana members on flood evacuation and first aid from 55% to 93%. Additionally, the program enhanced their practical skills in evacuating flood victims and administering first aid for injuries, including fractures and bleeding. In conclusion, the disaster mitigation training program successfully strengthened the community's capacity in flood response, contributing to improved resilience and preparedness in Sukaraja Village. The approach and outcomes of this program can serve as a model for similar high-risk areas to enhance community-based disaster mitigation efforts.

Keyword: Disaster Mitigation, Flood Evacuation, Community Resilience, Emergency Preparedness



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1. Introduction

Disaster mitigation is a series of efforts aimed at reducing the negative impacts of disasters on human life, including both loss of life and material damage. In the context of disaster management, mitigation plays a crucial role, as proactive measures taken before a disaster can significantly minimize potential damage. Mitigation efforts involve a variety of activities, such as the development of resilient infrastructure, community education, and the establishment of early warning systems. According to the Indonesian Government Regulation No. 21 of 2008, disaster mitigation encompasses efforts to reduce risks through physical development and by raising awareness and enhancing the capacity of communities to cope with potential disaster threats [1].

As an archipelagic country situated in the tropical region, Indonesia frequently faces hydrometeorological disasters, including floods. Flooding is one of the primary threats, especially during the rainy season with high precipitation intensity [2]. The impact of flooding extends beyond physical damage, affecting the socio-

economic conditions of communities. In densely populated urban areas like Sukaraja Village in the Medan Maimun District, the problem of flooding becomes more complex due to inadequate drainage infrastructure and limited public understanding of proper mitigation measures [3].

Preliminary observations identified several key challenges faced by the community partners, specifically the Disaster-Resilient Village (Keltana) in Sukaraja. Firstly, there is a low level of public awareness and preparedness regarding flood disasters [4]. The community typically relies on basic evacuation strategies, such as seeking higher ground, but lacks knowledge of first aid, particularly for vulnerable groups such as the elderly, pregnant women, and children. Secondly, there is an absence of an effective early warning system in the area, leaving residents with insufficient time to prepare when floods occur. Thirdly, there is a lack of training activities involving the community and Keltana volunteers to enhance their skills in emergency response and victim evacuation.

Given these issues, an intervention was necessary in the form of training and simulation exercises on disaster mitigation involving both the community members and Keltana officers. The training program aimed to improve knowledge, skills, and preparedness in dealing with flood disasters. Additionally, this initiative aligns with the goals of the Sustainable Development Goals (SDGs), particularly in addressing climate action and enhancing community resilience to disasters.

2. Methods

The disaster mitigation training for the Disaster-Resilient Village (Keltana) in Sukaraja Village, Medan Maimun District, was carried out through a series of structured activities designed to enhance the knowledge and skills of community members in responding to flood emergencies. The implementation of this program followed a comprehensive approach, consisting of the following stages:

1. The initial stage was conducting a survey and signing a letter to the partnership with the Head of Sukaraja Medan Maimun Village.
2. The training began with a welcoming speech by the Head of Sukaraja Medan Maimun Village and the Head of Prevention and Preparedness of the North Sumatra Provincial BPBD, followed by an introduction of the head and members of the service team, explaining the objectives and targets of the training and providing materials to the Keltana forum.



Figure 1. Opening Ceremony and Welcome Remarks

3. Preliminary Assessment and Pre-Test

The program began with a preliminary assessment to evaluate the existing knowledge, attitudes, and actions of the community regarding flood evacuation and first aid. A pre-test was conducted to gauge the initial level of understanding among participants before the training commenced [5].

4. Communication, Information, and Education (CIE) Activities

This phase involved the dissemination of educational materials on disaster preparedness, focusing on flood evacuation procedures and first aid. The CIE activities aimed to provide clear and accessible information to participants, including step-by-step guidelines for responding to flood emergencies.

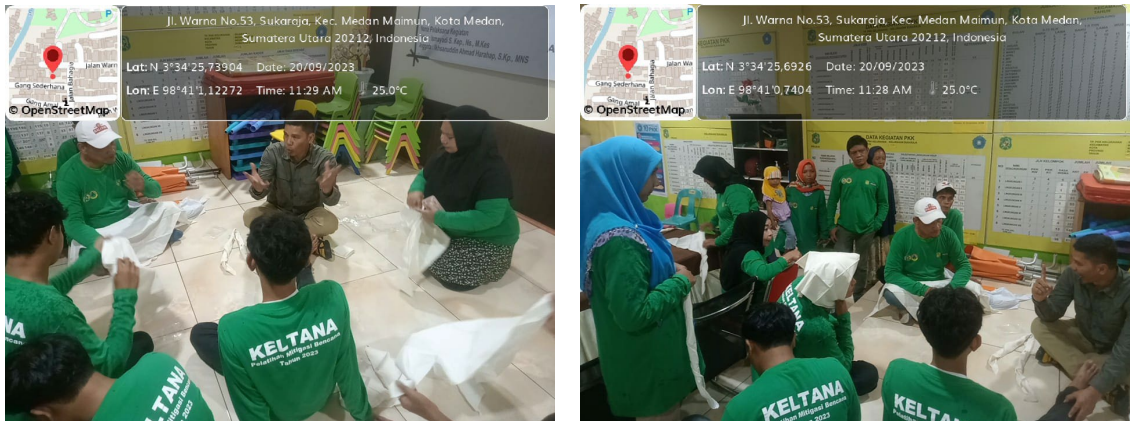


Figure 2. Discussion on Disaster Mitigation

5. Hands-On Training and Demonstrations

The core component of the program was the hands-on training, which included practical demonstrations on evacuation techniques and first aid. The training sessions covered essential skills, such as using stretchers, handling injuries like fractures and bleeding, and applying basic life support techniques. The demonstrations were led by trained experts from the Disaster Management Team [6].

6. Simulation and Re-Demonstration

Following the hands-on training, participants engaged in simulation exercises to practice the learned techniques. The simulations aimed to mimic real-life flood scenarios, allowing community members to apply their skills in a controlled environment. The participants were then asked to perform re-demonstrations to reinforce their learning and ensure proficiency.



Figure 3. Evacuation Simulation and First Aid for Victims

7. Post-Test and Evaluation

After the training, a post-test was administered to assess the improvement in participants' knowledge and skills. Feedback was collected to evaluate the effectiveness of the training and identify areas for future improvement.

8. Provision of Equipment and Supplies

To support the training activities, essential equipment such as stretchers, splints, and first aid kits were provided. These resources were intended to enhance the practical aspect of the training and ensure that participants had the necessary tools for emergency response.

To address the key issues identified during the initial assessment, a multi-faceted strategy was employed. The primary approach focused on capacity building through targeted education and practical training, aiming to enhance the knowledge and skills of both the community and Keltana volunteers [7]. This strategy aimed to increase participants' readiness and confidence in handling flood emergencies effectively. Collaboration with key stakeholders, including the village administration, the Regional Disaster Management Agency (BPBD), and local health officials, was integral to the program's success. Their involvement provided additional expertise and ensured alignment with local disaster response protocols. The use of simulation-based learning was a core element, bridging the gap between theoretical knowledge and practical skills by allowing participants to practice in a realistic environment. This approach improved their ability to respond swiftly during actual flood events. Additionally, continuous monitoring and feedback mechanisms were implemented throughout the program to evaluate participants' progress and make necessary adjustments. Finally, the program was designed in alignment with the Sustainable Development Goals (SDGs), particularly Goal 13 (Climate Action), by promoting long-term community resilience and integrating disaster mitigation as a sustainable practice.

3. Result and Discussion

The implementation of the disaster mitigation training program in Sukaraja Village, Medan Maimun, successfully addressed several critical issues related to community preparedness in responding to flood emergencies. The program consisted of multiple stages, including preliminary assessment, hands-on training, simulation exercises, and post-training evaluation. These activities provided valuable insights into the level of knowledge and skills of participants and highlighted the importance of such interventions in enhancing community resilience.

3.1. Enhanced Community Knowledge and Preparedness

The results of the pre-test and post-test assessments revealed a significant improvement in the participants' knowledge and understanding of disaster mitigation, particularly concerning first aid and evacuation procedures during flood emergencies. Prior to the training, many community members had limited awareness of the steps necessary for effective disaster response, often relying on instinctual actions such as seeking higher ground without proper planning. The training program successfully addressed this gap by providing comprehensive education on essential skills, such as using stretchers, handling fractures, and managing bleeding. This hands-on experience proved crucial in building the participants' confidence, especially when dealing with vulnerable groups like the elderly, children, and pregnant women.

The simulations conducted during the training provided a realistic environment for participants to apply their newly acquired skills. The scenarios mimicked typical flood conditions in the region, allowing the community members and Keltana volunteers to practice evacuation techniques and first aid procedures in a controlled setting. The re-demonstration exercises highlighted the importance of repetition in mastering these critical skills. The feedback gathered from participants indicated that they felt more prepared and capable of responding effectively to flood incidents, demonstrating the value of practical, experience-based learning.

3.2. Increased Stakeholder Engagement and Collaboration

The success of the program was also attributed to the strong involvement of key stakeholders, including the village administration, the Regional Disaster Management Agency (BPBD), and local health officials. Their participation ensured that the training content was aligned with local disaster response protocols and provided the necessary expertise to address specific challenges faced by the community. This collaborative approach not only enhanced the quality of the training but also fostered a sense of shared responsibility among stakeholders. The active engagement of these parties during the training sessions and simulations reinforced the importance of a coordinated response in disaster management.



Figure 4. Acceptance of Partners, Village Heads and Head of USU Community Service

3.3. Addressing Gaps in Early Warning Systems and Resource Availability

One of the critical issues identified during the initial assessment was the lack of an effective early warning system for flood events in Sukaraja Village. Although the training program focused on enhancing the community's response capabilities, it also highlighted the need for a more robust early warning mechanism to alert residents in advance of potential flood threats. The absence of such a system limited the community's ability to prepare adequately before the disaster struck. As a result, one of the key recommendations from this program is the development and implementation of an early warning system tailored to the local context, potentially incorporating mobile alerts and community sirens.

In addition to the gaps in early warning systems, the program also revealed limitations in the availability of emergency response resources, such as adequate first aid supplies and evacuation equipment. While the training provided essential tools like stretchers and splints, the overall capacity of the community to respond effectively to large-scale flood events remains constrained by the limited availability of these resources. Addressing this issue would require increased investment in disaster preparedness infrastructure, including the provision of emergency kits to each household and the establishment of community-based resource centers equipped with essential supplies.



Figure 5. Joint training with students and the community in community service with disaster mitigation.



Figure 6. Group Photo and Closing Ceremony

3.4. Recommendations for Future Interventions

Based on the findings from the training program, several recommendations can be made to enhance future disaster mitigation efforts in Sukaraja Village and similar communities:

- **Develop an Effective Early Warning System**
Implementing a locally tailored early warning system would significantly improve the community's ability to respond to flood threats in a timely manner.
- **Increase Resource Availability**
Ensuring the availability of adequate emergency supplies, such as first aid kits and evacuation tools, is crucial for effective disaster response.
- **Promote Ongoing Capacity Building**
Regular training sessions and refresher courses should be conducted to maintain the community's skills and knowledge in disaster mitigation.
- **Strengthen Stakeholder Collaboration**
Continued engagement with local authorities and disaster management agencies will help align community-level efforts with broader disaster response strategies.

Overall, the results of this program demonstrate that well-designed and community-centered training initiatives can significantly enhance disaster preparedness and resilience. The experience gained from this intervention in Sukaraja Village provides a valuable model that can be replicated and adapted to other high-risk areas facing similar challenges.

4. Conclusion

The disaster mitigation training program conducted in Sukaraja Village, Medan Maimun, has successfully demonstrated the effectiveness of community-based approaches in enhancing disaster preparedness. The comprehensive training, which included educational sessions, hands-on practice, and simulation exercises, significantly improved the knowledge and skills of participants, particularly in handling first aid and evacuation during flood emergencies. The involvement of key stakeholders, including local authorities and the Regional Disaster Management Agency (BPBD), played a crucial role in ensuring the relevance and alignment of the training content with local disaster response protocols. The program's emphasis on practical, experience-based learning, combined with continuous monitoring and feedback, helped bridge the gap between theoretical knowledge and real-life application. Participants reported increased confidence and readiness, indicating a positive shift towards a more proactive disaster management mindset. However, the training also highlighted the need for a robust early warning system and better access to emergency response resources, which are critical for effective disaster mitigation.

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